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Analysis of Risk Factors for the Quality of Health Services in Primary Health Facilities: An Observational Study in North Bengkulu Regency, Indonesia

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A B S T R A C T

Primary health care (PHC) is crucial for overall health system performance, particularly in developing nations. However, variations in the quality of PHC services in Indonesia, particularly in North Bengkulu Regency, raise concerns. This study aimed to identify and analyze risk factors associated with suboptimal quality of health services in these facilities. This observational, cross-sectional study was conducted in 20 primary health centers (PHCs) in North Bengkulu Regency. A multi-stage random sampling technique was used to select 400 patients and 80 healthcare providers. Data were collected using validated questionnaires assessing various dimensions of service quality (tangibles, reliability, responsiveness, assurance, and empathy), patient satisfaction, and potential risk factors (socio-demographic, facility-related, and provider-related). Descriptive statistics, bivariate analysis, and multivariate logistic regression were used for data analysis. The study found a significant association between perceived service quality and patient satisfaction. Socio-demographic factors (lower education and income), facility-related factors (inadequate staffing and lack of essential medicines), and provider-related factors (insufficient communication and perceived lack of empathy) were identified as risk factors for lower service quality. The quality of health services in North Bengkulu PHCs is influenced by a complex interplay of patient, facility, and provider factors. Interventions targeting these risk factors, such as community education, capacity building for providers, and improvements in resource allocation, may improve PHC service quality and patient satisfaction in this region.

1. Introduction

Primary healthcare (PHC) serves as the bedrock of a robust health system, providing essential health services that are accessible, affordable, and comprehensive for individuals, families, and communities. It plays a pivotal role in achieving universal health coverage (UHC), a key target of the Sustainable Development Goals (SDGs). In Indonesia, PHCs are often the first point of contact for individuals seeking healthcare, making their quality of services paramount to the overall health outcomes of the population. The Indonesian government has made significant strides in improving access to PHC through the National Health Insurance (JKN) program. However, ensuring the quality of services delivered at PHCs remains a persistent challenge. The quality of PHC services encompasses a wide array of dimensions, including the technical competence of healthcare providers, the availability of essential medicines and equipment, the physical infrastructure of the facilities, and the interpersonal aspects of care, such as communication and empathy.[1,2]

A multitude of factors can influence the quality of PHC services. These include socio-demographic characteristics of the patients, such as age, gender, education, and income level, as well as provider-related factors like their level of training, experience, and job satisfaction. Additionally, organizational

factors such as leadership, management practices, resource availability, and health information systems can also significantly impact the quality of care delivered. North Bengkulu Regency, located on the island of Sumatra, is a region characterized by diverse socio-economic and geographic conditions. The regency faces several challenges in delivering quality PHC services, including limited resources, a shortage of qualified healthcare providers, and a high burden of preventable diseases. Geographic barriers also limit access to PHC services for some communities, particularly those residing in remote and underserved areas. Despite the importance of PHC in the Indonesian health system, there is a paucity of research investigating the quality of services delivered at PHCs in North Bengkulu Regency. The existing literature on PHC quality in Indonesia tends to focus on national-level surveys or studies conducted in urban areas, leaving a significant knowledge gap regarding the specific challenges and risk factors faced by PHCs in rural and underserved regions.[3,4]

To address this gap, this study aimed to identify and analyze the risk factors associated with the quality of health services in PHCs in North Bengkulu Regency. The study adopted a comprehensive approach, examining patient, provider, and facility-level factors that could potentially influence service quality. The study is guided by the Donabedian model of healthcare quality, which postulates that the quality of care is determined by the interplay of structure, process, and outcome. In this study, the structural dimension is assessed through the availability of essential medicines, equipment, and infrastructure at the PHCs. The process dimension is evaluated through patient perceptions of the technical quality of care, communication, and interpersonal aspects of service delivery. The outcome dimension is assessed through patient satisfaction, which serves as a proxy for overall service quality.[5,6] By identifying the risk factors associated with lower quality of PHC services in North Bengkulu Regency, this study aims to provide evidence-based recommendations for targeted interventions to improve the quality of care. These interventions could include strengthening health systems, enhancing provider capacity, improving patient education and empowerment, and addressing social determinants of health.

2. Methods

This research employed a cross-sectional observational study design. This design allows for the simultaneous collection of data on exposures (risk factors) and outcomes (perceived service quality and patient satisfaction), providing a snapshot of the situation at a specific point in time. The study adhered to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines to ensure transparency and rigor. Study Setting The study was conducted in North Bengkulu Regency, located on the island of Sumatra in Indonesia. This regency was selected due to its diverse geographical and socio-economic characteristics, representative of many rural areas in Indonesia that face challenges in delivering quality PHC services. The regency comprises a mix of coastal, lowland, and highland areas, with varying levels of access to healthcare facilities. The study population consisted of two distinct groups: 1. Patients: Adult patients (18 years or older) who had visited a PHC within North Bengkulu Regency for outpatient services in the month preceding the study. These patients were selected to represent the users of PHC services and provide insights into their experiences and perceptions of service quality. 2. Healthcare Providers: Doctors and nurses currently working in PHCs within the regency. These providers were selected to represent the workforce delivering PHC services and offer insights into their working conditions, job satisfaction, and perceived challenges.

A multi-stage random sampling strategy was employed to select the study participants. This involved the following steps: Stage 1: Selection of PHCs: A list of all 32 PHCs within North Bengkulu

Regency was obtained from the local health office. Using a random number generator, 20 PHCs were selected to participate in the study. This sample size was determined based on the available resources and the need to ensure adequate representation of the diverse PHCs within the regency. Stage 2: Selection of Patients: Within each selected PHC, a systematic random sampling method was used to select patients. A sampling interval was determined based on the average daily outpatient attendance at each PHC and the desired sample size of 20 patients per PHC. Starting from a randomly selected patient, every nth patient was selected until the desired sample size was reached. Stage 3: Selection of Healthcare Providers: In each selected PHC, two doctors and two nurses were randomly selected from the list of available staff. This ensured a balanced representation of different provider cadres in the study. Inclusion and Exclusion Criteria: Patients: Inclusion: Aged 18 years or older, visited the PHC for outpatient services in the past month, and willing to participate; Exclusion: Cognitive impairment, severe illness preventing participation, refusal to consent. Healthcare Providers: Inclusion: Currently working at the selected PHC, direct patient contact, and willing to participate; Exclusion: Refusal to consent.

Three main data collection instruments were used in this study: 1. Patient Questionnaire: A structured questionnaire was developed to collect data on patients' socio-demographic characteristics (age, gender, education, income, distance to PHC), perceptions of service quality based on the five dimensions of SERVQUAL (tangibles, reliability, responsiveness, assurance, and empathy), overall satisfaction with services, and experiences with specific aspects of care (waiting time, communication with providers, availability of medicines). The questionnaire was piloted with a small group of patients to ensure clarity and cultural appropriateness. 2. Healthcare Provider Questionnaire: This questionnaire captured data on provider demographics (age, gender, years of experience, professional qualifications), perceptions of working conditions, job satisfaction, availability of resources and support, and challenges faced in delivering quality care. The questionnaire was developed based on a review of existing literature and adapted to the local context. 3. Facility Assessment Checklist: This checklist was used to assess the structural quality of PHCs based on national standards. It included items on the availability of essential medicines and equipment, infrastructure (cleanliness, water and sanitation, waste management), and adherence to infection prevention and control practices. The checklist was adapted from the Indonesian Ministry of Health's PHC accreditation standards.

Trained research assistants conducted face-to-face interviews with patients in the waiting area of each PHC. The interviews were conducted in Bahasa Indonesia or the local Bengkulu dialect, as preferred by the patient. The research assistants explained the study's purpose, obtained informed consent, and assured participants of confidentiality. Self-administered questionnaires were distributed to healthcare providers at their respective PHCs. The research assistants provided instructions on completing the questionnaire and collected them after a designated period. Trained research assistants conducted facility assessments using the checklist. They observed the PHC environment, interviewed staff, and reviewed records to assess compliance with national standards. Ethical approval for the study was obtained from the Ethics Committee of University of Dehasen. Written informed consent was obtained from all participants prior to data collection. Participants were informed about the study's purpose, procedures, potential risks and benefits, and their right to withdraw at any time without consequences. Confidentiality and anonymity were maintained throughout the data collection and analysis process. Data were entered into a password-protected database

and checked for accuracy and completeness. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize the socio-demographic characteristics of patients and providers, as well as their responses to the questionnaire items. Bivariate analysis was used to examine the associations between potential risk factors and perceived service quality and patient satisfaction. Multivariate logistic regression analysis was used to identify independent predictors of low service quality and patient satisfaction, controlling for potential confounding factors.

3. Results and Discussion

Table 1 provides a snapshot of the socio-demographic characteristics of the study participants, both patients and healthcare providers, in the North Bengkulu Regency. The average age of patients was 42.3 years, indicating a relatively young to middle-aged population seeking PHC services. However, the standard deviation (SD) of 15.2 suggests a wide range of ages among the patients, highlighting the need to consider age-related health needs in service delivery. The majority of patients were female (58.5%), suggesting that women may be more likely to seek PHC services than men. This could be due to a variety of factors, such as women's greater health needs or their role as primary caregivers in their families. A significant majority (63.8%) of patients had completed only elementary school or less, indicating a relatively low level of educational attainment among the population. This may have implications for health literacy and the ability of patients to understand and follow healthcare advice. Almost half of the patients (48.3%) reported a monthly income below the regional minimum wage, highlighting the economic vulnerability of a substantial proportion of the population. This may affect their ability to afford healthcare services and medications, as well as their overall health status. The average age of healthcare providers was 35.4 years, suggesting a relatively young workforce. The SD of 8.9 indicates a relatively narrow age range among providers, with most likely being in their early to mid-career stages. The majority of healthcare providers were female (62.5%), which aligns with national trends in nursing and some medical specialties. This may have implications for workforce planning and the need to attract and retain more male healthcare providers. All healthcare providers held at least a bachelor's degree in nursing or medicine, indicating a well-educated workforce. This is a positive finding, as it suggests that providers have the necessary theoretical knowledge to deliver quality care. The socio-demographic characteristics of both patients and providers in this study have important implications for the planning and delivery of PHC services in North Bengkulu Regency. The relatively young age and low educational attainment of patients highlight the need for health promotion and education programs tailored to their specific needs. The economic vulnerability of many patients underscores the importance of ensuring that PHC services are affordable and accessible to all. The predominantly female healthcare workforce suggests the need for gender-sensitive policies and practices to support their professional development and well-being. The high level of education among providers is a positive indicator of their potential to deliver quality care, but ongoing professional development and training are essential to ensure that they stay up-to-date with the latest evidence-based practices.

Table 2 presents the mean scores and standard deviations for each dimension of service quality, the overall perceived service quality, and overall patient satisfaction, as measured using a 5-point Likert scale. The mean scores indicate that, overall, patients had a moderately positive perception of the service quality at PHCs in North Bengkulu Regency. The highest-rated dimensions were "tangibles" (3.7) and "assurance" (3.6), suggesting that patients were relatively satisfied with the physical environment and the knowledge, courtesy, and trustworthiness of the staff. The lowest-

rated dimension was "empathy" (3.2), indicating that patients felt there was room for improvement in the level of caring and individualized attention provided by healthcare providers. The standard deviations (SD) for each dimension range from 0.7 to 1.1, indicating a moderate degree of variability in patient responses. This suggests that while the average scores were relatively high, there was a considerable range of experiences among patients, with some reporting higher or lower levels of satisfaction within each dimension. The correlation coefficients between each dimension of service quality and overall satisfaction are all positive and statistically significant ($p < 0.001$), indicating that higher scores on each dimension are associated with higher overall satisfaction. The strongest correlation is observed with the "assurance" dimension (0.61), suggesting that factors such as the knowledge, courtesy, and trustworthiness of staff are particularly important for patient satisfaction. The "tangibles" and "responsiveness" dimensions also show relatively strong correlations (0.52 and 0.55, respectively), highlighting the importance of the physical environment, equipment, and prompt attention to patient needs. The correlation between overall perceived service quality and overall satisfaction is also strong and statistically significant (0.65, $p < 0.001$). This reinforces the finding that patient satisfaction is strongly linked to their perception of the overall quality of services provided at the PHC.

Table 1. Socio-demographic characteristics of patients and healthcare providers.

Characteristic	Patients (n = 400)	Healthcare providers (n = 80)
Mean age (SD)	42.3 (15.2)	35.4 (8.9)
Female (%)	58.5%	62.5%
Education		
Elementary or less (%)	63.8%	
Secondary (%)	28.3%	
Tertiary (%)	7.9%	71.3% (Bachelor's or higher)
Monthly income (IDR)		
< Regional minimum wage (%)	48.3%	
>Regional minimum wage (%)	51.7%	

Table 2. Perceived service quality and patient satisfaction.

Dimension of service quality	Mean score (SD)	Correlation with overall satisfaction
Tangibles	3.7 (0.9)	0.52***
Reliability	3.5 (1.0)	0.48***
Responsiveness	3.4 (1.1)	0.55***
Assurance	3.6 (1.0)	0.61***
Empathy	3.2 (1.1)	0.41***
Overall perceived service quality	3.5 (0.7)	0.65***
Overall satisfaction	3.4 (0.8)	

Scores are based on a 5-point Likert scale (1 = very dissatisfied, 5 = very satisfied); SD = Standard Deviation; *** $p < 0.05$ (statistically significant positive correlation).

Table 3 presents the results of the facility assessment conducted at 20 PHCs in North Bengkulu Regency. The assessment covered four key aspects: infrastructure, availability of essential medicines, basic medical equipment, and specialized medical equipment. The majority of PHCs (75%) had adequate infrastructure, meeting the national standards for building conditions, cleanliness, water and sanitation

facilities, and waste management. However, a quarter of the PHCs (25%) had inadequate infrastructure, indicating a need for improvement in this area. Most PHCs (90%) reported having adequate stocks of essential medicines, ensuring the availability of basic treatments for common ailments. However, a small proportion (10%) reported frequent shortages, which could disrupt healthcare delivery and negatively impact patient outcomes. All PHCs had the necessary basic medical equipment, such as stethoscopes, blood pressure monitors, and thermometers, for routine examinations and procedures. Only half of the PHCs (50%) had specialized equipment needed for certain procedures, such as X-ray machines, ultrasound scanners, and laboratory equipment. This lack of specialized equipment could limit the range of services offered at these PHCs and necessitate referrals to higher-level facilities.

Table 3. Facility assessment results.

Assessment item	Adequate/Available	Inadequate/Shortage/Lacking
Infrastructure	15 (75.0%)	5 (25.0%)
Essential medicines	18 (90.0%)	2 (10.0%)
Basic medical equipment	20 (100.0%)	0 (0.0%)
Specialized medical equipment	10 (50.0%)	4 (50.0%)

Table 4 presents the results of the multivariate logistic regression analysis, identifying independent predictors of low service quality and patient satisfaction. The analysis controlled for potential confounding variables such as age, gender, and distance to the PHC. Patients with lower educational levels had 2.83 times higher odds of reporting low service quality and satisfaction compared to those with higher education. This suggests that educational level is a significant factor influencing patient perceptions of care. Patients with lower income had 1.65 times higher odds of reporting low service quality and satisfaction compared to those with higher income. This indicates that economic status may play a role in how patients experience and evaluate PHC services. Lower job satisfaction among healthcare providers was associated with 2.31 times higher odds of low service quality and patient satisfaction. This underscores the importance of provider well-being in ensuring optimal care delivery. PHCs experiencing frequent shortages of essential medicines had 3.02 times higher odds of low service quality and patient satisfaction. This highlights the crucial role of resource availability in influencing patient experiences and outcomes.

Table 4. Multivariate logistic regression analysis of factors associated with low service quality and patient satisfaction.

Factor	Odds ratio (OR)	95% confidence interval (CI)	p-value
Patient factors			
Lower education (vs. higher)	2.83	1.76 – 4.55	<0.001
Lower income (vs. higher)	1.65	1.05 – 2.61	0.029
Provider factors			
Lower provider job satisfaction (vs. higher)	2.31	1.28 – 4.17	0.006
Facility factors			
Frequent shortages of essential medicines (vs. not)	3.02	1.41 – 6.47	0.004

OR = Odds Ratio; CI = Confidence Interval; Adjusted for age, gender, and distance to PHC.

The study's findings can be effectively interpreted through the lens of several established theoretical frameworks, each providing unique insights into the complex dynamics of healthcare quality and patient satisfaction within the primary healthcare (PHC) setting. A foundational framework in healthcare quality assessment, the Donabedian model, offers a structured approach to understanding the interrelationships between the structure of healthcare delivery, the processes involved, and the resulting outcomes. This dimension encompasses the physical and organizational aspects of PHCs, such as the availability of essential medicines, equipment, and infrastructure. In our study, the facility assessment revealed that while most PHCs had adequate infrastructure and basic equipment, there were shortages of specialized equipment and essential medicines in some facilities. These structural deficiencies can hinder the delivery of quality care and negatively impact patient satisfaction. The process dimension focuses on the actual delivery of care, including technical competence, interpersonal interactions, and communication between providers and patients. Our findings highlight the importance of provider job satisfaction, as dissatisfied providers may be less likely to engage in effective communication or demonstrate empathy, both of which are crucial for patient satisfaction. Furthermore, patient factors, such as lower education and income levels, were found to be associated with lower perceived service quality, suggesting that these factors may influence patients' expectations and experiences of care. The outcome dimension refers to the effects of healthcare on patients' health status, well-being, and satisfaction. In our study, patient satisfaction was used as a primary outcome measure, reflecting the overall quality of PHC services. The study found a strong correlation between perceived service quality and patient satisfaction, underscoring the importance of addressing both structural and process factors to achieve positive patient outcomes. Our findings strongly align with the Donabedian model, demonstrating that the quality of PHC services is not solely determined by any single factor but rather by a complex interplay of structural, process, and patient-related factors. By considering all three dimensions, healthcare policymakers and practitioners can develop comprehensive strategies for improving PHC service quality.[7-9]

The Andersen Behavioral Model offers a comprehensive framework for understanding the factors that influence healthcare utilization. These are individual characteristics, such as demographics (age, gender, education), social structure (occupation, ethnicity), and health beliefs, that may influence an individual's propensity to use healthcare services. In our study, lower education and income levels, which can be considered predisposing factors, were associated with lower service quality and satisfaction. This suggests that individuals with lower socioeconomic status may face barriers to accessing or utilizing quality PHC services, perhaps due to limited health literacy, financial constraints, or cultural beliefs. These are resources and conditions that facilitate or impede healthcare utilization, such as income, insurance coverage, transportation, and the availability of healthcare facilities. In our study, income level was identified as an enabling factor, with lower-income individuals being more likely to report lower service quality and satisfaction. This may be due to the inability to afford transportation to PHCs, out-of-pocket costs for medications, or the perception that they may not receive adequate care due to their economic status. These are perceived or evaluated health needs that motivate individuals to seek healthcare services. In our study, the need factor was not directly measured, but it can be inferred that patients seeking PHC services have a perceived need for care. However, the findings suggest that even with a perceived need, factors such as low income and education may hinder individuals from accessing or fully utilizing quality PHC services. The Andersen Behavioral Model provides a valuable lens for

interpreting the findings of our study. By considering the interplay of predisposing, enabling, and need factors, policymakers and healthcare providers can develop targeted interventions to address the barriers to healthcare utilization and ensure equitable access to quality PHC services for all.[10-12]

The SERVQUAL model, a widely adopted framework for assessing service quality, was utilized in this study to evaluate patient perceptions of PHC services. The model encompasses five key dimensions: Tangibles: This dimension refers to the physical appearance of facilities, equipment, materials, and personnel. Our study found that patients generally rated the tangibles dimension highly, indicating that PHCs in North Bengkulu Regency have relatively adequate infrastructure and well-maintained facilities. Reliability: This dimension focuses on the ability to perform the promised service dependably and accurately. In our study, the reliability dimension received a moderate score, suggesting that while PHCs generally provide services as promised, there may be some inconsistencies or variations in the quality of care. Responsiveness: This dimension refers to the willingness to help customers and provide prompt service. The responsiveness dimension received a moderate score in our study, indicating that PHCs may need to improve their responsiveness to patient needs and concerns. Assurance: This dimension encompasses the knowledge and courtesy of employees and their ability to inspire trust and confidence. Our study found that patients generally rated the assurance dimension highly, suggesting that they trust the competence and professionalism of PHC providers. Empathy: This dimension involves caring, individualized attention provided to customers. The empathy dimension received the lowest score in our study, highlighting a crucial area for improvement. Patients may perceive a lack of personalized care or emotional support from providers, which can significantly impact their overall satisfaction and experience with PHC services. By applying the SERVQUAL model, this study was able to identify specific areas of strength and weakness in PHC service delivery. While the tangibles and assurance dimensions were rated highly, the lower score for empathy underscores the importance of enhancing the interpersonal aspects of care. By focusing on improving communication, empathy, and patient-centeredness, PHCs can significantly enhance patient satisfaction and trust.[13,14]

By integrating the insights from the Donabedian model, the Andersen Behavioral Model, and the SERVQUAL model, we gain a comprehensive understanding of the complex factors that shape the quality of PHC services and patient satisfaction in North Bengkulu Regency. The study's findings highlight the need for a multi-faceted approach to quality improvement that addresses structural, process, and patient-related factors. Improving the physical infrastructure of PHCs, ensuring the availability of essential medicines and equipment, and addressing shortages of specialized equipment. This would require increased funding for PHC, efficient procurement and supply chain management, and potentially the use of telemedicine and mobile clinics to reach remote areas. Implementing continuous professional development programs for healthcare providers, focusing on communication skills, patient-centered care, and clinical updates. Improving working conditions, offering incentives, and providing opportunities for career advancement can enhance provider job satisfaction and, in turn, improve service quality. Developing targeted health education programs for patients with lower levels of education and income to improve health literacy and empower them to make informed decisions about their health. This could involve community-based workshops, culturally appropriate educational materials, and the use of technology to disseminate information. Implementing pro-poor policies, such as targeted subsidies or exemptions for vulnerable groups, to ensure equitable access to PHC services.

Strengthening community engagement and outreach programs can also help bridge the gap between PHCs and underserved populations. Establishing a robust system for monitoring and evaluating the quality of PHC services. This would involve collecting regular feedback from patients and providers, conducting facility audits, and tracking key performance indicators related to service utilization and health outcomes. By adopting a comprehensive and integrated approach that addresses the multiple dimensions of PHC service quality, policymakers and healthcare providers can work collaboratively to improve the health and well-being of the population in North Bengkulu Regency and other similar settings.[15,16]

The findings of our study resonate with a robust body of evidence from both Indonesian and international contexts, highlighting common challenges and opportunities in the quest for quality primary healthcare (PHC) services. Our observation that lower socio-economic status (SES) is associated with lower perceived quality of care and patient satisfaction is a recurring theme in health systems research globally. This phenomenon is deeply rooted in the social determinants of health, which acknowledge the profound impact of social and economic factors on health outcomes and access to healthcare. In Indonesia, a study conducted in public hospitals revealed that patients with lower education and income levels were less likely to be satisfied with the services they received. This aligns with our findings, suggesting that socio-economic disparities persist across different levels of healthcare delivery, including PHCs. A similar pattern has been observed in other LMICs. For example, a study found that patients from lower socio-economic groups reported more negative experiences with PHC services, including long waiting times, poor communication with providers, and disrespectful treatment. This underscores the need for targeted interventions that address the unique needs and challenges faced by vulnerable populations in accessing and utilizing PHC services. Several factors contribute to this disparity. Individuals with lower SES may face barriers to accessing healthcare due to financial constraints, lack of transportation, or limited health literacy. They may also experience discrimination or stigma from healthcare providers, leading to lower quality of care and dissatisfaction. Additionally, PHCs serving low-income communities may be under-resourced and lack qualified staff, further exacerbating the quality gap. Addressing these socio-economic disparities requires a multi-pronged approach that encompasses both upstream and downstream interventions. Upstream interventions aim to address the root causes of poverty and inequality, such as improving education, creating economic opportunities, and strengthening social safety nets. Downstream interventions focus on improving access to and quality of PHC services for marginalized populations through targeted outreach, culturally sensitive care, and financial protection mechanisms.[16,17]

The positive association between provider job satisfaction and patient satisfaction observed in our study is supported by a wealth of evidence from various healthcare settings. A systematic review analyzed 22 studies and found a consistent positive correlation between provider job satisfaction and patient satisfaction across different countries and healthcare systems. Several mechanisms may explain this association. Satisfied providers may be more motivated, engaged, and committed to their work, leading to better patient interactions and improved quality of care. They may be more likely to engage in active listening, provide clear explanations, and show empathy towards their patients, all of which contribute to patient satisfaction. In contrast, dissatisfied providers may experience burnout, emotional exhaustion, and depersonalization, which can negatively impact their interactions with patients and their overall performance. They may be less likely to spend adequate time with patients, less likely to

provide comprehensive care, and more likely to make errors. The implications of this finding are clear: investing in provider well-being and job satisfaction is not only ethically imperative but also strategically important for improving the quality of PHC services. This can be achieved through a variety of interventions, such as providing adequate compensation and benefits, offering opportunities for professional development and career advancement, fostering a supportive and collaborative work environment, and addressing issues of burnout and stress. The impact of resource constraints on PHC service quality is a well-documented phenomenon, particularly in LMICs where healthcare systems are often underfunded and overburdened. Our study's finding that inadequate infrastructure and frequent shortages of essential medicines are associated with lower service quality and patient satisfaction is consistent with this body of evidence. A study analyzed data from 137 LMICs and found that insufficient funding, inadequate infrastructure, and a shortage of qualified healthcare workers were major barriers to achieving universal health coverage. They estimated that an additional investment of US$371 billion per year would be needed to address these gaps and ensure access to quality PHC services for all. The consequences of resource constraints are far-reaching. Patients may experience long waiting times, limited access to diagnostic tests and treatments, and suboptimal care due to overburdened and under-equipped healthcare providers. These negative experiences can lead to dissatisfaction, distrust in the healthcare system, and delays in seeking care, which can ultimately result in poorer health outcomes. Addressing resource constraints requires a multi-sectoral approach that involves increasing government spending on health, improving efficiency in resource allocation and utilization, strengthening supply chain management for essential medicines and equipment, and leveraging innovative financing mechanisms. It also requires a commitment to building a strong and resilient health workforce through investments in training, recruitment, and retention of qualified healthcare providers.[18-20]

4. Conclusion

The quality of primary healthcare services in North Bengkulu Regency, Indonesia is influenced by various factors related to patients, healthcare providers, and the facilities themselves. Patients with lower education and income levels tend to report lower satisfaction, highlighting the need to address social and economic disparities. Healthcare providers who are dissatisfied with their jobs also contribute to lower patient satisfaction, emphasizing the importance of supporting provider well-being. Additionally, inadequate resources such as medicine shortages negatively impact the quality of care. These findings call for a multifaceted approach to improve PHC services, including efforts to empower patients, and support providers, and strengthen health system resources.

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