

How Health Financing Determines The Quality Of Antenatal Care: Evidence From The Universal Health Insurance System In Indonesia

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ABSTRACT

Background: Health financing mechanisms play a crucial role in the quality of maternal health services. In Indonesia, the National Health Insurance system (BPJS) and regional financing initiatives (KIBBLA) deliver antenatal care (ANC).

Objective: To compare the quality of ANC services between the KIBBLA and BPJS financing schemes based on inputs, processes, and outcomes.

Methods: A prospective comparative cohort study was conducted at Bangil Regional Hospital, Indonesia. The study recruited 160 pregnant women in their third trimester (80 KIBBLA; 80 BPJS). Data were collected using a structured questionnaire and a structured observation checklist to assess accessibility, perceived cost, waiting time, adherence to standard operating procedures (SOPs), continuity of care, early detection of complications, appropriateness of referrals, and patient satisfaction according to SERVQUAL. Independent sample t-tests were used to compare group means, $p < 0.05$.

Results: KIBBLA participants reported significantly better accessibility, shorter waiting times, improved continuity of care, and more appropriate referrals. BPJS showed slightly higher SOP adherence. No significant differences were found in perceived cost, early detection, or overall satisfaction.

Conclusion: ANC quality is influenced by financing-related operational characteristics, showing the need to align financing mechanisms with service delivery processes.

Keywords: Antenatal Care; Health Financing; SERVQUAL; Service Quality; Indonesia.

1. Introduction

Maternal mortality remains a main indicator of health system performance worldwide (1). Despite improvements in service coverage, Indonesia's maternal mortality rate remains above global targets (2) (3). Strengthening the quality of antenatal care (ANC) is crucial because comprehensive ANC enables early identification of complications (4).

However, evidence suggests that increased service utilization does not automatically translate into improved maternal outcomes (5). National data indicate rising ANC coverage; however, disparities persist in accessibility, procedural consistency, and continuity of care across regions (6). This emphasis suggests that health financing mechanisms, as a determinant of quality, shape not only access but also service organization and patient flow.

Indonesia's National Health Insurance system (BPJS) has expanded healthcare access but may reduce efficiency due to tiered referrals and administrative requirements (8). The KIBBLA program, a regional health insurance in Pasuruan Regency, improves access for high-risk pregnancies by enabling direct hospital referral (11). However, empirical comparisons of ANC quality between national and regional financing remain limited. Healthcare quality is commonly assessed using the Donabedian framework (12) and SERVQUAL model (13), with operational factors such as waiting time, guideline adherence, and continuity of care identified as key determinants (14). Building on these, this study proposes an ANC Financing Quality Framework to examine how financing mechanisms shape service quality.

2. Methods

2.1 Study Design and Setting

A prospective comparative cohort study was conducted at Bangil Regional Hospital, Pasuruan Regency, Indonesia, from September 2025 to January 2026. Pregnant women in their third trimester who received antenatal care (ANC) under the KIBBLA or BPJS program were included in the study and followed until delivery.

2.2 Subjects of Study

A total of 160 participants were selected using stratified systematic sampling and were evenly divided between KIBBLA (n=80) and BPJS (n=80). Inclusion criteria included singleton pregnancy, at least three ANC visits at Bangil Regional Hospital, Pasuruan Regency, Indonesia, and active insurance status.

2.3 Variables and Measurements

Quality was evaluated based on eight dimensions of Input–Process–Outcome. Input dimensions include (1) accessibility and (2) perceived cost. Process dimensions include (3) waiting time and (4) adherence to standard operating procedures (SOPs). Outcome dimensions include (5) early detection of pregnancy risks, (6) continuity of care, (7) appropriateness of referrals, and (8) patient satisfaction, measured using the SERVQUAL domains (tangibility, reliability, responsiveness, assurance, and empathy).

Datas were collected using a validated questionnaire with a Likert scale. SOP adherence was assessed through direct observation using a standardized 10T antenatal care checklist.

2.4 Statistic Analysis

Datas were analyzed using an independent t-test using SPSS version 26.0 to compare the KIBBLA and BPJS groups. A p-value <0.05 was considered statistically significant.

2.5 Ethical Clearance

This study was approved by the Institutional Research Ethics Committee of Bangil Regional Hospital (No.001112/KEPK RSUD Bangil/2026). Written informed consent was obtained from all participants prior to enrollment. The study adhered to the principles of the Declaration of Helsinki.

3. Results

3.1 Respondent Characteristics

The mean age of participants was 29.4 years, with no significant differences in parity, gestational age, income, education level or occupation between groups (Table 1, all p > 0.05).

Table 1. Demographic Characteristics of Respondents (n = 160)

Variable	BPJS (n=80)	KIBBLA (n=80)	p-value	Statistical Test	Significance
Maternal age (years)	29,07 ± 5,88	28,21 ± 6,59	0,529	Independent t-test	*
Parity	1,76 ± 1,48	1,85 ± 1,19	0,681	Independent t-test	*
Gestational age (weeks)	33,59 ± 5,45	32,63 ± 5,66	0,278	Independent t-test	*
Monthly income (million IDR)	2,27 ± 1,43	2,92 ± 3,42	0,121	Independent t-test	*
Maternal education					
– Bachelor's degree	4 (5,0%)	7 (8,8%)	0,757	Chi-square test	*
– Senior high school	32 (40,0%)	30 (37,5%)			
– Junior high school	22 (27,5%)	18 (22,5%)			
– Primary school	22 (27,5%)	25 (31,2%)			

Maternal occupation

– Homemaker	69 (86,3%)	67 (83,8%)	0,676	Chi-square test	*
– Private employee	6 (7,5%)	4 (5,0%)			
– Teacher	2 (2,5%)	4 (5,0%)			
– Others	3 (3,7%)	5 (6,2%)			

Note: * indicates no significant difference ($p > 0.05$).

3.2 Comparison of ANC Quality Dimensions

Participants covered by KIBBLA showed higher scores for accessibility, shorter waiting times, better continuity of care, and more appropriate referrals compared to those covered by BPJS (Table 2, all $p < 0.05$, and Figure 1). The largest difference was in accessibility, indicating greater perceived ease of access when covered by KIBBLA. Fast KIBBLA waiting times also reflected excellent service efficiency. Similarly, continuity of care and referral appropriateness were significantly better among KIBBLA participants.

Table 2. ANC Quality Scores by Financing Scheme

Variable	Scheme	N	Mean $\pm$ SD	p-value	Significance
Accessibility	BPJS	80	3,82 $\pm$ 0,51	<0,001	**
	KIBBLA	80	4,81 $\pm$ 0,42		
Cost perception	BPJS	80	3,95 $\pm$ 0,29	0,37	
	KIBBLA	80	4,01 $\pm$ 0,37		
Waiting time	BPJS	80	4,07 $\pm$ 0,70	0,001	**
	KIBBLA	80	4,78 $\pm$ 0,30		
SOP compliance	BPJS	80	4,79 $\pm$ 0,51	0,02	**
	KIBBLA	80	4,59 $\pm$ 0,53		
Continuity of care	BPJS	80	4,15 $\pm$ 0,56	<0,001	**
	KIBBLA	80	4,77 $\pm$ 0,29		
Early detection of complications	BPJS	80	4,75 $\pm$ 0,32	0,61	
	KIBBLA	80	4,73 $\pm$ 0,31		
Referral appropriateness	BPJS	80	4,38 $\pm$ 0,47	<0,001	**
	KIBBLA	80	4,75 $\pm$ 0,32		
Overall SERVQUAL satisfaction	BPJS	80	4,80 $\pm$ 0,19	0,19	
	KIBBLA	80	4,84 $\pm$ 0,19		
Tangible	BPJS	80	4,78 $\pm$ 0,32	0,19	
	KIBBLA	80	4,84 $\pm$ 0,24		
Reliability	BPJS	80	4,78 $\pm$ 0,29	0,005	**
	KIBBLA	80	4,89 $\pm$ 0,18		
Responsiveness	BPJS	80	4,81 $\pm$ 0,29	0,685	
	KIBBLA	80	4,83 $\pm$ 0,26		
Assurance	BPJS	80	4,78 $\pm$ 0,22	0,287	
	KIBBLA	80	4,79 $\pm$ 0,26		
Empathy	BPJS	80	4,85 $\pm$ 0,26	0,671	
	KIBBLA	80	4,86 $\pm$ 0,24		

Note: ** shows a significant difference ($p < 0.05$).

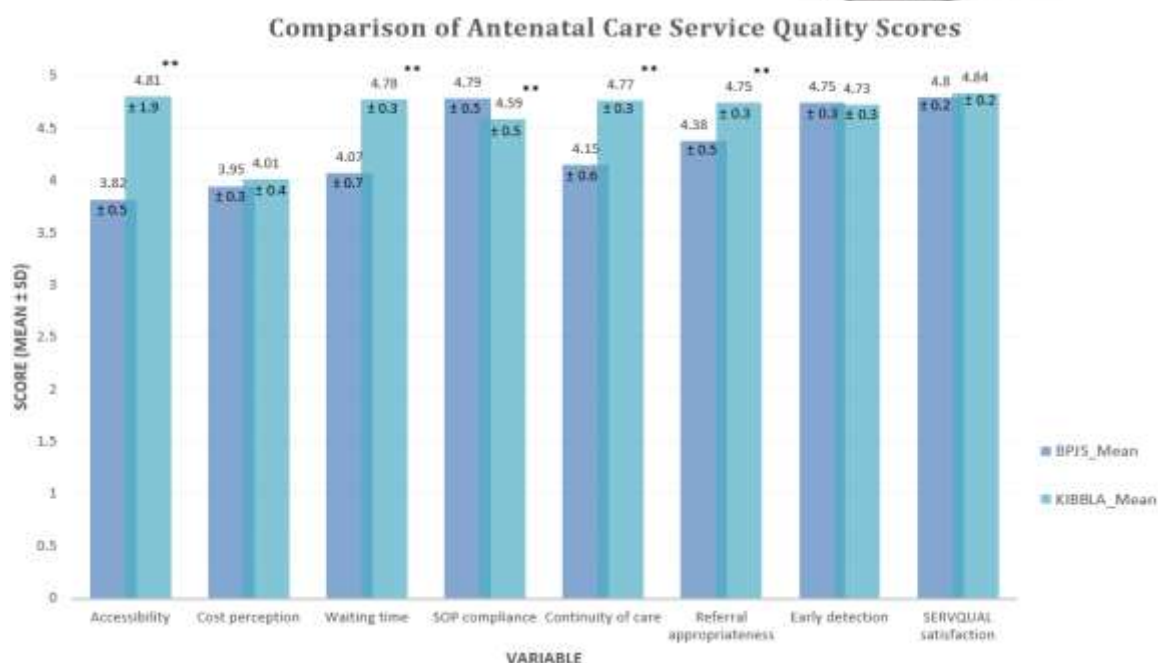


Figure 1. Comparison of ANC Quality between KIBBLA vs BPJS

Note: ** shows a significant difference ($p < 0.05$)

In contrast, BPJS-funded services showed significantly higher compliance with standard operating procedures (SOPs) (Table 2, $p < 0.05$, and Figure 1). No statistically significant differences were identified between the two groups in perceived cost, early detection of maternal complications, or overall patient satisfaction (Table 2, $p > 0.05$, and Figure 1). The high overall satisfaction scores for both financing systems indicate that the quality of service has been optimized for both services. Radar charts are used (Figure 2) to make it easier to monitor the differences in BPJS (national) and KIBBLA (regional) financing.

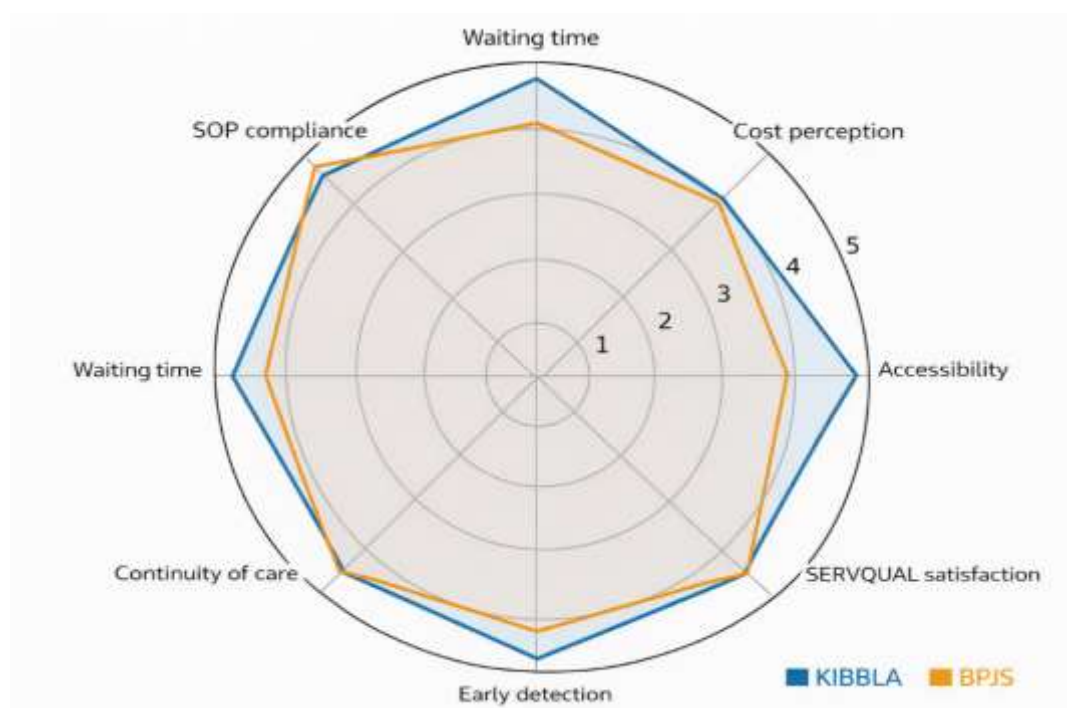


Figure 2. Radar Chart of Quality Performance

Note: The radar chart shows a comparison of eight aspects of service quality according to Input–Process–Outcome, including: accessibility, cost perception, waiting time, SOP compliance, continuity of care, early detection of complications, referral appropriateness, and SERVQUAL satisfaction. Each axis represents the mean score (using Likert Scale). The blue polygon represents the KIBBLA scheme, while the orange polygon represents the BPJS scheme. .

4. Discussion

The findings reveal distinct operational characteristics between the two financing schemes. KIBBLA's superior accessibility stems from its direct-access policy for high-risk pregnancies, enabling patients to bypass tiered primary care referrals required under BPJS. This mechanism reduces administrative barriers and facilitates earlier entry into hospital-level services. These results align with prior evidence suggesting that local government health initiatives can complement and address implementation gaps within national UHC frameworks (15). BPJS demonstrated higher adherence to SOPs, suggesting that centralized audit systems and reimbursement mechanisms promote stricter compliance with clinical guidelines. The similarly high mean overall satisfaction scores for both groups (BPJS: 4.80 ± 0.19 ; KIBBLA: 4.84 ± 0.19 , $p = 0.19$) suggest a potential ceiling effect, indicating that once financial barriers are removed, patients across both schemes perceive high service quality.

While previous studies have largely evaluated antenatal care quality through clinical indicators or service utilization rates, these findings further demonstrate how health financing arrangements influence operational characteristics of antenatal care services within a universal health coverage system. The present study extends this perspective by examining how financing mechanisms simultaneously shape service delivery processes and patient experience (7).

These findings suggest that integrating administrative flexibility with structured accountability mechanisms may optimize maternal health service performance. Rather than being competitive, the strengths of both schemes appear complementary in strengthening decentralized maternal healthcare systems. Theoretically, this study extends the Donabedian model by positioning financing mechanisms as structural determinants influencing process efficiency and service navigation (16)(17). While Donabedian conceptualized structure as facilities, human resources, and organizational capacity (18). Our findings indicate that financing design itself shapes operational dynamics. Previous health system research similarly identifies financing as a key building block influencing service delivery performance (9).

Building on this understanding, from a theoretical perspective, these findings contribute to the evolving interpretation of the Donabedian structure–process–outcome framework by highlighting financing mechanisms as an upstream structural determinant of healthcare quality (19). The present findings therefore support the argument that health financing design should be considered a core structural component influencing healthcare service delivery performance.

From a service quality perspective, integrating SERVQUAL within the Donabedian framework enables multidimensional evaluation encompassing both technical quality and patient experience. Although overall satisfaction was similar, structural accessibility differences influenced continuity of care. This finding supports behavioral health theory emphasizing perceived access and trust as determinants of healthcare-seeking behavior (20).

Interestingly, both financing schemes achieved similarly high patient satisfaction scores despite differences in operational performance. This pattern may indicate a ceiling effect once financial barriers to care have been removed through universal health coverage mechanisms.

Novelty of the Study

This study introduces the ANC Financing Quality concept, positioning financing as an upstream determinant influencing structural readiness, process efficiency, and maternal health outcomes. The findings show that similar quality outcomes may arise from different structural pathways, supporting the adaptability of this integrated approach across decentralized health systems. By linking financing with the Donabedian framework, this study highlights financing as a structural driver shaping service processes and reinforces evidence that financing architecture plays a key role in maternal healthcare outcomes within universal health coverage contexts (19)(7).

Practical Implications

Administrative flexibility and simplified referral pathways enhance operational efficiency, while centralized insurance systems reinforce procedural accountability. A hybrid financing model integrating streamlined access

with strong quality assurance may optimize maternal health service delivery. Policymakers should align reimbursement incentives with measurable quality indicators to ensure improved outcomes (21). These findings further indicate that integrating national insurance with local health initiatives can strengthen accessibility and quality within decentralized health systems.

Study Limitations

This single-center study limits generalizability. Although the prospective design supports temporal interpretation, unmeasured confounders, such as provider workload, may affect results. The analysis was restricted to delivery outcomes, without assessing long-term maternal or infant health. Future multicenter and longitudinal studies are needed to validate the ANC Financing Quality concept and examine its applicability across diverse settings. Comparative research may further clarify how financing interacts with organizational capacity and clinical governance to influence maternal care quality (9,22).

5. Conclusion

KIBBLA (Regional health insurance), effectively reduces geographic and administrative barriers, resulting in improved continuity of care, meanwhile BPJS (National health insurance) needs to consistently standardize its procedures. Integrating simplified access mechanisms within national insurance frameworks may provide a scalable strategy for reducing maternal mortality in Indonesia.

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