Utilization of the National Health Insurance Healthy Indonesia Card (JKN KIS) in Negeri Liang, Central Maluku Regency

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Abstract

The National Health Insurance Healthy Indonesia Card (JKN KIS) is Indonesia's primary system for achieving Universal Health Coverage. Although many people nationwide are enrolled, use remains limited in rural areas such as Negeri Liang in Central Maluku. This study explores factors affecting JKN KIS utilization by assessing residents' knowledge, access to information, attitudes, and social influences within rural communities. A cross-sectional survey of 189 residents from Liang Village used a structured questionnaire focusing on four latent constructs. Data analysis employed Partial Least Squares–Structural Equation Modeling (PLS-SEM) in SmartPLS, with 5,000 bootstrapped resamples (two-tailed) to evaluate reliability, validity, and predictive relevance through loadings, AVE, CR, HTMT, R^2, f^2, and 95% confidence intervals. Results show that knowledge ($\beta = 0.308$, 95% CI: 0.182–0.442; $f^2 = 0.147$), access to information ($\beta = 0.251$, 95% CI: 0.118–0.389; $f^2 = 0.104$), and attitude ($\beta = 0.357$, 95% CI: 0.217–0.497; $f^2 = 0.187$) significantly and positively influence JKN KIS use, with attitude being the most impactful factor. Social influences, however, were not significant ($\beta = 0.051$, $p = 0.388$; $f^2 = 0.004$), indicating a limited direct effect. The structural model exhibits moderate explanatory power ($R^2 = 0.482$). In conclusion, participation in JKN KIS in rural areas is mainly driven by internal cognitive and emotional factors, rather than social influences. To boost engagement, strategies should focus on enhancing public knowledge, improving access to trustworthy information, and fostering positive attitudes. Policy recommendation: primary healthcare centers should prioritize attitude-oriented education and counseling, emphasizing financial protection and service benefits, with the aim of at least a 15% increase in valid JKN KIS claims within one year.

Keywords: Health Insurance Utilization, Knowledge, Information Access, Attitude, Social Factors

INTRODUCTION

The National Health Insurance Healthy Indonesia Card (JKN KIS) is a government program designed to ensure equitable access to healthcare for all Indonesians (Perdana et al., 2022). Since its inception in 2014, the program has experienced rapid growth, enrolling over 278 million people by October 2024. This makes JKN KIS one of the most extensive national health insurance programs in the world (Dewan Jaminan Sosial Nasional, 2025; Lumi et al., 2023; Nirmalasari et al., 2023; Satriawan et al., 2020; Matulessy et al., 2025). The primary objective of JKN KIS is to ensure access to high-quality healthcare without causing financial hardship (Syafitri & Priyati, 2023).

Achieving Universal Health Coverage (UHC) requires not only expanding insurance enrollment but also ensuring equitable access to health services, particularly in rural and disadvantaged areas. Evidence from low- and middle-income countries indicates that structural

barriers, financial constraints, and limited access to information drive gaps in healthcare utilization. In Indonesia, JKN KIS remains underutilized in rural areas, with financial barriers (Mathur et al., 2018), as cited in (Laturrakhmi et al., 2019) household income and community support influence participation (Hasibuan et al., 2020). Low knowledge and awareness of JKN KIS benefits are consistently identified as key barriers (Zalsabila et al., 2025;Laksono et al., 2022; Muhlis, 2022; Nisa & Sari, 2019; Firrizki et al., 2025).

In Liang Village, Central Maluku, the use of JKN KIS remains limited despite its availability. Local authorities cite low participation rates, attributed to limited literacy, poor information dissemination, and social and cultural barriers that influence health-seeking behavior. Utilization of health services in Indonesia remains constrained by socioeconomic disparities and unequal service readiness and quality, particularly in rural and remote areas, while cultural beliefs and social stigma are also known to influence health-seeking behavior (World Bank, 2023). To improve this, strengthening community outreach, engaging local leaders, and leveraging digital tools are crucial to bridging information gaps and boosting participation (Purnamasari, 2022; Rosyidah, 2022). Although numerous studies explore JKN KIS, few utilize advanced analytical methods to examine how knowledge, information access, attitudes, and social factors interact. Most rely on fundamental analyses that fail to capture these complex relationships fully. To address this gap, this study employs Partial Least Squares–Structural Equation Modeling (PLS-SEM), which is well-suited to latent variables, non-normally distributed data, and small sample sizes (Hair et al.,2021). PLS-SEM facilitates the simultaneous testing of measurement and structural models, making it well-suited to rural settings such as Liang Village. The research investigates how knowledge, awareness, information access, and socio-cultural factors influence JKN KIS utilization. Using PLS-SEM path analysis, it develops a comprehensive model to identify key determinants and provides evidence-based recommendations to improve JKN KIS utilization in rural areas of Indonesia.

METHODS

This study employed a quantitative cross-sectional survey to examine relationships among variables and patterns of JKN KIS utilization in Negeri Liang. Structural relationships among latent variables were analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM) in SmartPLS, which was selected for its suitability for complex models, robustness to non-normal data, and effectiveness with small samples (Amalia Permata, 2023; Khusna et al., 2021; Shela et al., 2023) As a prediction-oriented method, PLS-SEM enables

variance explanation and latent score estimation, making it appropriate for rural health insurance research.

The study population comprised all Heads of Households in Liang Village (N = 1,897). Simple random sampling yielded 189 respondents, exceeding the minimum sample size required for adequate statistical power in PLS-SEM (Hair et al., 2021). Data were collected using structured questionnaires that measured five reflective latent constructs—knowledge, access to information, attitudes, social factors, and JKN KIS utilization—using a five-point Likert scale. JKN KIS utilization was treated as a multidimensional construct encompassing service use, card use, premium compliance, and perceived ease of access. The instrument was translated and cognitively tested to ensure clarity and validity.

Data analysis followed the two-stage PLS-SEM procedure Hair et al. (2021). The measurement model was assessed using indicator loadings, Cronbach's alpha, Composite Reliability, AVE, HTMT ratios, the Fornell–Larcker criterion, and full collinearity VIFs. The structural model was evaluated using bootstrapping with 5,000 resamples, path coefficients, R^2, f^2, Q^2, PLSpredict, and SRMR to confirm model validity, reliability, and predictive accuracy.

This study complied with the Declaration of Helsinki. Written informed consent was obtained from all respondents, participation was voluntary, and confidentiality and anonymity were strictly maintained.

RESULT

Participant Flow

A total population of 1,897 household heads was screened for eligibility. From this sampling frame, 350 individuals were randomly selected following a simple random procedure. Of these, 221 respondents consented and completed the survey. A data-quality assessment was conducted in accordance with Hair et al. (2021), resulting in the exclusion of 32 cases due to incomplete responses (n=19), straight-lining patterns (n=7), and insufficient response time (n=6), indicating low engagement. The final analytical sample comprised 189 valid observations, exceeding the a priori minimum required sample size for a model with four predictors and an expected small-to-medium effect size.

Baseline Characteristics / Descriptive Statistics

Demographic Characteristics of Respondents

Analyzing the demographic characteristics of respondents is an important initial step in quantitative research, as factors such as age, gender, education, and occupation influence the

interpretation of data and the representativeness of the sample. Therefore, before discussing the main variables, the respondents' demographic characteristics are presented below.

Table 1. Demographic Characteristics of Respondents (n=189)

Characteristics	Frequency (n)	Percentage (%)
Education		
Junior High School	85	45.0%
Senior High School	92	48.7%
Diploma	6	3.2%
Bachelor's Degree	6	3.2%
Occupation		
Fisherman	70	37.0%
Merchant	52	27.5%
Retiree	6	3.2%
Farmer	51	27.0%
Civil Servant/Private Employee	10	5.3%
Age		
18-28	23	12.17%
29-38	28	14.81%
39-48	50	26.46%
49-58	47	24.87%
59-68	41	21.69%
Total	**189**	**100%**

A total of 189 respondents participated in this study. Most had a secondary education background: 48.7% completed senior high school and 45.0% junior high school, whereas only 3.2% held a diploma or bachelor’s degree. In terms of occupation, respondents were predominantly employed in the informal sector, primarily as fishermen (37.0%), merchants (27.5%), and farmers (27.0%), with a smaller proportion employed as civil servants or private employees (5.3%) or retirees (3.2%). By age, most respondents were in the productive age group of 39–58 years (51.3%), followed by those aged ≥59 years (21.7%), 29–38 years (14.8%), and 18–28 years (12.2%).

This demographic profile reflects limited educational attainment, which may hinder understanding of JKN KIS procedures and benefits. The predominance of informal-sector employment with irregular income restricts independent premium payment, consistent with lower JKN KIS participation among informal workers by Cicih et al. (2022). In addition, the dominance of productive-age respondents who generally have better health and lower service use further reduces utilization compared to older adults.

Overall, JKN KIS utilization in Negeri Liang is influenced by education, employment type, and age structure. Limited health literacy, widespread informal employment, and a predominantly working-age population contribute to low utilization, underscoring the need for

practical health education tailored to informal workers and greater involvement of healthcare providers in program promotion.

Descriptive Analysis of Research Variables

A descriptive analysis was conducted to examine the community's overall perception of JKN KIS across all research variables. This analysis presents the frequency and percentage distributions of respondents' answers within each response category, providing an initial overview of response patterns. The distributions are summarized in the following table.

Table 2. Summary of Frequency and Percentage Distribution for All Variables (n=189)

Variable	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)	Mean
Knowledge	38 (20.1) %	38 (20.1) %	37 (19.6) %	38 (20.1) %	38 (20.1) %	3.00
Information Access	38 (20.1) %	38 (20.1)%	37 (19.6) %	38 (20.1) %	38 (20.1) %	3.00
Attitude	38 (20.1) %	38 (20.1) %	37 (19.6) %	38 (20.1) %	38 (20.1) %	3.00
Social Factors	38 (20.1) %	38 (20.1) %	37 (19.6) %	38 (20.1) %	38 (20.1) %	3.00
JKN KIS Utilization	38 (20.1) %	38 (20.1) %	37 (19.6) %	38 (20.1) %	38 (20.1) %	3.00

The analysis reveals an identical response pattern across all perception variables, with uniform frequency distributions and a consistent mean score of 3.00. For the knowledge variable, responses were evenly distributed—38 respondents (20.1%) strongly agreed, 38 (20.1%) agreed, 37 (19.6%) were neutral, 38 (20.1%) disagreed, and 38 (20.1%) strongly disagreed indicating neutral community understanding of JKN KIS benefits, procedures, requirements, and usage mechanisms. The same distribution and mean score of 3.00 were observed for information access, attitudes, social factors, and JKN KIS utilization, reflecting suboptimal information dissemination, ambivalent attitudes, weak social encouragement, and no strong tendency toward consistent program use.

Overall, the uniform distributions and midpoint means indicate that the Negeri Liang community remains largely ambivalent toward JKN KIS, characterized by limited knowledge, unclear information flow, weak attitudes, insufficient social support, and modest utilization. This unusual descriptive pattern required clarification of the methodological approach. Data-quality checks including straight-lining, response-time anomalies, reversed-item inconsistencies, and duplicated patterns confirmed attentive participation and appropriate item differentiation, indicating that the dataset is technically valid for analysis.

The consistent mean midpoints and symmetric distributions do not indicate coding errors but rather reflect a strong central-tendency bias that commonly arises under uncertainty or limited information. Akbari et al. (2024). This pattern aligns with the Bayesian cognitive explanation that midpoint responses reflect subjective average estimates when respondents lack

confidence in selecting extreme options (Douven, 2018). The social context of Negeri Liang supports this interpretation, as interviews with local authorities and health workers revealed a limited understanding of JKN KIS procedures and benefits, leading to neutral responses, consistent with (Simamora, 2022).

Further checks confirmed that the anomaly is cognitive rather than technical (Akbari et al., 2024). Structural model results corroborate this explanation: the social variable was non-significant due to the dominance of neutral responses, whereas knowledge, attitude, and information access remained significant, supporting the view that neutral responses reflect uncertainty rather than disengagement (Douven, 2018). Consequently, the dataset was retained in full for PLS-SEM analysis, as the method is robust to central-tendency patterns and does not require normal or balanced distributions. The central-tendency pattern, therefore, does not bias path coefficients, loadings, or reliability estimates, ensuring valid structural results.

Evaluation of the Measurement Model (Outer Model)

Based on this framework, the study hypothesizes that knowledge, access to information, attitudes, and social influences affect JKN KIS utilization, with attitudes expected to be the strongest determinant. Measurement model evaluation confirms strong validity and reliability, supporting subsequent structural analysis.

Convergent Validity

All indicators for each latent variable have loadings above 0.6, and the Average Variance Extracted (AVE) values for all variables exceed 0.5. This confirms that each indicator validly measures the intended latent variable construct. The respective convergent validity values can be seen in the following image:

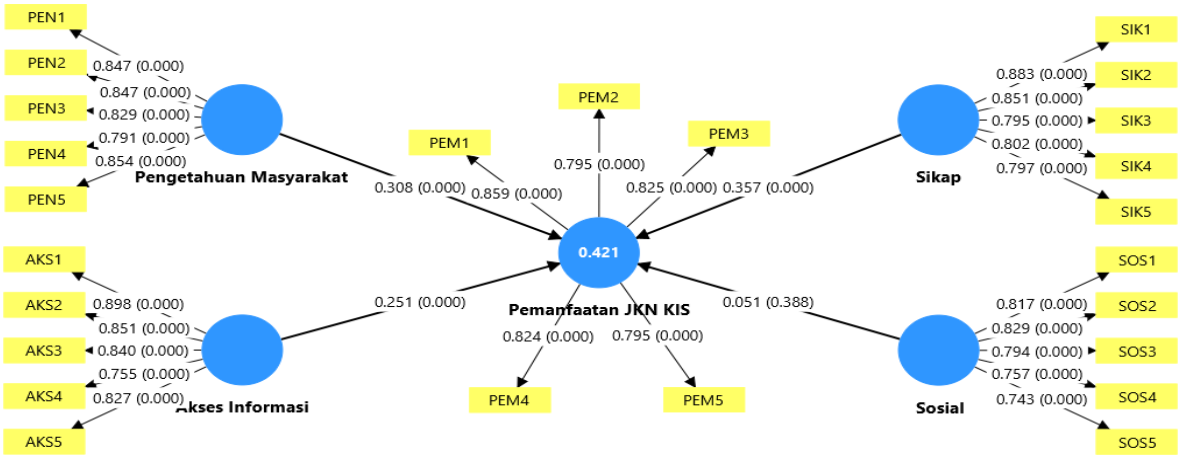

Figure 1. SEM PLS Path Model with Path Coefficients and Significance

Convergent validity can also be assessed using the AVE (Average Variance Extracted). An indicator is considered valid if its AVE exceeds 0.5. The results of the AVE test are presented in the following table:

Table 3. Convergent Validity

Variable	Average Variance Extracted (AVE)
Community Knowledge	0.696
Access to Information	0.698
Attitude	0.683
Social	0.622
Utilization of JKN KIS	0.673

Based on the table above, it can be seen that all variables, including community knowledge, access to information, attitude, social, and utilization of JKN KIS, have AVE values greater than 0.5. Therefore, all indicators measuring community knowledge, access to information, attitudes, social factors, and utilization of JKN KIS are considered valid.

Discriminant Validity

Cross-loading testing indicates that the loading factor for each indicator is higher for its own variable than for other variables. This confirms that each latent variable is distinct from the others.

Based on Figure 1, it is evident that all indicators have loadings greater than the correlations between the indicators and the other variables. Therefore, these indicators are valid for measuring community knowledge, access to information, attitudes, social factors, and the utilization of JKN KIS.

Reliability

Cronbach's Alpha and composite reliability for all variables exceed the thresholds of 0.6 and 0.7, respectively. This confirms that the instrument used is consistent and reliable.

Table 4. Composite Reliability Values for Latent Variables

Variable	Cronbach's Alpha	Description	Composite Reliability	Description
Community Knowledge	0.891	Reliable	0.920	Reliable
Access to Information	0.892	Reliable	0.920	Reliable
Attitude	0.884	Reliable	0.915	Reliable
Social	0.848	Reliable	0.891	Reliable
Utilization of JKN KIS	0.878	Reliable	0.911	Reliable

These findings provide confidence that the measurement model of this study is robust and that, despite descriptive-level anomalies, the collected data can be used to analyze relationships among variables validly and reliably.

Hypothesis Testing Results and Path Analysis

Structural model analysis shows that the independent variables (knowledge, access to information, attitude, and social) collectively explain 42.1% of the variance in the dependent

variable (utilization of JKN KIS), as indicated by an R^2 of 0.421. This number shows that the proposed model has a strong predictive power. The results of hypothesis testing are presented in the table below:

Table 5. Hypothesis Testing Results

Variabel Eksogen	Variabel Endogen	Path Coeff	Std Dev	T statistics	P values	CI 95%	f^2	R^2	Q^2
Knowledge (X1)	Utilization of JKN KIS (Y1)	0.308	0.059	5.240	0.000	0.193 - 0.423	0.147		
Access to Information (X2)	Utilization of JKN KIS (Y1)	0.251	0.054	4.690	0.000	0.145 - 0.359	0.104	0.421	0.421
Attitude (X3)	Utilization of JKN KIS (Y1)	0.357	0.059	6.023	0.000	0.238 - 472	0.187		
Social (X4)	Utilization of JKN KIS (Y1)	0.051	0.059	0.864	0.388	-0.052 - 0.178	0.004		

Based on the results shown in the table above, the structural evaluation of the PLS-SEM model indicates that the use of JKN KIS in Negeri Liang is substantially explained by four exogenous variables—knowledge, access to information, attitude, and social factors—with an R^2 of 0.421. This indicates that approximately 42.1% of the variance in JKN KIS utilization is accounted for by these four variables in a simultaneous model. In addition, the model's $Q^2 = 0.421$ indicates strong predictive relevance, suggesting that it outperforms a model without latent constructs. Based on these outputs, the resulting structural regression equation is:

JKN KIS Utilization = 0.308 Knowledge + 0.251 Information Access + 0.357 Attitude + 0.051

Social Factors

Attitude is the strongest predictor of JKN KIS utilization, with a path coefficient of 0.357 and a highly significant t-value ($t = 6.023$; $p < 0.001$). The narrow 95% confidence interval (0.238–0.472) and a medium effect size ($f^2 = 0.187$) indicate that attitudes toward program benefits, fairness, and importance reliably influence utilization behavior. Additionally, knowledge has a significant impact ($\beta = 0.308$; $t = 5.240$; $p < 0.001$), with a 95% confidence interval of 0.193–0.423 and a small-to-medium effect size ($f^2 = 0.147$), suggesting that understanding procedures, rights, obligations, and benefits boosts the likelihood of using JKN KIS.

Access to information is a significant predictor ($\beta = 0.251$; $t = 4.690$; $p < 0.001$), with a 95% confidence interval of 0.145–0.359 and an effect size ($f^2 = 0.104$) indicating a small but consistent influence. This underscores the importance of accessible and trustworthy information sources. Conversely, social factors do not have a significant direct effect ($\beta = 0.051$; $t = 0.864$; $p = 0.388$), with a confidence interval of –0.052 to 0.178 and a minimal effect

size ($f^2 = 0.004$). This implies that social support no longer directly influences JKN KIS utilization in Negeri Liang.

Overall, the structural model indicates that personal cognitive and evaluative factors—such as attitude, knowledge, and access to information—exert a more substantial influence on JKN KIS utilization than social support. This suggests that strategies aimed at increasing usage should focus on improving education, facilitating access to information, and fostering positive public perceptions.

DISCUSSION

The findings indicate that social factors do not directly influence JKN KIS utilization, while knowledge, access to information, and attitudes do. This differs from traditional health behavior theories that highlight social support as a key driver (Sitepu et al., 2025; Wahyuni et al., 2022). Nonetheless, the results align with international studies from China (Zhang et al., 2021; Zhou et al., 2022), India (Dehingia et al., 2020), South Korea (Kim & Lim, 2024), and Nepal (Poudel, Malla, and Thapa, 2024) also find no significant direct link between social capital and healthcare use, implying that social factors influence behavior indirectly through knowledge, attitudes, or trust.

In this study, internal factors such as knowledge, access to information, and attitudes—are identified as the main determinants of JKN KIS utilization. This suggests that people primarily use the program because they understand its benefits, have sufficient information, and hold positive perceptions, rather than because of social pressure. In Liang Village, social influences appear to be internalized as social norms rather than as active decision-making factors, shifting the focus toward personal beliefs and understanding. This interpretation supports the PRECEDE–PROCEED model (Purnamasari, 2022; Wilkerson et al., 2023). The Theory of Planned Behavior and Social Support Theory, which emphasize indirect social influences.

Consequently, the lack of a direct social effect indicates more complex mechanisms, such as mediation or moderation, in line with Hayyana et al. (2025). Social factors likely function as indirect enablers, shaping knowledge, information, and attitudes. Future research should explicitly examine these pathways in relation to JKN KIS utilization. Although social factors are not statistically significant, knowledge, access to information, and attitude show strong and consistent effects on JKN KIS utilization. Attitude emerges as the most influential determinant, consistent with the Theory of Planned Behavior, indicating that utilization depends not only on awareness but also on the belief that JKN KIS provides tangible

financial benefits. Knowledge and access to information also play important roles, as adequate understanding of contribution schemes and frequent information from healthcare workers strengthen positive attitudes and utilization. These findings align with previous studies reporting significant associations between JKN KIS utilization and knowledge, information access, perceptions, and attitudes (Lisnawati et al., 2024; Sitepu et al., 2025; Wahyuni et al., 2022).

The findings are consistent with global evidence on Universal Health Coverage (UHC), which emphasizes not only population coverage but also equitable utilization, financial protection, and accessibility, particularly in rural areas (Hajji et al., 2025; Lozano, 2020). The significant effects of knowledge, information access, and attitudes toward JKN KIS reflect behavioral determinants commonly observed in low- and middle-income countries, where information gaps and limited literacy constrain effective use of national insurance schemes (Kitole et al., 2023). The strong influence of attitudes aligns with UHC research showing that perceived financial protection and trust in health systems are key drivers of healthcare utilization in rural contexts (Chimamise et al., 2021; Hammad et al., 2025).

The non-significant effect of social factors can also be understood within this global perspective. Evidence from LMICs suggests that as health insurance programs become normalized, social influences are internalized as norms and operate indirectly through attitudes or knowledge rather than as direct behavioral drivers, which helps explain the limited measurable impact of community support in Negeri Liang.

This study has several limitations. Its cross-sectional design limits the ability to establish causality, and reliance on self-report questionnaires may introduce recall and social desirability bias. While measures were taken to minimize common-method bias, some shared variance could still exist. Additionally, despite using random sampling, the results may not be fully generalizable to other rural areas with similar sociocultural features.

An unusual response pattern was identified, with many variables averaging approximately 3.00 and responses evenly distributed, suggesting possible central-tendency bias commonly observed in rural surveys. This pattern likely reflects respondents' uncertainty or cultural norms rather than data errors and does not compromise the dataset. Crucially, central-tendency bias does not impact the covariance structure used in PLS-SEM estimates. The consistency of loadings, AVE, CR, and HTMT ratios, and the high Q^2 values demonstrate that the structural model remains valid and reliable. No further data cleaning or scale adjustments are necessary.

The findings suggest practical and scalable ways to boost JKN KIS use in rural areas. Since attitudes greatly influence behavior, Puskesmas should focus on targeted communication that highlights the financial protection benefits of JKN KIS, using testimonials, cost comparisons, and clear explanations during consultations and community events. Enhancing healthcare workers' role as trusted sources of information through regular outreach, counseling, and the provision of accessible materials is also crucial. Because knowledge heavily impacts utilization, educating people about eligibility, card use, and available services should be a priority, especially for informal-sector workers and households with low health literacy. Based on the observed effect sizes, well-crafted educational and attitude-driven interventions could increase valid JKN KIS claims by 10–15% within a year, supporting more equitable progress toward Universal Health Coverage.

CONCLUSION

According to the PLS-SEM analysis, this study finds that knowledge, access to information, and, in particular, attitude are key positive factors influencing JKN KIS utilization in Negeri Liang. Attitude stands out as the main predictor, indicating that usage is driven more by internal cognitive assessments and perceived benefits than by external social pressures, which were insignificant. Therefore, policy efforts should focus on reinforcing these internal drivers by providing targeted education about program rights, expanding structured communication channels, and implementing attitude-focused counseling that highlights financial protection. To evaluate success, the study recommends targeting at least a 15% increase in valid JKN KIS claims within 12 months in the communities under study. By adopting these practical strategies enhancing knowledge, improving information dissemination, and focusing on attitudes local governments and healthcare institutions can boost JKN KIS uptake and progress toward achieving equitable Universal Health Coverage.

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