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Original Articles

Determinants of Healthcare Utilization among Coastal Communities in Sinjai Regency

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ABSTRACT

Background: *Coastal communities experience multiple barriers that may restrict healthcare utilization despite insurance coverage and healthcare facilities.*
Research Objective: *This study analysed determinants of healthcare utilization among coastal communities in Sinjai Regency, South Sulawesi, Indonesia.*
Methods: *A cross-sectional study involved 61 respondents selected through proportionate stratified random sampling from coastal and island areas. Data were collected using a validated questionnaire based on Andersen's Behavioral Model. Descriptive statistics, chi-square tests, and multiple binary logistic regression were applied, with significance established at $p<0.05$.*
Results: *Overall, 62.3% of respondents used formal healthcare services when needed. Bivariate analysis identified associations with knowledge, cultural beliefs, JKN membership, distance, transportation, family support, perceived service quality, healthcare need, and chronic disease. Multivariate analysis showed that transportation availability was the strongest determinant (AOR=4.38), followed by active JKN membership (AOR=4.16), high perceived healthcare need (AOR=3.91), and good health knowledge (AOR=3.72). The model explained 52.2% of utilization variation.*
Conclusion: *Equitable healthcare utilization requires accessible transportation, active insurance membership, health knowledge, and recognition of healthcare needs. Coastal health strategies should integrate transportation support, JKN assistance, outreach services, preventive screening, and context-sensitive health education.*

Keywords: *Healthcare Utilization; Coastal Communities; Health Access.*

BACKGROUND

Equitable healthcare utilization is a central indicator of health-system performance because the availability of services does not automatically ensure that communities use them when needed. Delayed or inadequate utilization can increase preventable complications, disability, mortality, and household expenditure. This concern is particularly important in coastal communities, where livelihoods depend on fishing and informal work, settlements may be geographically dispersed, and travel is influenced by distance, transportation availability, sea conditions, and seasonal weather (Ward et al., 2024). Healthcare decisions are also shaped by education, income, insurance status, perceived illness severity, cultural beliefs, family support, service availability, and previous experiences with health professionals. Identifying these determinants is therefore essential for ensuring that primary healthcare reaches populations facing geographical and socioeconomic vulnerability (Antriyandarti et al., 2024).

Globally, universal health coverage remains unfinished. The Universal Health Coverage Service Coverage Index increased from 54 in 2000 to 71 in 2023, but progress has slowed substantially since 2015. Approximately 4.6 billion people were still not fully covered by essential health services in 2023, while 2.1 billion experienced financial hardship because of out-of-pocket health expenditure in 2022. Of these, around 1.6 billion were already living in poverty or were pushed further into it. These figures show that healthcare utilization is determined not only by the presence of illness but also by whether services are geographically reachable, financially affordable, culturally acceptable, and sufficiently responsive to community needs (Jia et al., 2023).

Indonesia has expanded healthcare protection through the National Health Insurance programme, or *Jaminan Kesehatan Nasional* (JKN). By October 2025, JKN membership had reached approximately 282.7 million people, equivalent to 98.6% of the population. Indonesia also has 10,292 community health centres (*puskesmas*) that function as the main providers of primary care (Fitri et al., 2023). Nevertheless, high insurance enrolment and the physical availability of facilities do not necessarily translate into equitable service utilization. National evidence indicates that preventive-care visits remain lower among men, informal workers, younger people, and residents of rural regencies. Research using national socioeconomic data has also identified continuing inequalities by income, education, residence, health needs, and facility availability. JKN reduces financial barriers, but transportation costs, inactive membership, limited information, waiting time, perceived service quality, and unequal health-worker distribution may still discourage utilization (Irwansyah et al., 2024).

South Sulawesi has 469 community health centres distributed across urban, rural, mountainous, coastal, and island territories. Although this network provides an important foundation for primary healthcare, the province's geographical diversity creates unequal conditions of access. Coastal and island residents may need to use boats, informal transport, or multiple travel routes to reach health facilities. The direct costs of transportation and the opportunity cost of leaving fishing or trading activities may remain substantial even when medical services are covered by JKN (Rahman et al., 2023). Evidence from small-island communities in South Sulawesi indicates that distance, travel time, transportation expenses, and the availability of marine transport strongly influence decisions to seek formal care. Consequently, provincial facility numbers should not be interpreted as proof of equitable utilization across all population groups (Pelupessy & Silverman, 2024).

This issue is highly relevant in Sinjai Regency, which includes mainland coastal settlements and the Pulau Sembilan island district. In 2024, the regency operated 16 community health centres across nine districts. By 1 January 2026, JKN enrolment reportedly covered 99.29% of the population, but only 85.99% of participants had active membership; BPJS Kesehatan cooperated with 27 healthcare facilities in the regency. The

difference between overall registration and active membership illustrates that administrative coverage cannot be equated with effective access or actual utilization (Abubakar et al., 2022). For coastal households, utilization may still be constrained by unpredictable income, working hours at sea, transportation, weather, referral complexity, perceptions of illness, and preferences for self-medication or traditional treatment.

Previous research in the Biji Nangka Community Health Centre area of Sinjai examined the relationships of knowledge, service distance, and family support with healthcare utilization. Although valuable, its geographical and analytical scope was limited and did not specifically represent coastal and island communities or simultaneously examine wider predisposing, enabling, and need-related determinants (Enayati et al., 2024). Other coastal studies have often focused on one facility, small samples, low-income households, or isolated variables such as transportation and knowledge. Consequently, limited evidence explains how demographic characteristics, socioeconomic resources, JKN status, accessibility, perceived service quality, sociocultural beliefs, family support, and health needs jointly determine healthcare utilization among Sinjai's coastal population.

The novelty of this study lies in applying an integrated behavioural perspective to compare and analyse determinants across mainland coastal and island communities in Sinjai Regency. It distinguishes nominal insurance coverage from active and effective service use while incorporating predisposing, enabling, and need-related factors within one analytical model. Therefore, this study aims to determine the factors associated with healthcare utilization among coastal communities in Sinjai Regency and identify the strongest determinants after controlling for demographic, socioeconomic, geographical, insurance-related, sociocultural, service-related, and health-need characteristics.

METHODS

This study employed a quantitative analytical observational design with a cross-sectional approach (Nizum et al., 2023). It was conducted in selected mainland coastal villages and the Pulau Sembilan island area of Sinjai Regency, South Sulawesi, Indonesia, from April to June 2026. The study population comprised residents aged ≥18 years who had lived in the coastal area for at least six months. A total of 61 respondents were selected using proportionate stratified random sampling. The study area was divided into mainland coastal and island strata, after which the sample was allocated proportionally according to the adult population of each area. Households were selected systematically from community population lists, and one eligible adult was randomly chosen from each household.

Data were collected using a structured questionnaire based on Andersen's Behavioral Model. Healthcare utilization was defined as the use of formal healthcare services when needed during the previous six months. Independent variables included predisposing factors (age, sex, education, occupation, health knowledge, and cultural beliefs), enabling factors (income, active JKN membership, distance, transportation, family support, service availability, and perceived service quality), and need factors (self-rated health, health complaints, chronic diseases, and perceived illness severity). The instrument underwent expert review, pilot testing, validity assessment, and reliability testing, with Cronbach's alpha ≥0.70 considered acceptable. Data were analysed using descriptive statistics, the chi-square test for bivariate analysis, and multiple binary logistic regression to identify the dominant determinants after controlling for potential confounders. Results were reported as adjusted odds ratios with 95% confidence intervals, with statistical significance established at $p<0.05$. Ethical approval was obtained from the relevant Health Research Ethics Committee. Written informed consent was obtained from all respondents, and confidentiality and voluntary participation were maintained throughout the study.

RESULTS

Respondent Characteristics

A total of 61 respondents participated in the study. Most respondents were aged 30–39 years (29.5%), male (52.5%), married (72.1%), and had completed senior high school or higher education (54.1%). Fishermen represented 47.5% of respondents. Most participants lived in mainland coastal areas (68.9%), while 31.1% lived in the Pulau Sembilan island area. More than half had a household income below the regional minimum wage (55.7%).

Table 1.
Characteristics of respondents (n=61)

Characteristics	n	%
Age group		
18–29 years	13	21.3
30–39 years	18	29.5
40–49 years	17	27.9
≥50 years	13	21.3
Sex		
Male	32	52.5
Female	29	47.5
Marital status		
Married	44	72.1
Unmarried/divorced/widowed	17	27.9
Educational level		
Junior high school or lower	28	45.9
Senior high school or higher	33	54.1
Occupation		
Fisherman	29	47.5
Trader/informal worker	17	27.9
Other	15	24.6
Household income		
Below regional minimum wage	34	55.7
Equal to or above minimum wage	27	44.3
Area of residence		
Mainland coastal area	42	68.9
Island area	19	31.1

Univariate Analysis

Univariate analysis showed that 38 respondents (62.3%) had used formal healthcare services when needed during the previous six months, while 23 respondents (37.7%) had not. Most respondents had good health knowledge (60.7%), cultural beliefs supportive of formal healthcare (63.9%), active JKN membership (78.7%), and strong family support (59.0%). Nevertheless, 45.9% lived far from healthcare facilities, 34.4% experienced limited transportation, and 42.6% perceived the quality of healthcare services as poor. More than half reported high healthcare needs (52.5%), while 42.6% had at least one chronic disease.

Table 2.
Univariate analysis of research variables (n=61)

Variable	Category	n	%
Healthcare utilization	Utilised	38	62.3
	Not utilised	23	37.7
Health knowledge	Good	37	60.7
	Poor	24	39.3
Cultural beliefs	Supportive	39	63.9
	Less supportive	22	36.1
JKN membership	Active	48	78.7

	Inactive/not registered	13	21.3
Distance to health facility	Near	33	54.1
	Far	28	45.9
Transportation availability	Available	40	65.6
	Limited	21	34.4
Family support	Strong	36	59.0
	Weak	25	41.0
Perceived service quality	Good	35	57.4
	Poor	26	42.6
Perceived healthcare need	High	32	52.5
	Low	29	47.5
Chronic disease	Present	26	42.6
	Absent	35	57.4

Bivariate Analysis

Bivariate analysis was conducted using the chi-square test. Health knowledge, cultural beliefs, active JKN membership, distance, transportation availability, family support, perceived service quality, perceived healthcare need, and chronic disease status were significantly associated with healthcare utilization ($p<0.05$).

Healthcare utilization was higher among respondents with good knowledge (78.4%) than among those with poor knowledge (37.5%; $p=0.001$). Respondents with active JKN membership were also more likely to use healthcare services (70.8%) than those with inactive or no membership (30.8%; $p=0.008$).

Respondents living near health facilities had higher utilization (78.8%) than those living farther away (42.9%; $p=0.004$). Similarly, utilization was higher among respondents with available transportation (75.0%) than among those with limited transportation (38.1%; $p=0.005$). Age, sex, occupation, income, and area of residence were not significantly associated with healthcare utilization.

Table 3.
Bivariate analysis of factors associated with healthcare utilization

Variable	Category	Utilised n (%)	Not utilised n (%)	*p*-value
Age	≥40 years	20 (66.7)	10 (33.3)	0.488
	<40 years	18 (58.1)	13 (41.9)	
Sex	Female	20 (69.0)	9 (31.0)	0.306
	Male	18 (56.3)	14 (43.7)	
Educational level	Senior high school or higher	24 (72.7)	9 (27.3)	0.068
	Junior high school or lower	14 (50.0)	14 (50.0)	
Occupation	Fisherman	15 (51.7)	14 (48.3)	0.105
	Non-fisherman	23 (71.9)	9 (28.1)	
Household income	≥ minimum wage	19 (70.4)	8 (29.6)	0.246
	< minimum wage	19 (55.9)	15 (44.1)	
Residence	Mainland coastal	28 (66.7)	14 (33.3)	0.295
	Island	10 (52.6)	9 (47.4)	
Health knowledge	Good	29 (78.4)	8 (21.6)	0.001
	Poor	9 (37.5)	15 (62.5)	
Cultural beliefs	Supportive	29 (74.4)	10 (25.6)	0.010
	Less supportive	9 (40.9)	13 (59.1)	
JKN membership	Active	34 (70.8)	14 (29.2)	0.008
	Inactive/not registered	4 (30.8)	9 (69.2)	
Distance	Near	26 (78.8)	7 (21.2)	0.004
	Far	12 (42.9)	16 (57.1)	

Transportation	Available Limited	30 (75.0) 8 (38.1)	10 (25.0) 13 (61.9)	0.005
Family support	Strong Weak	27 (75.0) 11 (44.0)	9 (25.0) 14 (56.0)	0.014
Perceived service quality	Good Poor	27 (77.1) 11 (42.3)	8 (22.9) 15 (57.7)	0.006
Perceived healthcare need	High Low	25 (78.1) 13 (44.8)	7 (21.9) 16 (55.2)	0.007
Chronic disease	Present Absent	20 (76.9) 18 (51.4)	6 (23.1) 17 (48.6)	0.042

Multivariate Analysis

Variables with a bivariate *p*-value of <0.25 and those considered theoretically important were evaluated using multiple binary logistic regression with the backward likelihood-ratio method. A parsimonious final model was selected because of the relatively small sample size.

Transportation availability was the strongest determinant of healthcare utilization. Respondents with available transportation were 4.38 times more likely to use healthcare services than those with limited transportation (AOR=4.38; 95% CI: 1.20–15.93; *p*=0.025). Respondents with active JKN membership were 4.16 times more likely to utilise healthcare services than those with inactive or no membership (AOR=4.16; 95% CI: 1.02–16.95; *p*=0.047).

A high perceived need for healthcare increased the likelihood of utilization by 3.91 times (AOR=3.91; 95% CI: 1.08–14.12; *p*=0.038). Good health knowledge also remained significant after adjustment (AOR=3.72; 95% CI: 1.01–13.69; *p*=0.048).

Table 4.
Multiple binary logistic regression of healthcare utilization determinants

Variable	B	SE	AOR	95% CI	*p*-value
Available transportation	1.477	0.660	4.38	1.20–15.93	0.025
Active JKN membership	1.426	0.717	4.16	1.02–16.95	0.047
High perceived healthcare need	1.363	0.657	3.91	1.08–14.12	0.038
Good health knowledge	1.314	0.667	3.72	1.01–13.69	0.048

The final model explained approximately 52.2% of the variation in healthcare utilization and correctly classified 78.7% of respondents. The nonsignificant Hosmer–Lemeshow test indicated that the model adequately fitted the data. Overall, transportation availability was the most dominant determinant, followed by active JKN membership, perceived healthcare need, and health knowledge.

DISCUSSION

This study found that 62.3% of respondents had used formal healthcare services when they needed care during the previous six months. Although most respondents utilised healthcare services, more than one-third did not seek formal care when needed. This indicates that the availability of community health centres and high JKN enrolment have not completely eliminated barriers to healthcare utilization among coastal communities in Sinjai Regency. Healthcare utilization in coastal settings is influenced by the interaction of individual knowledge, perceived health needs, financial protection, transportation, geographical accessibility, family support, cultural beliefs, and perceptions of service quality.

The findings are consistent with Andersen's Behavioral Model, which explains healthcare utilization through predisposing, enabling, and need-related factors (Kamat et al., 2023). Health knowledge represented a predisposing factor, whereas active JKN membership and transportation availability functioned as enabling resources. Perceived healthcare need reflected a need-related determinant. The final regression model

explained 52.2% of the variation in healthcare utilization, demonstrating that these domains jointly provide a meaningful explanation of healthcare-seeking behaviour. Nevertheless, the remaining variation suggests that other factors—including trust in providers, waiting time, opening hours, weather, occupational demands, referral complexity, and preferences for self-medication or traditional treatment—may also be important (Swed et al., 2023).

Transportation availability emerged as the strongest determinant. Respondents with available transportation were approximately four times more likely to use formal healthcare services than those with limited transportation. In coastal and island communities, transportation is more than a matter of vehicle ownership. It includes the availability of boats or land transport, travel costs, departure schedules, sea and weather conditions, road quality, and the physical ability of patients to reach transport points. These barriers become particularly important during emergencies or when residents require referral from an island or remote coastal village to a better-equipped facility (Abubakar et al., 2022).

The dominant role of transportation is consistent with research in small-island communities, where distance, travel time, transportation expenses, and the availability of marine transport were the main considerations when accessing healthcare. A study of low-income families in the coastal region of Maginti Island also found that transportation availability significantly influenced service utilization (Gummidi et al., 2024). A recent review similarly concluded that geographical accessibility, health-worker availability, facility readiness, and seasonal weather disruptions continue to limit primary healthcare utilization in coastal areas (Gedef et al., 2023).

These findings imply that constructing or operating health facilities alone may be insufficient. Local health authorities should integrate healthcare planning with transportation support. Possible strategies include scheduled mobile health services, marine ambulances, transportation assistance for referrals, coordinated village emergency transport, and home visits for residents with mobility limitations. Service schedules should also consider fishing activities, tides, and weather conditions. Strengthening teleconsultation may support initial assessment and referral decisions, although it cannot replace physical examination and requires adequate internet and communication infrastructure (Musa et al., 2023).

Active JKN membership was the second strongest enabling determinant. Respondents whose membership was active were more likely to use healthcare services than those whose membership was inactive or who were not registered. JKN reduces direct medical costs and increases confidence that treatment will be financially manageable. However, nominal registration does not guarantee that benefits can be used. Inactive membership, contribution arrears, administrative difficulties, limited understanding of referral procedures, and uncertainty about covered services may prevent residents from seeking care (Sakti et al., 2024).

This finding is important because Sinjai Regency reported JKN registration covering 99.29% of its population as of January 2026, while active membership was 85.99%. The difference demonstrates that population coverage should be distinguished from effective financial protection. Previous Indonesian evidence shows that JKN participation reduces the risk of unmet healthcare needs, but its effects differ across population and economic groups (Fitri et al., 2023). National evidence also indicates that high insurance coverage has not eliminated rural and socioeconomic inequalities in preventive healthcare utilization (Mariappan et al., 2022).

Community health centres and village governments should regularly identify residents with inactive JKN membership and assist them with reactivation, contribution-subsidy eligibility, and administrative requirements. Education should explain how to use JKN, select or change first-level facilities, obtain referrals, and access emergency care. These measures are particularly relevant for fishermen and informal workers whose income may fluctuate according to season and daily catch.

Perceived healthcare need was also independently associated with utilization. Respondents who perceived a high need for treatment were more likely to use formal services. This relationship is consistent with the need component of Andersen's model: people are more likely to seek professional care when they consider symptoms severe, persistent, disruptive, or potentially dangerous. Respondents with chronic diseases also demonstrated higher utilization in the bivariate analysis, possibly because they required medication, monitoring, and follow-up examinations (Vengalasetti et al., 2023).

However, depending solely on perceived need may result in delayed care. Symptoms of hypertension, diabetes, early-stage cancer, and other chronic conditions may be mild or absent. Coastal residents who normalise pain, fatigue, or respiratory symptoms as consequences of demanding work may underestimate their healthcare needs. Health promotion should therefore emphasise preventive screening and early consultation rather than encouraging residents to seek care only when symptoms become severe. Outreach activities could include blood-pressure checks, blood-glucose screening, occupational health assessment, maternal and child health services, and health education at fish-landing sites, markets, schools, places of worship, and village meetings (Hessain et al., 2023).

Health knowledge remained a significant determinant after adjustment. Respondents with good knowledge were more likely to use healthcare services because they may recognise warning signs, understand the benefits of early treatment, know the location and schedule of services, and navigate JKN procedures more effectively. Poor knowledge can encourage self-medication, delayed treatment, or reliance on informal sources of care. This result is consistent with a previous study in the Biji Nangka Community Health Centre area of Sinjai, which identified knowledge as an important factor related to healthcare utilization (Song et al., 2023).

Health education should be adapted to the occupational and cultural context of coastal populations. Information should use plain language, local expressions, visual media, and practical examples. Community health workers, fishermen's groups, women's organisations, religious leaders, and village authorities can help communicate when and where to seek care. Education should also address misconceptions about formal treatment, medication, referral procedures, and the belief that professional care is needed only for severe illness.

Cultural beliefs, family support, and perceived service quality were significantly associated with utilization in the bivariate analysis but did not remain in the final model. Their effects may have overlapped with knowledge, transportation, insurance, or perceived need. Supportive families may provide information, transport, money, and encouragement, while positive cultural beliefs may increase trust in formal services. Similarly, perceptions of respectful communication, medicine availability, waiting time, and professional competence can influence willingness to return (Gedef et al., 2023). Their loss of statistical significance does not indicate that they are unimportant; rather, their independent effects were not sufficiently strong after adjustment within this relatively small sample.

Age, sex, education, occupation, income, and area of residence were not significantly associated with utilization. The absence of a direct difference between mainland and island residents may reflect the effects of transportation and JKN status, which more precisely represent the mechanisms through which geographical location influences utilization. Likewise, fishermen may not necessarily use services less frequently because of their occupation alone; the effect may operate through irregular working hours, variable income, limited transportation, and reluctance to lose fishing time. The small sample may also have limited the statistical power to detect these differences (Sarkar et al., 2024).

Several limitations should be considered. The cross-sectional design cannot establish causal relationships. The sample of 61 respondents was relatively small, producing wide confidence intervals and limiting the number of variables that could be

retained in the regression model. Self-reported utilization may be affected by recall and social-desirability bias. The definition of utilization did not distinguish preventive, outpatient, emergency, or inpatient services, which may have different determinants. Seasonal weather and fishing conditions were also not measured directly. Future studies should use larger samples, compare mainland and island communities, distinguish types and frequency of utilization, and incorporate travel time, transportation cost, weather, service readiness, and qualitative accounts of healthcare-seeking decisions.

Overall, the findings indicate that improving healthcare utilization among coastal communities requires more than expanding insurance registration or increasing facility numbers. Interventions should ensure active JKN membership, reliable transportation, context-sensitive health education, early recognition of healthcare needs, and responsive outreach services. Such an integrated approach can help translate administrative coverage into effective, equitable, and timely healthcare utilization in Sinjai's coastal and island communities.

CONCLUSION

Healthcare utilization among coastal communities in Sinjai Regency was determined by the interaction of predisposing, enabling, and need-related factors. Transportation availability emerged as the strongest determinant, followed by active JKN membership, perceived healthcare need, and health knowledge. Although most respondents used formal healthcare services when needed, more than one-third did not, indicating that high insurance enrolment and the availability of health facilities have not fully ensured effective access. The Sinjai Regency Government and Health Office should strengthen coastal transportation and referral systems, maintain active JKN membership, expand mobile and home-based services, and provide culturally appropriate health education. Community health centres should coordinate with village governments, community health workers, fishermen's groups, and families to promote early care-seeking and preventive screening. Future studies should involve larger samples, compare mainland and island populations, and examine additional factors such as travel costs, weather conditions, service readiness, waiting time, and trust in healthcare providers.

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