

Research Article

Analysis of the Determinants of Knowledge, Accessibility, and Service Quality on the Utilisation of Health Services with Socio-Economic Status as a Moderating Variable in BPJS Health Patients

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Abstract: Utilization of health services is influenced by various factors such as knowledge, accessibility, service quality, and socioeconomic conditions. Therefore, high Universal Health Coverage (UHC) coverage does not always correspond to increased utilization of health services. The phenomenon at QIM Batang Hospital shows a gap between almost universal UHC participation and service utilization that is still hampered by geographical factors, limited facilities, low public knowledge, and perceptions of service quality. The purpose of this study was to analyze the influence of knowledge, accessibility, and service quality on health service utilization by considering the role of socioeconomic factors as a moderator. This study was conducted at QIM Batang Hospital with a sample of 100 patients. Research data were obtained from questionnaires distributed to respondents and then analyzed using SEM-PLS analysis. The results showed that knowledge, accessibility, and service quality significantly influenced the utilization of health services by BPJS patients. Knowledge encourages patients' ability to make health decisions, accessibility determines ease of use of services, and service quality increases trust and continuity of utilization. The role of socioeconomic factors only moderates the relationship between accessibility and utilization, but does not affect the relationship between knowledge and service quality. These findings strengthen Andersen's theory regarding the role of predisposing factors, supporting factors, and socioeconomic characteristics. The implications of the research emphasize the importance of increasing health literacy, improving access, and strengthening the quality of services for the sustainable use of health facilities.

Keywords: Accessibility; Knowledge; Service Quality; Socioeconomic Role; Utilization of Health Services.

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1. Introduction

The utilization of health services is an important indicator of the functioning of the health system, reflecting the interaction between individual needs and the system's ability to provide promotive, preventive, curative, and rehabilitative services. Conceptually, health service utilization behavior is influenced by predisposing factors, enabling factors, and need factors as described in the models of Andersen & Newman (1973) and Aday & Andersen (1974). The World Health Organization (WHO) also emphasizes that the utilization of health services is influenced by aspects of accessibility, availability, affordability, acceptability, timeliness, and quality of services in order to produce optimal health outcomes. Thus, high health insurance coverage should theoretically be directly proportional to increased utilization of formal health services by the community.

In Indonesia, achieving Universal Health Coverage (UHC) is a strategic target for national health development. Batang Regency, Central Java, has achieved 99.28% UHC coverage in 2025, an increase from 97% in 2024. Normatively, this condition is expected to increase the utilization of advanced health facilities (FKRTL), including referral hospitals such as the Qolbu Insan Mulia Hospital (RS QIM) Batang. However, empirical data shows a

discrepancy between coverage and service utilization. Medical records data from RS QIM Batang show that the number of outpatient visits actually decreased from 169,086 visits in 2024 to an estimated 162,436 visits in 2025, while inpatient visits increased from 18,505 to 19,262 patients. This phenomenon indicates that high UHC achievement does not automatically lead to increased utilization of all types of health services.

The geographical and structural conditions of Batang Regency further compound the complexity of this issue. With an area of approximately 788.64 km² and a varied topography ranging from coastal to mountainous areas, disparities in access to health services remain a real challenge, especially for people in rural and border areas. The limited number of hospitals only three hospitals will be available by 2025 has the potential to affect the distribution of service loads and people's choices to seek health services outside the region. In addition to structural factors, individual factors such as community knowledge also play an important role. Low health knowledge regarding procedures, benefits, and rights of BPJS Kesehatan participants has been shown to reduce the tendency of the community to utilize formal health services (Ohkubo et al., 2013; Zaini et al., 2022; Xu et al., 2022).

Previous studies have shown that knowledge, accessibility, and service quality are related to health service utilization, but the results are not consistent across contexts and regions (Basith & Nita Prameswari, 2020; Permatasari et al., 2021; Herlinawati et al., 2022; Meliala et al., 2024). On the other hand, socioeconomic factors have been proven to influence individuals' ability to utilize health services, but they have rarely been studied as moderating variables that can strengthen or weaken the relationship between these factors and health service utilization (Herlinawati et al., 2022; Meliala et al., 2024; Wahyudi & Sulaiman, 2024). Therefore, this study is important and urgent to analyze the influence of knowledge, accessibility, and service quality on health service utilization at QIM Batang Hospital, considering the role of socioeconomic factors as a moderator variable, in order to bridge the gap between UHC achievements and the reality of health service utilization at the local level.

2. Literature Review

Knowledge (X1)

According to Notoatmodjo (2015), knowledge is the result of knowing that occurs after a person perceives a particular object. The perception process occurs through the five human senses, namely sight, hearing, smell, taste, and touch.

Accessibility (X2)

Thomas & Penchansky (1984) define access as the ability to enter the health care system. Accessibility in the use of health services is a complex and multidimensional issue, involving various factors that affect the ability of individuals or communities to obtain the health services they need.

Service Quality (X3)

According to Zeithaml et al. (1990), service quality is defined as the degree of difference between customer expectations of service and their perception of the service received. The smaller the gap between expectations and reality, the higher the perceived service quality.

Utilization of Health Services (Y)

According to the WHO, health service utilization is the pattern of use of health care services observed by individuals or populations that is influenced by accessibility, availability, affordability, and acceptability. Utilization of health services refers to the actual use of health services for the purpose of preventing and treating health problems, improving health maintenance, or achieving a diagnosis (Aday & Andersen, 1974)

Socioeconomic Role (M)

Abdulsyani (2012) also revealed that socioeconomic status is the position occupied by individuals or families in relation to commonly accepted averages regarding cultural ownership, effective income, property ownership, and participation in group activities within their community.

3. Research Method

This study uses a positivist-based quantitative approach that aims to test hypotheses through numerical data and statistical analysis (Sugiyono, 2020). The survey method was chosen to capture field phenomena related to BPJS patients' perceptions and experiences of QIM Batang Hospital services, amid high visitation rates and demands for improved quality of health services. The research population included 41,249 BPJS patients during the period of May–July 2025, with a sample of 100 respondents determined using the Slovin formula at a 10% error rate (Sugiyono, 2020). Data were collected through a closed-ended Likert scale questionnaire distributed online and analyzed using SEM-PLS to test the influence between variables. These quantitative findings reinforce previous studies stating that quantitative surveys are effective in measuring the relationship between health service variables objectively and measurably (Sugiyono, 2020). The conceptual framework and formulation of research hypotheses are presented as follows:

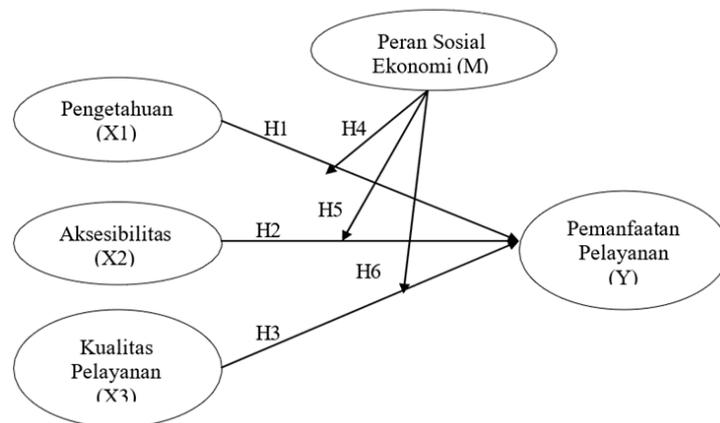


Figure 1. Concetual Framework

Source: Notoatmodjo (2015), Thomas & Pechansky (1984), Aday & Andersen (1974), Zeithaml et al. (1990), Abdulsyani (2012)

Hypotheses:

H1: Knowledge influences the use of health services

H2: Accessibility influences the use of health services

H3: Service Quality Influences Utilization of Health Services

H4: The role of socioeconomic factors moderates the influence of knowledge on the use of health services.

H5 : The role of socioeconomic factors moderates the influence of accessibility on the use of health services.

H6 : The role of socio-economic factors moderates the influence of service quality on the utilization of health services.

4. Results and Discussion

Result

The characteristics of respondents in this study were identified through questionnaires collected from 100 respondents who were BPJS Kesehatan patients at Qolbu Insan Mulia Hospital in Batang. The characteristics of respondents measured included gender, age, highest level of education, occupation, monthly income, and BPJS status. The results of the analysis of respondent characteristics are described as follows:

Table 1. Respondent Characteristics Based on Gender.

No	Gender	Amount	Percentage
1	Male	55	55%
2	Female	45	45%
Total		100	100%

Source: Processed primary data (2025).

Characteristics based on gender show that of the 100 BPJS Kesehatan patients at Qolbu Insan Mulia Hospital in Batang, the majority were male, namely 55 patients (55%) of the total respondents. The remaining 45 patients (45%) were female. Thus, it can be concluded that the majority of BPJS Kesehatan patients at Qolbu Insan Mulia Hospital in Batang are male.

Table 2. Respondent Characteristics Based on Age.

No	Age	Amount	Persentase
1	< 20 Years Old	10	10%
2	20 - 29 Years Old	18	18%
3	30 - 39 Years Old	21	21%
4	40 - 49 Years Old	19	19%
5	50 - 59 Years Old	16	16%
6	> 60 Years Old	16	16%
Total		100	100%

Source: Processed primary data (2025).

Characteristics based on age show that of the 100 BPJS Kesehatan patients at Qolbu Insan Mulia Hospital in Batang, most were aged 30–39 years, namely 21 patients (21%) of the total respondents. The remaining patients were under 20 years old (10 patients, 10%), 20–29 years old (18 patients, 18%), 40–49 years old (19 patients, 19%), 16 patients (16%) aged 50–59 years, and 16 patients (16%) aged >60 years. Thus, it can be concluded that the majority of BPJS Kesehatan patients at Qolbu Insan Mulia Hospital in Batang are aged 30–39 years.

Table 3. Respondent Characteristics Based on highest level of education.

No	Highest Level of Education	Amount	Percentage
1	Did not complete elementary school (SD)	14	14%
2	Elementary school (SD)	11	11%
3	Junior high school (SMP)	12	12%
4	Senior high school/vocational high school (SMA/SMK)	17	17%
5	Diploma	16	16%
6	Bachelor's Degree (S-1)	17	17%
7	Postgraduate Degree (S-2)	13	13%
Total		100	100%

Source: Processed primary data (2025)

Characteristics based on education show that of the 100 BPJS Kesehatan patients at Qolbu Insan Mulia Hospital in Batang, most had a high school/vocational school education and a bachelor's degree, namely 17 patients (17%) of the total respondents. The rest had the following educational backgrounds: 14 patients (14%) had not completed elementary school, 11 patients (11%) had completed elementary school, 12 patients (12%) had completed junior high school, 16 patients (16%) had completed a diploma program, and 13 patients (13%) had completed a postgraduate program. Thus, it can be concluded that the majority of BPJS Kesehatan patients at Qolbu Insan Mulia Batang Hospital have a high school/vocational school and bachelor's degree education.

Table 4. Respondent Characteristics Based on Occupation.

No	Occupation	Amount	Percentage
1	Professional Worker	17	17%
2	Civil Servant (PNS)	15	15%
3	Entrepreneur	6	6%
4	Farmer	18	18%
5	Student	14	14%
6	Housewives	16	16%
7	Others	14	14%
Total		100	100%

Source: Processed primary data (2025)

Characteristics based on occupation show that of the 100 BPJS Kesehatan patients at Qolbu Insan Mulia Hospital in Batang, most were farmers, with 18 patients (18%) of the total respondents. The rest were professional workers (17 patients or 17%), civil servants (15 patients or 15%), entrepreneurs (6 patients or 6%), students (14 patients or 14%), housewives (16 patients or 16%), and others (14 patients or 14%). Thus, it can be concluded that the majority of BPJS Kesehatan patients at Qolbu Insan Mulia Batang Hospital are farmers.

Table 5. Respondent Characteristics Based on Monthly Income.

No	Monthly Income	Amount	Percentage
1	< Rp 2.000.000	29	29%
2	Rp 2.000.000 - Rp 5.000.000	21	21%
3	Rp 5.000.000 - Rp 10.000.000	33	33%
4	> Rp 10.000.000	17	17%
Total		100	100%

Source: Processed primary data (2025)

Characteristics based on monthly income show that of the 100 BPJS Kesehatan patients at Qolbu Insan Mulia Hospital in Batang, most had a monthly income of Rp 5,000,000 – Rp 10,000,000 (33 patients), the rest had a monthly income of < IDR 2,000,000 (29 patients or 29%), IDR 2,000,000 – IDR 5,000,000 (21 patients or 21%), and > IDR 10,000,000 (17 patients or 17%). Thus, it can be seen that the majority of BPJS Kesehatan patients at Qolbu Insan Mulia Batang Hospital have a monthly income of Rp 5,000,000 – Rp 10,000,000.

Table 6. Respondent Characteristics Based on BPJS status

No	BPJS Status	Amount	Percentage
1	Independent Participants	38	38%
2	Contribution Assistance Recipients (PBI)	29	29%
3	Wage-Earning Workers (PPU)	33	33%
Total		100	100%

Source: Processed primary data (2025)

Characteristics based on BPJS status show that of the 100 BPJS Kesehatan patients at Qolbu Insan Mulia Hospital in Batang, most had Independent Participant BPJS status, with 38 patients (38%) of the total respondents. The remaining patients had BPJS Subsidy Recipient Participant (PBI) status, totaling 29 patients (29%), and Wage Earner Participant (PPU) status, totaling 33 patients (33%). Thus, it can be concluded that the majority of BPJS Health patients at Qolbu Insan Mulia Batang Hospital have BPJS Independent Participant status.

This study tested Partial Least Squares (PLS) analysis using SmartPLS version 4 software. According to Ghazali & Latan (2021), PLS analysis involves evaluating the measurement model (outer model) and structural model (inner model). In this study, hypothesis testing was conducted using PLS analysis techniques with the SmartPLS 4 program. The following is the PLS model scheme used in the analysis.

Table 7. Outer Loading.

Item	Accessibility	Service Quality	Utilization of Health Services	Knowledge	Socioeconomic Role
M.1					0.981
M.2					0.983
M.3					0.871
X1.1				0.976	
X1.2				0.964	
X1.3				0.983	
X1.4				0.962	
X1.5				0.916	
X1.6				0.981	
X2.1	0.759				
X2.2	0.792				
X2.3	0.769				
X2.4	0.758				
X2.5	0.763				
X3.1		0.876			
X3.2		0.938			
X3.3		0.937			
X3.4		0.774			
X3.5		0.830			
Y.1			0.971		
Y.2			0.979		
Y.3			0.976		

Source: Processed primary data (2025)

Based on the outer loading measurement results, all reflective indicators had values above 0.7, indicating that they were valid and suitable for use in further analysis. This shows that the indicators had a strong correlation with the measured variables and were able to reliably represent the research construct, thereby strengthening the methodological basis and confidence in the research results.

Table 8. Heterotrait – Monotrait Ratio (HTMT).

Variabel	X2	X3	Y	X1	M	M x X2	M x X3	M x X1
Accessibility								
Quality of Service	0.300							
Utilization Health Services	0.481	0.539						
Knowledge	0.382	0.197	0.541					
Socioeconomic Role	0.476	0.055	0.173	0.429				
Socioeconomic Role x Accessibility	0.098	0.059	0.134	0.076	0.145			
Socioeconomic Role x Quality of Service	0.249	0.144	0.146	0.082	0.283	0.314		
Socioeconomic Role x Knowledge	0.078	0.107	0.172	0.263	0.079	0.496	0.219	

Source: Processed primary data (2025)

According to the table, it can be seen that the HTMT ratio for all variables shows a value below 0.9 ($HTMT < 0.9$), which indicates that all variable constructs show good discriminant validity. Another approach to assessing discriminant validity is to examine the square root of the Average Variance Extracted (AVE), where values above 0.5 are recommended (Ghozali et al., 2021). The AVE values obtained in this study are presented in the following table:

Table 9. Average Variant Extracted (AVE).

Variable	Average Variance Extracted (AVE)
Knowledge (X1)	0,930
Accessibility (X2)	0,590
Service Quality (X3)	0,763
Utilization of Health Services (Y)	0,951
Socioeconomic Role (M)	0,896

Source: Processed primary data (2025)

Based on the table, all research variables have an AVE value above 0.5, thus meeting the criteria for discriminant validity. Therefore, all variables are declared to have good discriminant validity.

Table 10. Composite Reliability and Cronbach Alpha

Variable	Composite Reliability	Cronbach Alpha
Knowledge (X1)	0,988	0,985
Accessibility (X2)	0,878	0,844
Service Quality (X3)	0,941	0,923
Utilization of Health Services (Y)	0,983	0,974
Socioeconomic Role (M)	0,962	0,944

Source: Processed primary data (2025)

The test results show that all variables have satisfactory composite reliability values, namely Knowledge (X1) at 0.988, Accessibility (X2) at 0.878, Service Quality (X3) at 0.941, Health Service Utilization (Y) at 0.983, and Socioeconomic Role (M) at 0.962. All of these values exceed the threshold of 0.7, indicating high reliability. In addition, the Cronbach's alpha value for all variables is also > 0.7 , confirming that the research instrument has a high level of internal consistency and reliability.

Table 11. R-Square

Variable	R Square	R Square Adjusted
Utilization of Health Services (Y)	0,593	0,562

Source: Processed primary data (2025)

According to the data measurements in the table above, it is shown that the R-square (R^2) value for the health service utilization variable is 0.593, which indicates that knowledge, accessibility, service quality, and socioeconomic role can explain 59.3% of the variation in the health service utilization variable.

Table 12. F-Square

Variable	Utilization of Health Services
Knowledge	0.238
Accessibility	0.160
Service Quality	0.274
Socioeconomic Role	0.024
Socioeconomic Role x Accessibility	0.040
Socioeconomic Role x Quality of Service	0.165
Socioeconomic Role x Knowledge	0.042

Source: Processed primary data (2025)

The f-square results show that knowledge, accessibility, and quality of service have a moderate effect on the utilization of health services. Meanwhile, socioeconomic status has a weak effect. In terms of moderating effects, socioeconomic status weakens the influence of knowledge and quality of service, but has a moderate effect on the relationship between accessibility and utilization of health services.

Table 13. Hypothesis Test

Hypothesis	Influence Between Variables	Original Sample (O)	t-statistics (O/STDEV)	p-value
H1	Knowledge → Utilization of Health Services	0,373	3,555	0,000
H2	Accessibility → Utilization of Health Services	0,295	2,950	0,003
H3	Quality of Services → Utilization of Health Services	0,357	3,484	0,000
H4	Knowledge*Socioeconomic Role → Utilization of Health Services	-0,127	1,253	0,210
H5	Accessibility*Socioeconomic Role → Utilization of Health Services	0,263	2,635	0,008
H6	Quality of Services*Socioeconomic Role → Utilization of Health Services	-0,118	1,133	0,257

Source: Processed primary data (2025)

Discussion

Knowledge Influences the Utilization of Health Services

The results show that knowledge has a positive and significant effect on the utilization of health services, as evidenced by a t-statistic value of $3.555 > 1.97$ and a p-value of $0.000 < 0.05$, confirming that the higher the patient's knowledge, the greater the tendency to utilize health services. This finding is in line with Health Service Utilization Behavior Model (Andersen & Newman, 1973), which places knowledge as a major predisposing factor in health decision-making. Empirically, the results of this study are consistent with studies by Basith & Prameswari (2020), Permatasari et al. (2021), Darmawan et al. (2025), Herlinawati et al. (2022), Meliala et al. (2024), Suhermin & Hermawati (2021) and Saprianti et al. (2024), which show that individuals with good health knowledge are more active in using health services, including BPJS participants. The phenomenon in the field, particularly at Qolbu Insan Mulia Batang Hospital, shows that BPJS patients who understand referral and administrative procedures tend to be more confident and do not hesitate to utilize services, while limited knowledge remains a barrier for some patients in accessing services optimally.

Accessibility Affects the Utilization of Health Services

The results of the study show that accessibility has a positive and significant effect on the utilization of health services, as evidenced by a t-statistic value of $2.950 (>1.97)$ and a p-value of $0.003 (<0.05)$, which confirms that the easier it is for the community to access health facilities, the higher the level of utilization. This finding is in line with Andersen's Health Service Utilization Behavior Model, which places accessibility as a major supporting factor in the realization of service utilization behavior (Andersen & Newman, 1973). Conceptually, accessibility encompasses geographical, financial, and organizational aspects Thomas & Penchansky (1984), Hermawati & Yosiana (2021); Guagliardo (2004), which in the field context of Batang Regency are reflected in the proximity of hospitals, short travel times, availability of transportation, and participation in the BPJS Kesehatan health insurance program. This phenomenon is consistent with previous studies showing that distance and transportation significantly influence health service visits Guagliardo (2004) especially in semi-urban areas with limited facilities.

Service Quality Affects Health Service Utilization

The results show that service quality has a positive and significant effect on the utilization of health services, as indicated by a t-statistic value of $3.484 > 1.97$ and a p-value of $0.000 < 0.05$, which indicates that improvements in service quality encourage patients to utilize health services. This finding is in line with Health Service Utilization Behavior Model (Aday & Andersen, 1974), which places service quality as a major supporting factor in the decision to use services. Empirically, the results of this study are consistent with those of Basith & Prameswari (2020), Hermawati et al. (2022) and Karina et al. (2020), which confirm that the competence of medical personnel, speed of service, and the empathetic attitude of staff have a significant effect on the utilization of health services. The phenomenon in the

field shows that BPJS patients with relatively adequate access to services tend to consider service quality as the main distinguishing factor in choosing and using health facilities, especially when cost and physical access barriers are relatively controlled.

The Socioeconomic Role Moderates the Influence of Knowledge on the Utilization of Health Services

The results show that socioeconomic status does not significantly moderate the effect of knowledge on health service utilization (t-statistic = 1.253 < 1.97; p-value = 0.210 > 0.05), indicating that individuals with a good level of knowledge continue to utilize health services regardless of differences in socioeconomic status. This finding shows the consistency of the influence of knowledge across socioeconomic groups, in line with Andersen's (1973) Health Service Utilization Behavior Model framework, but with a reduced role of supporting factors in certain contexts. Unlike previous studies that placed socioeconomic status as a direct predictor of health service utilization (Meliala et al., 2024); (Herlinawati et al., 2022); (Wahyudi & Sulaiman, 2024), this study confirms that the moderating effect is not empirically proven. Field observations indicate that the dominance of respondents enrolled in the National Health Insurance (BPJS Kesehatan) program and public financing policies that reduce cost barriers contribute to the homogeneity of service utilization behavior. Consequently, knowledge functions as a relatively neutral economic determinant in driving health service utilization.

The Socioeconomic Role Moderates the Influence of Accessibility on Health Service Utilization

The results show that socioeconomic status significantly moderates the effect of accessibility on health service utilization (t-statistic = 2.635; p-value = 0.008), indicating that accessibility does not automatically increase service utilization without the support of individual socioeconomic capacity. This finding reinforces Andersen's Health Service Utilization Behavior Model (1995), which places accessibility as an enabling factor whose effectiveness depends on economic and social resources. Empirically, these results are consistent with the studies by Basith & Prameswari (2020), which show that groups with higher socioeconomic status are better able to convert ease of access into health service utilization. The phenomenon in the field, particularly around the Qolbu Insan Mulia Batang Hospital, shows that low-income communities, despite living close to health facilities, still face obstacles in the form of transportation costs, loss of income, and time constraints. Thus, accessibility needs to be understood multidimensionally and integrated with economic capacity-building policies so that the utilization of health services is more equitable and effective.

The Socioeconomic Role Moderates the Influence of Service Quality on Health Service Utilization

The results show that socioeconomic status does not moderate the effect of service quality on health service utilization, as indicated by a T-statistic value of 1.133 (<1.97) and a P-value of 0.257 (>0.05), meaning that service quality has a relatively uniform effect on all socioeconomic groups. This finding indicates that good services continue to encourage the use of health services, while poor services reduce the interest in seeking treatment, with no significant difference between high- and low-income patients. Theoretically, these results are in line with Andersen's Health Service Utilization Behavior Model (1995), which places service quality as a universal supporting factor. Previous studies also support these findings, including Karina et al. (2020), and Mardiana et al. (2021), who found that satisfaction and perceptions of service quality have an impact across social classes. Field observations indicate that within the BPJS system, which has relatively uniform service standards, patients respond more to interpersonal aspects such as empathy, communication, and comfort than to socioeconomic conditions.

5. Conclusion

Based on the research that has been conducted, several conclusions can be drawn from the research results. BPJS Kesehatan patients who possess a good level of knowledge, supported by proper understanding and the ability to apply that knowledge to address the health problems they face, are more likely to increase their utilization of available health services. Good accessibility, characterized by ease of access to health facilities, availability of resources, and affordability of costs and transportation, also encourages patients to utilize health services. In addition, high-quality services enhance patient trust and satisfaction, which in turn leads to increased utilization of health services; in this context, the reliability of medical personnel, accuracy of services, responsiveness, safety assurance, and staff empathy are key factors that motivate patients to continue using health services. Furthermore, socioeconomic status does not moderate the influence of knowledge on health service utilization, indicating that knowledge has a sufficiently strong effect on utilization behavior regardless of patients' socioeconomic conditions. However, better socioeconomic conditions in terms of income, employment, and education strengthen the influence of ease of access on decisions to utilize health services, as patients with higher socioeconomic status are generally better able to take advantage of available access compared to those with lower socioeconomic status. Finally, variations in socioeconomic conditions related to income, employment, and education do not strengthen or weaken the relationship between service quality and the decision to utilize health services, suggesting that patients primarily consider the quality of services provided to BPJS Kesehatan patients when deciding to use health services.

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