

Analysis of Factors Influencing the BPJS Outpatient Registration System at Jati Husada General Hospital, Karanganyar

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ABSTRACT

Background : Digital transformation in the healthcare sector has driven the adoption of online outpatient registration systems to improve service efficiency and reduce patient queues. However, at Jati Husada General Hospital in Karanganyar, offline registration remains dominant for BPJS patients. This situation suggests factors influencing the choice of registration system. **Purpose** : This study aims to analyze factors such as age, education, income, patient satisfaction, and service quality in the BPJS outpatient registration system. **Methods** : The study used a quantitative descriptive-analytical design with a cross-sectional approach. The population was 2,021 BPJS outpatient visits in March 2025, with a sample of 105 respondents selected using simple random sampling. Data were collected through questionnaires and analyzed using the Chi-Square test with a 95% significance level ($\alpha=0.05$). **Results** : The results showed that age ($p=1.000$), education ($p=0.339$), income ($p=0.414$), and service quality ($p=0.109$) did not significantly influence the outpatient registration system. Conversely, patient satisfaction had a significant effect ($p=0.007$). **Conclusion** : It is concluded that patient satisfaction is a factor that influences the outpatient registration system, so improving patient experience and comfort needs to be a priority in developing the service system.

Keywords :

Patient Satisfaction, Service Quality, Education, Income, Outpatient Registration System

Introduction

Hospitals play a leading role in development efforts and provide healthcare services to the community. Hospitals generate revenue through their operations from the services and facilities they provide. Competition between hospitals is now unavoidable (1).

As the number of hospitals increases, this must be balanced by improvements in service quality to ensure that patients' needs, expectations, and satisfaction are optimally met. Service delivery refers to a series of activities carried out by government and private institutions to meet the needs and interests of the public. The service delivery process takes place through direct interaction between service providers and recipients, with the goal of providing a satisfying experience for service users (2).

Every healthcare facility has a responsibility to provide high-quality care and uphold patients' rights. High-quality care is demonstrated by the provider's ability to meet patients' expectations and ensure their satisfaction (3)

The rapid development of information technology is currently unavoidable. Various innovations continue to emerge and are being implemented in various sectors of life, including the healthcare sector. Digital transformation in the healthcare sector aims to improve the efficiency, effectiveness, and quality of public services. The government supports increased access to healthcare services through a social security program managed by BPJS Kesehatan, an institution established under legal provisions to administer the National Health Insurance (JKN) program, which covers all Indonesians.(4).

This program requires healthcare facilities to provide effective, efficient, and standardized services in accordance with Regulation of the Minister of Health of the Republic of Indonesia Number 28 of 2014 concerning Guidelines for the Implementation of the National Health Insurance (JKN). In the context of hospitals, the outpatient registration system serves as the

gateway to services, playing a crucial role in determining the smooth flow of services and the patient's initial perception of service quality. (Regulation of the Minister of Health of the Republic of Indonesia Number 28 of 2014).

Outpatient registration generally consists of two methods: offline (manual) registration and online registration. Offline registration still faces various challenges, particularly long queues due to the high number of patients who prefer to register directly at the counter. Meanwhile, the online registration system also faces obstacles such as limited staff assistance and low public understanding of how to use digital systems. This situation indicates that the digital transformation of the registration system is not yet fully optimized.(6).

The patient registration system is the initial stage of hospital care and represents the first point of contact between patients and the healthcare facility. Therefore, the quality of service in the registration department is often used as an early indicator in assessing the overall quality of hospital care (7)

Online outpatient registration systems have been proven to increase service efficiency and provide easier access for patients. Several studies have shown that implementing online registration can reduce waiting times and increase patient satisfaction.(8). In addition, the application-based registration method is also considered effective in increasing positive patient perceptions of hospital services, although there are still aspects of service that need to be improved.(4).

The online registration system is designed to streamline the registration process and reduce patient wait times. However, many patients still choose to register in person due to a lack of awareness and understanding of how to use the online system, resulting in long lines and longer wait times for care (9)

A study by (10) on the Utilization of an Online Registration System Through WhatsApp at a Regional General Hospital stated that the online registration system via WhatsApp at Panembahan Senopati Regional General Hospital has the potential to improve service efficiency. However, its implementation still faces various technical and non-technical obstacles, including a lack of patient digital literacy and slow system response. The Self-Registration Kiosk (APM) system remains the primary choice for patients due to its practicality and predictability of registration results.

This is supported by research by (4) on the Influence of Patient Satisfaction on WhatsApp-Based Online Registration Methods for Outpatients, which found that online registration via WhatsApp at Palmatak Regional General Hospital was effective in improving outpatient satisfaction. However, there is room for improvement, particularly in the dimensions of empathy and tangible evidence, which received fair ratings from the majority of respondents. Improvements in these aspects could further enhance overall patient satisfaction.

The influence of registration duration on patient satisfaction for both online and offline registration indicates that the implementation of an online registration system plays a significant role in improving service efficiency and patient satisfaction. It is recommended to adopt similar technology to reduce waiting time and improve service quality (8).

Outpatient visit data at Jati Husada General Hospital, Karanganyar, in March 2025 showed that 86.60% of BPJS patients still used offline registration, while only 13.40% used the online system. This indicates that the digital registration system is not yet optimally utilized. Therefore, this study aims to analyze factors such as age, education, income, patient satisfaction, and service quality in the BPJS outpatient registration system.

Methods

This study used a quantitative method with a descriptive-analytical and cross-sectional approach to analyze the factors influencing the BPJS outpatient registration system at Jati Husada General Hospital in Karanganyar. The study population consisted of all BPJS Health outpatient participants in March 2025, totaling 2,021 visits, with a sample of 105 respondents determined using the Slovin formula and simple random sampling. The research instrument consisted of a structured questionnaire that measured the variables of age, education, income,

patient satisfaction, and service quality. The patient satisfaction variable was measured based on three indicators: expectation fulfillment, willingness to return, and willingness to recommend the service. The service quality variable was measured based on the five dimensions of SERVQUAL: tangibles, reliability, responsiveness, assurance, and empathy. All statement items used a 4-point Likert scale: Strongly Disagree (1), Disagree (2), Agree (3), and Strongly Agree (4). Validity was tested using Pearson's correlation, and reliability was assessed using Cronbach's Alpha. Data analysis was performed using univariate analysis to examine frequency distributions and bivariate analysis using the chi-square test with a 95% significance level ($\alpha = 0.05$) and odds ratio (OR) calculations to determine the likelihood of using online and offline registration systems.

Research Ethics

This study received ethical approval from the Moewardi General Hospital Health Research Ethics Committee under ethical clearance number 1.736 / VIII / HREC / 2025 prior to its implementation.

Results

Table 1.1. Frequency Distribution of Respondents by Age and Education (n=105)

Respondent Characteristics	f	%
Age		
26-35 years old	22	21%
36-45 years old	27	25.7%
46-55 years	21	20%
>55 years	35	33.3%
Education		
JUNIOR HIGH SCHOOL	3	2.9%
SENIOR HIGH SCHOOL	74	70.5%
Diploma	14	13.3%
Bachelor	14	13.3%

Source: Primary Data, 2025

Based on table 1, the results obtained were that the majority of 105 respondents were aged >55 years, namely 35 respondents (33.3%), and the majority of respondents had a high school education level, namely 74 respondents (70.5%).

Table 1. 2. Frequency Distribution of Respondents by Income, Patient Satisfaction, Service Quality, and Registration System (n=105)

Respondent Characteristics	f	%
Income		
<Rp 2,000,000	24	22.9%
≥Rp 2,000,000	81	77.1%
Patient Satisfaction		
Satisfied	64	61%
Not satisfied	41	39%
Quality of Service		
Good	71	67.6%
Not good	34	32.4%
Registration System		
On line	24	22.9%
Offline	81	77.1%

Source: Primary Data, 2025

Based on table 2, the results of 105 respondents showed that the majority of respondents had incomes of $\geq 2,000,000$, namely 81 respondents with a percentage (77.1%). In addition, the majority of respondents stated that they were satisfied with outpatient registration, namely 64 respondents with a percentage (61%). The assessment of service quality was in the good category, namely 71 respondents with a percentage (67.6%). Meanwhile, the majority of respondents chose offline outpatient registration, namely 81 respondents with a percentage (77.1%).

Table 1. 3. Cross-tabulation of the Relationship between Age and the Outpatient Registration System (n=105)

Age	System Registration		OR	CI 95%		p value
	On line	Offline		Lower	Upper	
	≤ 55 years	16		54	1,000	
> 55 years	8	27				

Source: Primary Data, 2025

Based on table 3 the results of the Chi Square test analysis show an insignificant relationship between the outpatient registration system and age, obtained from the value (OR = 1.000; 95% CI: 0.380-2.628; p value = 1.000) which means that the outpatient registration system variable does not have a positive relationship with the age variable. When the offline registration system variable increases, the chance of reaching the respondent's age increases 1,000 times. The data shows that from the offline registration system, there are 54 respondents aged ≤ 55 years, while there are 27 respondents aged > 55 years. Meanwhile, the online registration system has 16 respondents aged ≤ 55 years, while there are 8 respondents aged > 55 years.

Table 1. 4. Cross-tabulation of the Relationship between Education and the Outpatient Registration System (n=105)

Education	System Registration		OR	CI 95%		p value
	On line	Offline		Lower	Upper	
	$<$ High School	0		3	1,038	
\geq High School	24	78				

Source: Primary Data, 2025

Based on table 4, the results of the Chi Square test analysis show an insignificant relationship between the outpatient registration system and education, obtained from the value (OR = 1.038; 95% CI: 0.995-1.084; p value = 0.339) which means that the outpatient registration system variable does not have a positive relationship with the education variable. When the offline registration system variable increases, the probability of achieving respondent education increases 1.038 times. The data shows that from the offline registration system, there are 3 respondents with an education $<$ high school, while there are 78 respondents with an education \geq high school. Meanwhile, in the online registration system, there are 24 respondents with an education \geq high school.

Table 1. 5. Cross-tabulation of the Relationship between Income and the Outpatient Registration System

Income	System Registration		OR	CI 95%		p value
	On line	Offline		Lower	Upper	
	$< 2,000,000$	4		20	0.610	
$\geq 2,000,000$	20	61				

Source: Primary Data, 2025

Based on table 5 the results of the Chi Square test analysis show an insignificant relationship between the outpatient registration system and income, obtained from the value (OR = 0.610; 95% CI: 0.186-1.998; p value = 0.414) which means that the outpatient registration system variable does not have a positive relationship with the income variable. When the offline registration system variable increases, the opportunity for respondents to achieve income increases 0.610 times. The data shows that from the offline registration system, there are 20 respondents with income <2,000,000, while there are 61 respondents with income ≥2,000,000. Meanwhile, the online registration system has an income <2,000,000, which is 4 respondents, while there are 20 respondents with income ≥2,000,000.

Table 1. 6. Cross-tabulation of the Relationship between Patient Satisfaction and the Outpatient Registration System (n=105)

Patient Satisfaction	System Registration		OR	CI 95%		p value
	On line	Offline		Lower	Upper	
Good	11	23	2,134	0.836	5,446	0.109
Not good	13	58				

Source: Primary Data, 2025

Based on table 6, the results of the Chi Square test analysis show an insignificant relationship between the outpatient registration system and service quality, obtained from the value (OR = 2.134; 95% CI: 0.836-5.446; p value = 0.109) which means that the outpatient registration system variable does not have a positive relationship with the service quality variable. When the offline registration system variable increases, the chance of achieving service quality increases 2.134 times. The data shows that the offline registration system has a higher level of service quality, namely 23 respondents, while 58 respondents are dissatisfied. Meanwhile, in the online registration system, 11 respondents are satisfied and 13 respondents are dissatisfied.

Table 1. 7. Cross-tabulation of the Relationship between Service Quality and the Outpatient Registration System (n=105)

Quality Service	System Registration		OR	CI 95%		p value
	On line	Offline		Lower	Upper	
Satisfied	9	55	3,526	1,365	9,107	0.007
Not satisfied	15	26				

Source: Primary Data, 2025

Based on table 7, the results of the Chi Square Test analysis show a significant relationship between the outpatient registration system and patient satisfaction, obtained from the value (OR = 3.526; 95% CI: 1.365-9.107; p value = 0.007) which means that the outpatient registration system variable has a positive relationship with the patient satisfaction variable. When the offline registration system variable increases, the chance of achieving satisfaction increases 3.526 times. The data shows that the offline registration system has a higher level of satisfaction of 55 respondents while those who are dissatisfied are 26 respondents. Meanwhile, the online registration system, patients who are satisfied are 9 respondents and those who are dissatisfied are 15 respondents.

Discussion

Relationship between age and registration system

The results of the study indicate that age at Jati Husada Karanganyar General Hospital does not have a significant relationship with the outpatient registration system. Statistical analysis shows that respondents aged ≤55 years and >55 years have a relatively similar tendency in choosing an outpatient registration system, both offline and online. The results of the probability analysis indicate that the difference in the probability of choosing a registration

system between age groups does not show statistical significance. Respondents aged ≤ 55 years are more likely to choose the offline outpatient registration system compared to online registration, but the difference is not large enough to conclude that age influences the choice of an outpatient registration system.

Research result (11) The results show that early adulthood and late adolescence utilize health services in relatively similar proportions. This indicates that the need for health services can be experienced by all age groups, regardless of their specific stage. Regarding the outpatient registration system, age differences are not a major factor in determining the choice of registration system, whether offline or online, because all age groups have the same need to access health services.

Study (12) stated that age differences can influence how individuals assess the quality of a product or service. In healthcare, this relates to how patients of different age groups perceive and utilize the outpatient registration system. However, in this study, age differences did not show a significant impact because patients considered ease of access and system usage habits more than age itself.

(13) found a significant relationship between age and the online registration system, with younger patients being more adaptable to technology than older patients. However, the results of this study indicate that among BPJS patients at Jati Husada Karanganyar General Hospital, age did not significantly influence the choice of outpatient registration system. This is likely due to the relatively similar service needs across age groups and the dominant factors of habit and ease of access.

The relationship between education and the registration system

The study found that education level had no significant relationship with the outpatient registration system for BPJS patients at Jati Husada General Hospital, Karanganyar. Statistical tests showed that differences in education level did not influence the choice of outpatient registration system, whether online or offline. Both low- and high-educated patients still preferred the offline system.

(14) The study stated that the majority of respondents had secondary to higher education, which theoretically allows individuals to have a better understanding of access to health information. Patients of varying educational levels tended to exhibit relatively similar patterns of registration system selection.

(15) The results also showed that patients with a diploma or bachelor's degree tended to have an easier time understanding technology-based systems. The presence of patients with secondary education also suggests that the outpatient registration system is accessible to people of all educational levels. However, in this study, education level was not significantly associated with the choice of registration system.

(16) stated that education level plays a role in the ability to receive and understand information. The education level of outpatients showed that the majority of patients came from low-education groups, while the number of patients with higher education levels was relatively small. However, the results of this study indicate that patients from various education levels exhibited relatively similar system selection patterns. This suggests that ease of access, usage habits, and the presence of staff assistance play a greater role than formal educational background.

Relationship between income and registration system

The study results showed that income level had no significant relationship with the BPJS outpatient registration system at Jati Husada Karanganyar Hospital. Both low- and high-income patients still used the offline system more often than the online one.

(12) The study stated that income reflects purchasing power and the ability to access healthcare services. Most respondents were in the middle income bracket. Patients with lower incomes tended to choose outpatient registration systems that were familiar and did not require additional costs or access to specific technologies, while patients with higher incomes had greater flexibility in utilizing various registration system options.

(17) found that the majority of patients were in the low- to middle-income category. This indicates that the majority of outpatients come from communities that are quite dependent on easily accessible and affordable healthcare facilities. The results showed that most respondents used the online registration system compared to the offline one. (18) also stated that economic limitations can be a barrier to utilizing health services. Increasing education and support for low-income communities is needed to reduce the disparity in health service utilization between economic groups.

However, in this study, income was not shown to significantly influence the choice of registration system. This suggests that for BPJS patients, the primary consideration is ease of access and system usage habits, rather than economic capacity.

The relationship between patient satisfaction and the outpatient registration system

The study results showed a significant relationship between patient satisfaction and the outpatient registration system at Jati Husada General Hospital, Karanganyar. This relationship was positive, with the offline registration system showing higher satisfaction levels than the online one.

(19) states that online registration systems have a significant impact on patient satisfaction when managed optimally. The study found that online registration systems have a very strong relationship with patient satisfaction and can explain a significant portion of the variation in patient satisfaction. (20) emphasized that ease of access, information accuracy, and human resource readiness significantly determine patient satisfaction with digital systems. These findings indicate that the online registration system is not yet running effectively, causing inconvenience, confusion, and delays in service, thus impacting BPJS patient satisfaction. Therefore, efforts are needed to improve the quality and management of the online registration system to provide an optimal service experience tailored to patient needs.

Study (21) A study on Self-Registration Platforms (ANPs) showed that ease of use, timeliness, and display format significantly influence patient satisfaction. The results indicate that a self-registration system designed with good technological quality can improve patient satisfaction. If the APM system does not run optimally, patient satisfaction levels will also decline. These findings reinforce the need for registration service systems, both online and self-service, to be designed with speed, accuracy, convenience, and ease of use in mind to provide a better service experience for patients.

Meanwhile, (22) found that patient dissatisfaction with the online system was caused by system errors, lack of guidance, and processing delays. Patients' perceptions of the ease of the online registration system significantly influenced their level of satisfaction. In this study, the offline system was still considered more satisfying due to the direct interaction, clarity of procedures, and minimal technical issues.

The relationship between service quality and the outpatient registration system
The results of the study showed that the quality of service did not have a significant relationship with the BPJS patient outpatient registration system at Jati Husada Karanganyar Hospital.

(23) stated that the dimensions of empathy, reliability, and assurance are significantly related to service quality. This means that staff skills in providing friendliness, reliability, timeliness, and service assurance contribute more to perceptions of service quality than the type of registration system used.

(24) found that tangibles, reliability, responsiveness, and empathy significantly influence service quality. Therefore, improving service quality can be focused on enhancing staff's ability to provide fast, responsive, empathetic, and reliable service, along with improvements to supporting systems such as integrated registration to enhance service efficiency.

(25) also showed that not all dimensions of service quality had a significant influence. Tangible and reliability dimensions did not show a significant influence. Conversely, empathy and responsiveness dimensions were shown to have a significant influence on service quality.

In this study, the insignificant relationship was likely due to patients' relatively similar perceptions of service quality across both registration systems. Patients focused more on ease of access, clarity of flow, and certainty of process than on general service quality.

Conclusion

This study found no significant association between age, education, income, and service quality and the outpatient registration system, as indicated by p-values of 1.000, 0.339, 0.414, and 0.109, respectively ($p > 0.05$). In contrast, patient satisfaction was significantly associated with the outpatient registration system, with a p-value of 0.007 ($p < 0.05$). These findings suggest that patient satisfaction is associated with the outpatient registration system, whereas age, education, income, and service quality are not. Therefore, patient satisfaction should be considered in efforts to improve the quality of outpatient registration services.

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