



Determinants of Relapse Among Schizophrenia Patients in West Kalimantan: A Cross-sectional Study

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Track Record Article	Abstract
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INTRODUCTION

Recent studies report that around 11.63% people aged 5 to 24 years experienced at least one mental disorder, where adolescents and young adults were the most affected population (Kieling et al., 2024). In Indonesia, the 2023 Indonesia Health Survey reported that around 2% of the population aged 15 years and older, equivalent to approximately 8.6 million people, experience mental health problems. At the provincial level, data from the same survey indicate that West Kalimantan has a prevalence of households with members experiencing psychosis or schizophrenia of 2.7 per thousand based on reported symptoms, and 2.2 per thousand when symptoms are accompanied by a clinical diagnosis, placing the province within the moderate prevalence range nationally (Ministry of Health of the Republic of Indonesia, 2023). These finding indicate that schizophrenia is a serious problem of public health in West Kalimantan.

People who have schizophrenia will have cognitive, emotional, and social impairments (Faden & Citrome, 2023). Schizophrenia has both positive and negative symptoms, such as hallucinations, delusions, isolation, and reduced motivation. More than 52% of individuals with schizophrenia have been reported to experience relapse during the course of their illness, which can reduce the quality of life for both patients and their families (Agenagnew & kassaw, 2020; Moges et al., 2021).

A wide range of factors has been linked to schizophrenia relapse. While there is a non-modifiable factor, such as illness duration, others are potentially modifiable and therefore especially relevant for intervention. These include medication adherence, internalized stigma, and family support (Abdisa et al., 2020; Samuel, 2022; Zubi et al., 2022). Medication adherence has been identified as one of the most dominant factors associated with relapse. Individuals who have a lower level of medication adherence are likely to more than double their risk of experiencing relapse (Guo et al., 2023; Semahegn et al., 2020). Other factors, such as internalized stigma, can also affect their self-esteem, which can lead to relapse (Abdisa et al., 2020; Yu et al., 2021). Family support has similarly been shown to enhance treatment adherence and recovery, whereas inadequate support increases vulnerability to relapse (Rodolico et al., 2022).

Although factors associated with relapse in schizophrenia patients have been extensively studied globally, only a few have been identified in resource-limited areas such as West Kalimantan. Therefore, it is essential to evaluate which factors contribute most to relapse, so that they can form the basis for appropriate nursing intervention. This study aimed to assess the factors associated with relapse among schizophrenia patients at a mental hospital in West Kalimantan.

METHODS

This study employed an analytical, cross-sectional design and took place at a mental hospital in West Kalimantan from November to December 2024. The study aimed to examine the most dominant factors associated with relapse among schizophrenia patients. This study has received ethical approval from the Health Research Ethics Committee (KEPK) of STIKes Yarsi Pontianak with the number: 155/KEPK/STIKes.YSI/XI/2024. A total of 63 patients and their families who met the inclusion criteria (patients who had been hospitalized once or more, undergoing outpatient treatment, did not experience severe cognitive impairment based on data from nurses, and family members who accompanied patients to the outpatient clinic) were included in this study. A consecutive sampling technique was used to select the respondents.

Data were collected using demographic characteristic instruments, the Morisky Medication Adherence Scale-8 (MMAS-8), the Internalized Stigma of Mental Illness Scale-9 (ISMI-9), and the Family Support questionnaires. The patient's medical reports were used to identify the relapse rate. All of the instruments were valid and reliable, with item-total correlations ranging from 0.464 to 0.941; Cronbach's $\alpha = 0.935$ for the MMAS-8, 0.544–0.945; Cronbach's $\alpha = 0.938$ for the ISMI-9, and 0.464 to 0.941; Cronbach's $\alpha = 0.935$ for the family support questionnaire. Schizophrenia patients completed the MMAS-8 and ISMI-9 questionnaires directly at the outpatient center, while their families completed the family support questionnaire via Google Form at home.

Descriptive statistics, including frequency distributions, were used to analyze respondent characteristics (age, gender, education, and employment), as well as the variable for internalized stigma, medical adherence, social support, and lifetime relapse. The relationship between the independent and dependent variables was examined using Fisher's Exact Test. Variables with $p < 0.25$ in bivariate analysis were entered into a multivariate logistic regression model to identify the most dominant factors associated with relapse among schizophrenia patients.

RESULTS

Table 1 Frequency Distribution of Respondent Characteristics (N=63)

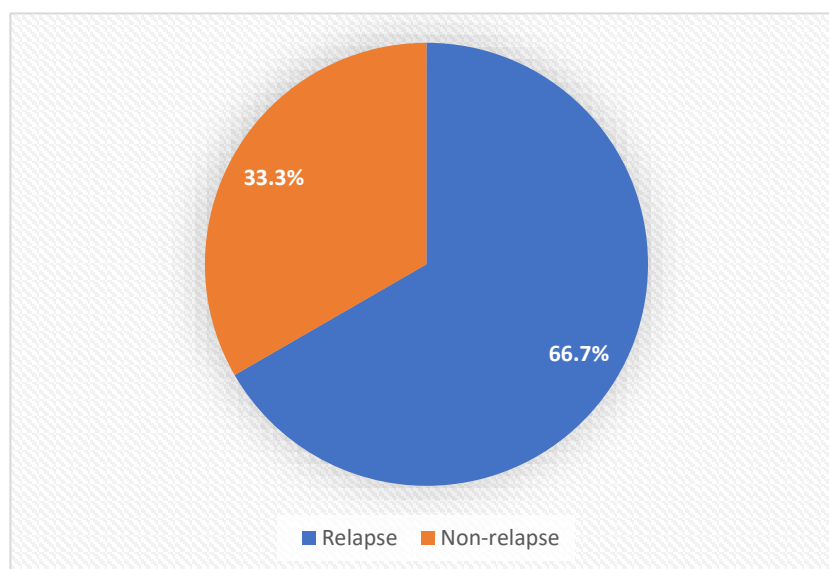
Characteristics	f	%	Mean
Age			38.73
Gender			
Male	63	100	
Education			
No schooling	9	14.2	
Elementary school	18	28.6	
Junior high school	19	30.2	
Senior high school	17	27.0	
Type of employment			
Unemployed	40	63.5	
Civil servant	2	19.0	
Private	12	3.2	
Farmer/laborer/fisherman	9	14.3	

The mean age of the respondents was 38.73 years, and the sample comprised exclusively male participants (63;100%). Regarding education, the majority of respondents had attained junior high school completion (19;30.2%) and were unemployed (40;63.5%).

Table 2 Distribution of Factors Associated with Relapse in Schizophrenia Patients (N=63)

Variable	f	%
Internalized stigma		
Minimal-no stigma	15	23.8
Mild	36	57.1
Moderate	5	7.9
Severe	7	11.1
Medical adherence		
High	25	39.7
Medium	11	17.5
Low	27	42.9
Family support		
Poor	10	15.9
Moderate	47	74.6
Strong	6	9.5

Regarding internalized stigma, over half of the respondents (36; 57.1%) reported mild stigma, whereas 15 (23.8%) reported minimal to no stigma. A minority of individuals reported moderate (5; 7.9%) and severe (7; 11.1%) stigma. Regarding medical adherence, most respondents (27;42.9%) displayed low adherence (25;39.7%), while some exhibited high (25;39.7%) and medium (11;17.5%) adherence. It is a significant concern, as inadequate medication adherence is a recognized predictor of relapse in schizophrenia. Regarding family support, the majority of respondents reported moderate levels (47;74.6%), while only a few (6;9.5%) reported strong support, and 10 (15.9%) reported poor support.



Based on figure 1, most respondents experienced lifetime relapse (42;66.7%)

Table 3 The Relationship Between Internalized Stigma, Treatment Adherence, and Family Support with Relapse in Schizophrenia Patients (N=63)

Variable	Relapse		Non-relapse		Total f (%)	X2	df	p value
	f	(%)	f	(%)				
Internalized stigma								
Minimal or no stigma	7	46.7	8	53.3	15 (100)	4.443	2	0.217
Mild	26	72.2	10	27.8	36 (100)			
Moderate	3	60	2	40	5 (100)			
Severe	6	85.7	1	14.3	7 (100)			
Medical adherence								
High	13	48.1	14	51.9	27 (100)	7.303	2	0.026
Medium	9	81.9	2	18.1	11 (100)			
Low	20	80	5	20	25 (100)			
Family support								
Strong	4	40	14	60	18 (100)	4.216	2	0.121
Moderate	5	70.2	1	16.7	6 (100)			
Poor	33	83.3	6	29.8	39 (100)			

Medication adherence showed a significant association with relapse ($p = 0.026$). Individuals with low adherence experienced the highest relapse rate (20;80%) compared with those with medium (9;81.9%) or high adherence (13;48.1%), with a p-value of 0.026. The p-values of internalized stigma and family support were $p = 0.217$ and $p = 0.121$, respectively, which means those variables were not statistically significant with relapse. Although internalized stigma and family support do not have a significant relationship with relapse in schizophrenia patients, patients who experienced severe internalized stigma showed a high relapse rate (6; 85.7%), and patients who had low family support also experienced a high relapse rate (33; 83.3%). These findings indicate that while medication adherence was the only factor significantly associated with relapse in bivariate analysis, both internalized stigma and family support display directional trends warranting further investigation in studies with larger and more evenly distributed samples.

Table 4 Factors Associated with Relapse Among Patients with Schizophrenia (N=63)

Variable		B	df	p	AOR	95% CI EXP(B)	
						Lower	Upper
Step 1	Internalized stigma	-.511	1	.186	.600	.281	1.279
	Medical adherence	.722	1	.032	2.059	1.062	3.990
	Family support	-1.006	1	.115	.366	.105	1.279
	Constant	.681	1	.676	1.975		
Step 2	Medical adherence	.738	1	.027	2.091	1.087	4.023
	Family support	-1.020	1	.094	.360	.109	1.191
	Constant	-.340	1	.808	.712		

Table 4 shows a multivariate logistic regression analysis using the forward method. In the final model (Step 2), medication adherence remained significantly associated with relapse among patients with schizophrenia (AOR = 2.09; 95% CI 1.09–4.02; $p = 0.027$), indicating that

patients with lower adherence were approximately 2 times more likely to experience a relapse compared to those with higher adherence.

DISCUSSION

This study aimed to evaluate the factors most associated with relapse in schizophrenia patients in West Kalimantan. The results of a multivariate analysis showed that medication adherence was the most closely associated with relapse. Patients with low adherence were twice as likely to experience relapse as those with higher adherence. The results of this study support previous research, which revealed that poor adherence is the strongest predictor of relapse (Birhan et al., 2025; Mi et al., 2020). Treatment adherence is also associated with successful symptom control, thereby reducing the risk of rehospitalization. (Karabulut & Uslu, 2024). Recent studies have shown that adherence-enhancing interventions, including psychoeducation, behavior interventions, and smartphone-based adherence apps, can significantly enhance adherence and reduce relapse in schizophrenia patients in community settings (Chen et al., 2023; Guo et al., 2023; Loots et al., 2021).

Medication adherence in schizophrenia patients is a complex behavior that requires involvement between the patient, healthcare professionals, and the surrounding environment. (Schneider & Burnier, 2022). Medication adherence is defined as "the process by which a patient takes medication as prescribed" (Cahir, 2020). Conversely, a person is considered non-adherent if they take less than 80% of their prescribed medication (Kareem & Mahmood, 2022). In schizophrenia patients, poor medication adherence is associated with various factors, such as a limited understanding of the disease and its medication side effects (Rohmi et al., 2023; Zaouali et al., 2025).

The Fisher's exact test result showed no significant relationship between internalized stigma and relapse in schizophrenia patients. This result is inconsistent with earlier studies, which reported internalized stigma to be one of the determinants of relapse (Abdisa et al., 2020) (Barlati et al., 2022). However, descriptive trends showed that patients with severe internalized stigma experienced higher rates of relapse.

Bivariate analysis results also showed that family support was not significantly associated with relapse in schizophrenia patients. This finding contradicts previous studies that reported family support as an essential factor in preventing relapse in schizophrenia patients. Several studies have found that the type of family support (informational, appraisal, instrumental, and emotional support) is significantly associated with relapse. Therefore, family-based interventions have been widely developed to reduce relapse, especially in low-

and middle-income countries (LMICs) (Febriana et al., 2020; Iswanti et al., 2024; Kim & Park, 2023). Although the results of this study showed no relationship between family support and relapse, the descriptive trend indicated that patients who experienced relapse had poor family support.

Nurses and stakeholders should prioritize planning appropriate interventions to enhance medication adherence in schizophrenia patients. Reducing internalized stigma, as well as improving family support, is also crucial due to these descriptive trends, especially in low- and middle-income countries. This study has several limitations, including a relatively small sample size, respondents who were male patients, and a cross-sectional design that limits the ability to determine causal relationships or clarify the temporal sequence between predictors and recurrence.

CONCLUSIONS

Research results show that medication adherence is a predictor of relapse in schizophrenia patients. This implies that planning appropriate interventions to enhance medication adherence is crucial to reducing relapse.

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