

## EXTRAPYRAMIDAL SYMPTOMS AND ADHERENCE OF SCHIZOPHRENIA PATIENTS IN TAMPAN MENTAL HOSPITAL RIAU PROVINCE: A CROSS-SECTIONAL STUDY

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### ABSTRACT

Schizophrenia is a condition in the form of a collection of clinical symptoms that are varied, highly disturbing, psychopathology involving cognitive, emotional perception and other aspects of behavior. The management of schizophrenia therapy uses antipsychotics. The use of antipsychotics has extrapyramidal side effects that can affect patient medication compliance. This study aims to analyze the effect of extrapyramidal side effects on adherence to taking medication for patients with schizophrenia by comparing the incidence of extrapyramidal side effects and types of extrapyramidal side effects on adherence to taking patient medicines. This study is an analytic descriptive observational study with a cross-sectional approach. The study sample was schizophrenia patients who were hospitalized at Tampan Mental Hospital as many as 55 people who were taken by cluster sampling method. The results of data analysis showed that 48% of patients experienced extrapyramidal side effects with the types of extrapyramidal symptoms were pseudoparkinson 41.38%, akathisia 31.03%, acute dystonia 27.59% and dyskinesia tardif 0%. Meanwhile, patients with a high level of compliance amounted to 58.33% and low compliance amounted to 41.67%. Based on the incidence of extrapyramidal side effects on the compliance score, the value of  $p=0.105$  ( $p>0.05$ ) and the type of extrapyramidal side effects on the compliance score, the value of  $p=0.326$  ( $p>0.05$ ). Based on the results of the study, it is known that the incidence of extrapyramidal side effects and the type of extrapyramidal side effects do not affect the medication adherence score of schizophrenia patients at Tampan Mental Hospital, Riau Province.

**Keywords:** adherence; extrapyramidal symptoms; schizophrenia

### INTRODUCTION

Schizophrenia is a severe, lifelong disorder that affects cognitive, behavioral, and emotional functioning (Khan et al., 2015). The Food and Drug Monitoring Agency of the Republic of Indonesia has

reached 1,027,763 people in Indonesia. The prevalence of schizophrenia is 1.7 per mile, and Riau alone has a prevalence of mental disorders of 0.9 per mile (Primary Health Research, 2013). From medical record data

at Tampan Mental Hospital, Riau Province, schizophrenia is the most common mental illness, with the prevalence of schizophrenia in 2016, which is around 80.98%.

Antipsychotic treatment of schizophrenia is divided into two groups, namely typical and atypical groups. Typical groups are efficacious in overcoming positive symptoms but provide less response to negative symptoms, do not have a good effect on restoring cognitive function, and often cause side effects in the form of extrapyramidal side effects. On the other hand, atypical groups effectively overcome positive and negative symptoms, restoring cognitive function, and extrapyramidal side effects are minimal or practically nonexistent (Hawari, 2014).

Oktarina (2017) says that there is a strong relationship between the antipsychotic and the incidence of extrapyramidal symptoms, with typical antipsychotics causing the most extrapyramidal side effects. According to Cahyawati (2013), atypical antipsychotics are more likely to cause weight gain and abnormalities in glucose and lipid control.

The research results of Yulianty et al. (2017) showed 60% of patients experienced extrapyramidal side effects after using the typical antipsychotic haloperidol, 100% of patients experienced extrapyramidal symptoms after using the atypical antipsychotic clozapine, and 96% of patients experienced extrapyramidal symptoms after using the typical-atypical antipsychotic (haloperidol-clozapine). The results of research conducted by Srikandini (2017) show the percentage of each extrapyramidal symptom that appears, namely akathisia at 60.87%, parkinsonism at 28.26%, acute dystonia at 8.70% and tardive dyskinesia at 2.17%.

Ali et al. (2023) showed that 60.20% of schizophrenia patients had a low level of patient compliance. The causes of patient non-adherence were high among individuals who have schizophrenia. It was influenced by various factors such as single marital status, alcohol usage, Khat chewing, having no understanding of their condition, longer duration of treatment, substance users, those on antipsychotic polypharmacy, and those who develop extra-pyramidal side effects (Mohammed et al., 2024; Tamene et al., 2024). This study aimed to analyze the impact of extra-pyramidal side effects on medication adherence in schizophrenic patients by comparing the incidence of extrapyramidal side effects and the types of extrapyramidal side effects on patient medication adherence.

## RESEARCH METHODS

This study was observational, using the descriptive-analytic method and cross-sectional approach. It was conducted in the inpatient room of Tampan Mental Hospital Pekanbaru. The sampling technique was cluster sampling. The sample was 55 inpatients with the primary diagnosis of schizophrenia. The level of patient compliance was measured using a questionnaire tested for validity with  $r$  count  $>$   $r$  table (0.444) and a reliability value of 0.976. The occurrence of extrapyramidal effects was observed from the patient's medical record. Data were analyzed using the *chi-square test*.

## RESULT AND DISCUSSION

### Incidence of Extrapryamidal Symptoms

Based on Table 1, the results of data analysis obtained 51.67% of patients who did not get extrapyramidal symptoms.

**Table 1. Extrapryamidal Symptoms Incidence**

Incidence	Frequency (n=60)	Percentage (%)
Yes	29	48.33
No	31	51.67

This could be due to the use of antipsychotic combinations of antipsychotics as a therapeutic option in schizophrenia patients with a smaller possibility of extrapyramidal symptoms so that the incidence of extrapyramidal symptoms can be tolerated.

This is in line with the opinion of Morant et al. (2023), who said that most participants reported reduced adverse effects of antipsychotics with dose reductions, primarily in mental clouding, emotional blunting, and sedation, and some positive impacts on social functioning and sense of self.

Table 1 also shows that patients who suffered from extrapyramidal symptoms after receiving antipsychotic therapy amounted to 48.33%. The onset of EPS can be caused by 90% of patients using first-generation/typical antipsychotics, namely haloperidol and chlorpromazine. First-generation antipsychotics have more substantial extrapyramidal side effects than atypical antipsychotics.

Most researchers estimate that extrapyramidal symptoms present in about 90% of patients treated with the first-generation antipsychotics haloperidol and chlorpromazine (Poznic *et al.*, 2012). Haloperidol is an antipsychotic drug that belongs to the butyrophenone class, while chlorpromazine belongs to the phenothiazine class (Maslim, 2014). The difference between these two drugs is their affinity for binding to dopamine D2 receptors (Tardy *et al.*, 2012). Haloperidol is estimated to be 50 times more potent than

chlorpromazine. Each has a different affinity strength in binding to D2 receptors in the striatum, 70% for chlorpromazine and 90% for haloperidol. Thus, treatment with first-generation antipsychotics often causes side effects in the form of extrapyramidal symptoms that are greater (Dipiro *et al.*, 2009). Another possibility is that the patient has become resistant to treatment, so the use of drugs is no longer effective in managing the symptoms that appear (Oktarina, 2017).

Kawa (2016) said about the description of the use of typical antipsychotics and the incidence of extrapyramidal symptoms from October to December 2012 at Dr. Soeharto Heerdjan Mental Hospital, stated that haloperidol was the most antipsychotic used, namely 23% while chlorpromazine was 4% with extrapyramidal symptoms as many as 472 patients.

### **Extrapryamidal Symptom Types**

The study found that 48.33% of patients had extrapyramidal symptoms such as pseudoparkinson as much as 41.38%, akathisia by 27.59%, and acute dystonia by 31.03%, while symptoms of dyskinesia tardif were not found.

Many patients experience pseudoparkinsonian symptoms as extrapyramidal symptoms. These symptoms consist of tremors, bradykinesia, rigidity, and walking disorders. The large percentage of pseudoparkinson seen by patients can be due to the timing of the pseudoparkinson appearance within 5-30 days after treatment (Owens, 2014).

**Table 2. Extrapryamidal Symptoms Types**

Type of Extrapryamidal Symptoms	Frequency (n=29)	Percentage (%)
Akathisia	9	31.03
Acute dystonia	8	27.59
Tardive dyskinesia	0	0
Pesudoparkinson	12	41.38

From the data obtained, this study's post-post-parkinsonian incident occurred in

3-38 days. Maslim (2014) states that haloperidol is an antipsychotic that is



reported to most often cause neurological effects, namely extrapyramidal symptoms in the form of pseudoparkinson. Meanwhile, Yulianty (2017) said the incidence of pseudoparkinson occurred due to the use of a combination of antipsychotics. The more combinations used, the greater the risk of side effects.

This is in line with research conducted by Adhitia (2016) on the relationship between antipsychotic administration patterns and Parkinson's side effects, explaining that there is a relationship between the number of polypharmacy antipsychotic use is 56% more affected by pseudoparkinson side effects than the group that gets monotherapy administration patterns. The prevalence of psudoparkinson itself in the use of typical antipsychotics is up to 70% and with atypical antipsychotics is only 20% (Luft, 2014).

Another extrapyramidal symptom felt by schizophrenia patients is akathisia which refers to a state of restlessness or a lot of movement, pacing, raising legs as if walking in place, crossing and straightening legs while sitting or performing repetitive actions without purpose. The prevalence of akathisia after using typical antipsychotics is 68% and after using atypical antipsychotics only ranges from 11-15% (Luft, 2014).

The low percentage of akathisia symptoms compared to pseudoparkinsonian symptoms could be due to the timing of the appearance of akathisia symptoms which takes 1-3 weeks after antipsychotic use (Owens, 2014). The incidence of acute dystonia and akathisia was found to be 27.59% each. Acute dystonia shows anxiety,

stress, fatigue and stiffness of the face or neck. Dystonia can occur in limbs with abnormal postures. Luft (2014) states that the prevalence of acute dystonia after using typical antipsychotics is 10%. According to Owens (2014), the appearance of acute dystonia symptoms takes 5-60 days after the patient uses antipsychotics. The results showed acute dystonia occurred from day 16-38.

Extrapiramidal symptoms in the form of tardive dyskinesia were not found in this study because the symptoms of tardive dyskinesia are only seen if the patient uses antipsychotics for an extended period  $\geq 6$  months. In addition, the limited research time was conducted by researchers, so symptoms of tardive dyskinesia did not appear when the study was conducted. Another reason is that the average length of stay of patients in the hospital is 2-3 months, so dyskinesia symptoms have not been seen while the patient is still hospitalized. This side effect needs to be considered in choosing the right antipsychotic for the patient. However, if the use of antipsychotics cannot be avoided, then additional drugs can be used to limit side effects (Ikawati, 2014).

### Patient Medication Adherence Level

Based on Table 3, 58.33% were classified as high compliance with taking medication. This is due to the total value of factors influencing patient compliance, namely drug use and individual and environmental factors. Karabulut & Uslu (2024) said that 48% of patients were compliant with the drugs consumed.

**Table 3. Patient Medication Adherence Level**

Adherence Level	Frequency (n=60)	Percentage (%)
Low	25	41.67
High	35	58.33

The second factor that causes patients to adhere to taking medicine, based on the results of the questionnaire, is that patients do not forget to take medicine, do not have

to be forced and supervised to take medicine independently, and adequately ask the nurse for medicine. This is by Fleischhacker *et al.* (2003), who stated that individuals are one



of the factors that can affect patient medication compliance. Family support is one factor influencing patient compliance in taking medication (Eltrikanawati, 2022; Juwita, 2018; Mailani dan Andriani, 2017). The causes of problems in caring for schizophrenic clients are low knowledge, relapse, and financial issues (Dewi, 2018).

The third factor that can affect patient compliance in taking medication is environmental factors. The Food and Drug Administration (2006) states that the environment is essential to patient compliance. From Figure 3, 41.67% were classified as low compliance in taking medication. The existence of non-compliance or patients who have low compliance can be seen from the total mean value of factors that influence compliance, namely health workers.

Fleischhacker et al. (2003) stated that the quality of interaction between patients and health workers determines the degree of

compliance; providing complete information about drugs from health workers can cause patient non-compliance with medication-counseling health workers and increase patient compliance ( $p=0.034$ ) (Juwita, 2018).

### **The Incidence and Type of Extrapryamidal Symptoms to Adherence Level for Schizophrenia Patients**

Based on the results of statistical tests to see the effect of the incidence of extrapryamidal symptoms on adherence, a significance value of  $p = 0.105$  ( $p > 0.05$ ) was obtained, meaning that there was no significant difference between the incidence of extrapryamidal symptoms and the patient's medication adherence level. This is due to the highest mean value of the factors affecting patient adherence, namely drugs consumed, environment, individual, disease, and health workers.

**Table 4. The Incidence and Type of Extrapryamidal Symptoms to Adherence Level for Schizophrenia Patients**

Number	Extrapryamidal Symptoms	Adherence Level				P	Conclusion	
		Low		High				
		n	%	n	%			
1	Incidence	Yes	15	51.72	14	48.28	0,105	not significant
		No	10	32.26	21	67.74		
2	Type	Akathisia	6	66.67	3	33.33	0,326	not significant
		Acute dystonia	5	62.50	3	37.50		
		Tardive dyskinesia	0	0	0	0		
		Pesudoparkinson	4	33.33	8	66.67		

*n: Frequency, %: Percentage*

The presence of 46 out of 55 relapsed patients in this study also makes the reason for the appearance of extrapryamidal symptoms more minor because patients are thought to have tolerated the extrapryamidal effects of antipsychotics. In line with research by Oktarina (2017), another cause of the absence of extrapryamidal symptoms is the patient who has resistance to treatment. Hence, the use of drugs no longer causes extrapryamidal symptoms. From the

data recapitulation, 22 patients use extrapryamidal restriction drugs so that they can prevent the appearance of extrapryamidal symptoms. The doctor's speed in dealing with extrapryamidal symptoms that appear so that extrapryamidal symptoms do not occur protracted. So that this does not interfere with patient compliance when taking medication. From the results of statistical tests conducted to see the effect of the type





of extrapyramidal symptoms on patient medication compliance, a significant value of  $p = 0.326$  ( $p > 0.05$ ) was obtained. This shows that there is no significant difference between the types of extrapyramidal symptoms and patient medication adherence. The absence of substantial differences in the four types of extrapyramidal symptoms, namely acute dystonia, akathisia, pseudoparkinsonian, and tardive dyskinesia, can be caused by the duration of the occurrence of extrapyramidal symptoms that are not long, where the duration of occurrence of extrapyramidal symptoms is only a matter of days. The rapid treatment of extrapyramidal symptoms by doctors by reducing the frequency of antipsychotics, replacing antipsychotics suspected of causing extrapyramidal and providing extrapyramidal restriction drugs so that the types of extrapyramidal symptoms that appear do not occur long and do not affect patient adherence.

Following the discussion, the highest average value of factors affecting patient adherence is the drugs consumed, the environment, the individual, the disease, and health workers. So, the high adherence of schizophrenia patients at Tampan Mental Hospital is due to many other factors that also affect patient compliance.

## CONCLUSION

According to the previous discussion, the highest average value of factors affecting patient adherence is the drugs consumed, the environment, the individual, the disease, and health workers. So, the high adherence of schizophrenia patients at Tampan Mental Hospital is due to many other factors that also affect patient compliance.

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