

FACTORS ASSOCIATED WITH RELAPSE OF PERSONS WITH SCHIZOPHRENIA AFTER DISCHARGE FROM PSYCHIATRIC INPATIENT CARE

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Abstract

Background and Hypothesis: Schizophrenia is a chronic condition with high risk of relapse, affecting the lives and careers of those afflicted along with their carers. In the context of Surin hospital, 4.6% of patients with schizophrenia experience relapses within 6 months after discharge from hospital inpatient care. The knowledge regarding factors associated with relapses after discharge from inpatient admissions can prove useful for monitoring and management to reduce the risk of relapses in such patients.

Purpose: To explore the factors associated with relapse of persons with schizophrenia after discharge from psychiatric inpatient care.

Study Design: An etiological study using retrospective matched data case-controls at Surin hospital. Patients with schizophrenia exhibiting relapse within 6 months after discharge from the psychiatric ward between the year 2020-2021 were selected from our database with a ratio of 5 controls to 1 case. The analysis for this etiology study was performed using logistic regression, expressing values in odds ratio, 95% confidence intervals and P values.

Study Results: Of the 817 schizophrenic patients in this study, 263 patients suffered from relapses while 554 patients did not. The factors associated with relapses include the average duration of inpatient admission and duration of illness, the number of psychiatric admissions, discontinuity of medication intake, and the presence of psychiatric comorbidities.

Keywords: Schizophrenia; Relapse; Hospitalization; Exacerbation; Admission

Introduction

Schizophrenia is a chronic condition found in 1% of the population (Jablensky *et al.*, 1992). It is an entity within a larger set of psychotic disorders predominantly featuring thought disorder in the form of disorganized speech, hallucination,

abnormalities in mood and affect, behavior and psychomotor manifestations, in addition to cognitive functioning. The effects of schizophrenia on a patient are often chronic and severe. Schizophrenia carries a high risk of relapse,

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(Moges *et al.*, 2021; Robinson *et al.*, 1999) in the space of 1 year it was found that relapses occur in about 31-37% of patients (Bergé *et al.*, 2016; Suzuki *et al.*, 2023). Furthermore, the life-time risk of relapse is 70% (Wiersma *et al.*, 1998). In context of patients discharged from hospital, it was found that the rate of readmission of patients with schizophrenia was 7.2% and 15.2% within 28 days and 90 days of discharge, respectively. In the context of Surin hospital, the rate of relapse was 4.6% at 6 months after being discharged from hospital.

The relapse of schizophrenia has varying definitions in previous studies, the most commonly found description is an increase in positive symptoms leading to hospital admission (José *et al.*, 2013). The consequences of relapse are profound on a patient's livelihood, career, relationships, confining their lives to hospital treatment, deteriorating their intellectual and cognitive function, causing financial burden and caring needs for their families (Pigott *et al.*, 2003; Kane, 2007; Pompili *et al.*, 2007; Hong *et al.*, 2009). Ultimately, these consequences lead to a reduced quality of life (Almond *et al.*, 2004; Awad and Voruganti, 2008; Funk, 2008; Kazadi *et al.*, 2008; Adebisi *et al.*, 2018). It was found that factors associated with relapse mentioned in literature consisted of duration of illness, alcohol consumption after discharge, number of psychiatric admissions, discontinuity of medication intake, psychiatric comorbidities such as anxiety and depression, type of antipsychotic drugs, young age, male gender, history of receiving antipsychotic drug injections. (Burns *et al.*, 2000; Rabinowitz *et al.*, 2001; Falkai *et al.*, 2005; Uçok *et al.*, 2006; Kazadi *et al.*, 2008; Morken *et al.*, 2008; Alvarez-Jimenez *et al.*, 2012; Emsley *et al.*, 2012; Moges *et al.*, 2021). A review of previous literature to date suggests that numerous studies on factors associated with the risk of relapse in patients with schizophrenia in an outpatient setting but few have examined from the perspective of relapses in the aftermath of being discharged from a hospital inpatient setting. Obtaining knowledge in this less-known aspect of relapse can prove useful in the monitoring and management of patients with schizophrenia, preventing them from further relapse.

Materials and Methods

An etiological study using retrospective matched data case-controls at Surin hospital between the year 2020-2021. Patients with schizophrenia exhibiting

relapse within 6 months after discharge from the psychiatric ward. Relapse in this study is defined as an increase in positive symptoms requiring hospital admission (Jørgensen *et al.*, 2020).

These cases were selected by acquiring all patients with schizophrenia that were readmitted and filtering out patients that did not have an increase in positive symptoms. Controls were selected based on having similar dates of discharge to the study cases but did not qualify as having relapses in a ratio of 5 to 1.

Data from medical records were recorded for gender, age, antipsychotic and mood stabilizing drugs, usage of long acting medications, duration of admission, duration of illness, history of alcohol consumption after discharge, number of admissions to the psychiatric ward, continuity of medication intake, and psychiatric comorbidities. The sample size was estimated under the assumptions that a relapse of schizophrenia and those without relapse had an average duration of admission of 14.95 (SD 8.5) and 12.58 (SD 5.3), respectively. The estimation also assumed a two-sided test with, accepting significance at P value <0.05 and power of 0.80 resulting in the ratio of case controls of 1 case per 5 controls. Hence, an estimated sample size of 109 cases to 545 controls was proposed to cover the variables of gender, use of mood stabilizers, presence of long acting drugs, average duration of admission, duration of illness, alcohol consumption after discharge, continuity of medication intake. However, the estimated sample size was not large enough to achieve statistical significance to cover variable of age. The analysis for this etiology study was performed using logistic regression, expressing values in odds ratio, 95% confidence intervals and P values. In Table 1.

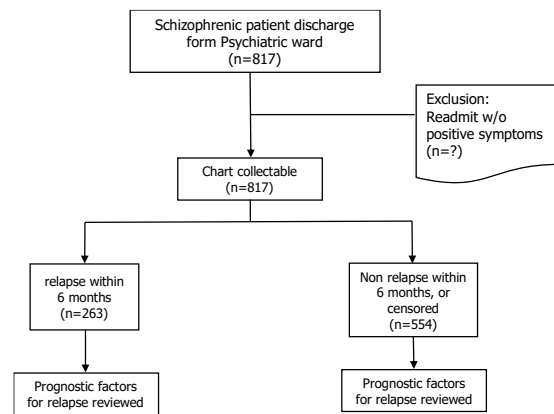
This table details the demographic and clinical characteristics influencing relapse in schizophrenia patients. The factors like the number of previous hospital admissions and compliance with medication regimen are critically important. The presence of statistically significant predictors such as 'Long duration of illness' 'Length of stay' and 'Compliance with drug regimen' with p-values indicating strong evidence against the null hypothesis, highlights areas where healthcare interventions can be strategically focused to mitigate relapse risks. highlights the impact of clinical practices and patient behaviors on relapse rates. Particularly, length of stay, the duration of illness, number of previous admissions, psychiatric comorbidities and drug compliance are strongly associated with relapse. In Table 2, Figure 1.

Table 1. Shows characteristics of the participants

Predictors	Relapse (n= 263)	Non-relapse (n=554)	p-value
Gender			
Male	201(76.4)	393(70.9)	0.11
Female	62(23.6)	161(29.1)	
Age(year), (mean±SD)	38.9±12.3	39.3±11.0	0.66
≤20	7(2.7)	11(2.0)	0.13
21-40	144(54.8)	304(54.9)	
41-60	94(35.7)	220(39.7)	
≥60	18(6.8)	19(3.4)	
Type of Antipsychotic			
1 st generation	98(37.3)	250(45.1)	0.07
2 nd generation	79(30.0)	135(24.3)	
mixed	86(32.7)	169(30.6)	
Be prescribed the mood stabilizer			
No	150(57.0)	350(63.2)	0.091
Yes	113(43.0)	204(36.8)	
Be prescribed long acting			
No	171(65.0)	382(69.0)	0.262
Yes	92(35.0)	172(31.0)	
Length of stay (day), (mean±SD)	14.2(9.0)	12.9(6.8)	0.02
Duration of illness (year), (mean±SD)	6.3(2.3)	5.2(2.6)	
<5	60(22.8)	224(40.4)	0.000
≥5	203(77.2)	330(59.6)	
Alcohol consumption after discharge			
Yes	143(54.4)	329(59.4)	0.197
No	120(45.6)	225(40.6)	
Number of previous admissions, (mean±SD)	7.4(5.3)	3.3(3.2)	0.0000
1-2	37(14.1)	309(55.8)	0.000
3-4	65(24.7)	123(22.2)	
≥5	161(61.2)	122(22.0)	
Drug compliance			
Poor	201(76.4)	378(68.2)	0.013
Well	62(23.6)	176(31.8)	
compliance			
Psychiatric comorbidities			
No	252(95.8)	53(9.8)	0.000
Yes	11(4.2)	1(0.2)	

Table 2. Shows analyzed factors using logistic regression

Characteristics	OR	95%CI	P-value
gender	1.33	.95–1.86	0.097
age			
≤20	1.00	references	–
21-40	7.44	0.28–1.96	0.550
41-60	0.67	0.25–1.79	0.425
≥60	1.49	0.47–4.68	0.496
antipsychotics	1.15	.97–1.37	0.109
Mood stabilizer	0.77	.57–1.04	0.093
Long acting	0.83	.61–1.13	0.241
Length of stay (day)	1.02	1.00–1.04	0.025
Duration of illness (year)	2.64	1.92–3.63	0.000
<4	1.00	References	–
≥5	2.30	1.64–3.21	0.000
Alcohol consumption after discharge	1.23	.91–1.65	0.176
Number of previous admission			
1-2			
3-4	4.41	2.80–6.95	0.000
≥5	11.02	7.28–16.68	0.000
Drug compliance	1.49	1.07–2.08	0.018
Psychiatric comorbidities	19.59	2.47–155.49	0.000

**Figure 1. Data Collection and Analysis Flow Diagram**

Conclusions

This study was performed in the inpatient setting of patients with schizophrenia after discharge from hospital with a follow up period of 6 months. The controls were matched with the cases using similar dates of discharge in a ratio of 5 to 1. The study revealed that significant factors associated with relapse in patients with schizophrenia included the average duration of admission, duration of illness, number of psychiatric admissions, continuity of medication intake and presence of psychiatric comorbidities. These findings are in line with previous literature (Burns *et al.*, 2000; Rabinowitz *et al.*, 2001; Falkai *et al.*, 2005; Uçok *et al.*, 2006; Kazadi *et al.*, 2008; Morken *et al.*, 2008; Alvarez-Jimenez *et al.*, 2012; Emsley *et al.*, 2012; Moges *et al.*, 2021).

Schizophrenia patients with a duration of illness over 5 years carries an odds ratio of 2.3, compared to the duration of illness of less than 5 years. Furthermore, the factor of having greater than 5 psychiatric admissions carries an odds ratio of 11.02 compared to those with a history of 1-2 admissions. Patients with a presence of psychiatric comorbidities carry an odds ratio of 19.59 compared to those without.

Patients with schizophrenia tend to have a long history of illness, many are found to have negative symptoms affecting their career, productiveness, interpersonal relationships and poor quality of life, they are often found to have coexisting depression (Jablensky *et al.*, 1992; Moges *et al.*, 2021). These patients often find the continued medication intake tiresome and many have poor insight to their own afflictions (Suzuki *et al.*, 2023). Consequently, these patients often become non-compliant to their medications greatly increasing their chances of multiple relapses.

Alcohol consumption after hospital discharge was not found to be significantly associated with relapse in schizophrenia. The study finds that alcohol consumption post-hospital discharge did not significantly correlate with schizophrenia relapse may stem from various issues. One potential factor is the method used to quantify and record alcohol consumption. Inaccurate or insufficiently detailed measurements may not effectively capture relevant consumption patterns or levels that influence the risk of relapse. Additionally, patient underreporting of alcohol use, a common occurrence in studies dependent on self-reported data, can lead to discrepancies between reported and actual consumption, thereby skewing the analysis and obscuring any real impact of alcohol on relapse outcomes.

Possible factors must be further explored for each patient. Some individuals may be prone to giving inaccurate information due to their psychiatric conditions, or their relatives may not have provided reliable information due to lack of witnessing. This causative factor should be further explored with cohort studies.

Previous studies suggested that receiving 2nd generation antipsychotic drugs can reduce the chance of relapse in schizophrenia, however, the data in this study has not found any particular form of antipsychotic drugs to have a significant effect on this aforementioned effect. Possible explanations for this may be due to the fact that the 2nd generation antipsychotic drugs used in this study consisted of Quetiapine, Risperidone, and Clozapine. While patients in previous studies have been prescribed Sertindole, Ziprasidone, and long-acting Risperidone and Olanzapine (Taishiro *et al.*, 2013). Each medication has its own unique pharmacological effects and side effects, and should not be analyzed collectively as second generation antipsychotic drugs. Further studies should be examining the effects on relapse for each individual antipsychotic drug.

Patients afflicted by schizophrenia for 5 years or longer, those with 3 or more admissions to psychiatric inpatients, those with discontinuity of medication intake, and those with psychiatric comorbidities are at the highest risk of relapse after discharge from hospital.

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