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Medication Adherence And Its Associated Factor: A Cross-Sectional Study Among Patients with Schizophrenia

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Abstract

Schizophrenia is a chronic severe psychiatric disorder. Antipsychotic medications are a highly efficacious modality of treating patients with schizophrenia. Non-adherence to antipsychotic medication is a critical problem leading to increased relapse rate, hospitalization rate, and health care costs. Non-adherence is caused by multi-factors and might be varied within the globe. Assessing non-adherence and influencing factors would help in framing preventive strategies. This cross-sectional study involved 100 patients with schizophrenia fulfilling inclusion criteria. Patients' demographics, clinical parameters, and prescribed drugs were collected. Medication adherence was assessed using the MARS scale (medication adherence rating scale) and symptom severity by PANSS (positive and negative symptom scale). Statistical analysis was done to identify the potential predictors of non-adherence to antipsychotic medication. The correlation of medication adherence with severity of illness was tested. Males were significantly associated with decreased likelihood of being non-adherent with odds ratio of 0.095 (0.014, 0.667) p value of 0.018. An increase in positive and cognitive scores was significantly associated with higher odds of being non-adherent with OR of 1.188 (1.044, 1.325) p-value 0.009 and OR 1.258 (1.073, 1.475) p value 0.005. From this study, non-adherence to medication was noted in 45% of the study population. Thus, strategies need to be framed for regular monitoring and follow-up of female patients on antipsychotics and patients with high PANSS. These steps could reduce the frequency of non-adherence among patients with schizophrenia.

Keywords: achizophrenia; antipsychotics; non-adherence; factors influencing; symptom severity; MARS score.

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Introduction

Schizophrenia is a psychotic mental disorder that causes significant disability. The international prevalence of schizophrenia among non-institutionalized persons is 0.33% to 0.75%.[1] In India, the prevalence was estimated to be 0.3%, with disability-adjusted life years of 9.8%.[2] Antipsychotic medications are a highly efficacious modality of treating patients with schizophrenia. They effectively treat acute episodes of psychosis by preventing relapse, reducing the risk of relapse in both first-episode and chronic schizophrenia. But, non-adherence to antipsychotic medication is a highly prevalent global challenge. This condition is estimated to be 50%, ranging widely from 4% to 72%.[3] While, various single-centered Indian studies have reported non-adherence cases reached 40-60% of population.[4-6]

Non-adherence to medication has been reported to increase the risk of relapse, use of emergency psychiatric hospitalization, self-harm, violence, victimization, and substance use leading to poorer quality of life. Thus, this can substantially negatively impact patients' health and functioning and have economic implications for society.[7] Reducing non-adherence to antipsychotic medications can decrease psychiatric morbidity and financial burden substantially.

Several factors have been identified that may influence adherence behavior in patients. It is important to identify the key factors contributing to non-adherence to medication in schizophrenia so that the interventions can be designed to achieve desired treatment goals for patients, health care providers, policymakers, and health program planners. Hence, the present study was conducted to assess the frequency of non-adherence to antipsychotic medication and the factors influencing it. The study results have been expected to frame strategies to improve non-adherence to antipsychotic medication among patients with schizophrenia.

Methods

This cross-sectional study was conducted at Bangalore Medical College and Research Institute from November 2017 to August 2018. About 100 patients diagnosed with schizophrenia who met the ICD X criteria were included in this study. The patients were willing to provide informed consent, comprehend the questionnaire with reliable informants, and take antipsychotics for at least six months; patients aged 18 to 65 years old were included in the study. The study was conducted after obtaining approval from the institutional ethics committee.

The medication adherence was assessed using the Medication adherence rating scale (MARS) score, and patients' symptom severity was evaluated using the positive and negative symptom scale (PANSS) score. MARS score has ten items, patients scoring equal to or less than five were considered non-adherent. PANSS score has 30 items, with positive, negative, and cognitive symptoms sub-scores. In-depth interviews with participants and caregivers were individually conducted.

Sample Size Calculation

Using the prevalence (p) of 50%, q of 50%, relative precision (d) as 20% of p, the minimum sample size required was 100 (formula $N=Z21-\alpha/2\times P(1-p)/ d2$)

Statistical Analysis

Results were shown as percentages, as mean and standard deviation (SD) for continuous parametric variables. Comparisons between the adherent and non-adherent groups were performed using the chi-square (non-parametric variables) and t-tests (parametric variables) as appropriate. Bivariate analysis

Table 1. Characteristics Schizophrenia Patients by Adherence Behavior to Antipsychotic Medication

Characteristics		Adherence Behaviour to Antipsychotic Medication		Chi Square Value	P-value *
		Adherence (n=55)	Non-adherence (n=45)		
Gender	Male	37	24	2.02	0.155
	Female	18	21		
Residence	Rural	25	31	5.51	0.019*
	Urban	30	14		
Marital status	Unmarried	23	21	1.346	0.510
	Married	23	14		
	Others	19	10		
Educational status	Illiterate	8	9	3.07	0.38
	primary	8	2		
	secondary	25	21		
	Graduate and above	14	13		
Family History of Mental illness	No	40	24	4.04	0.044*
	Yes	15	21		
Comorbid conditions	0 (absent)	39	39	3.581	0.051
	1 (present)	16	6		
History of substance abuse	No	36	29	0.011	0.916
	Yes	19	16		
SES#	LSES	40	34	0.103	0.748
	MSES	10	10		
	USES	5	1		

*- p value of less than 0.05 was kept as level of significance LSES= lower socioeconomic status; MSES= middle socioeconomic status; USES= upper socioeconomic status

was used to identify the association between the exploratory variables and adherence. Binary logistic regression analysis was used to determine the predictors of treatment adherence. p-value < 0.05 will be considered statistically significant.

Results and Discussion

Patients' adherence to antipsychotic medications is important for preventing relapse or associated risk of decreased quality of life. A total of 100 patients were included in this study. The mean age of the patients was 38 years, with a male preponderance. The MARS scores showed 55% were adherent, while 45% were non-adherence to antipsychotic medications.

The adherence behavior in schizophrenia is multi-factorial and complex to understand the underlying mechanisms. A previous study conducted in the same center showed that the patients' lack of insight and medication attitude was shown to play an important role in the patients' adherence behavior.[8]

As shown in Table 1, patients who lived in urban areas were more likely to adhere to their medication therapy than those who lived in rural areas. This might be due to limited access to health care, lack of community awareness, cultural beliefs, and financial constraints. Patients with a significant family history of mental illness were significantly non-adherent to the

Table 2. Characteristics and Treatment of Schizophrenia Patients by Adherence Behavior to Antipsychotic Medication

Characteristics	Adherence (n=55)	Non-Adherence (n=45)	U	P
	Median (Q1, Q3)	Median (Q1, Q3)	VALUE	VALUE
Age	40 (30.0,46.1)	35 (26.0,44.0)	965.5	0.095
PANSS score	42 (34.0,47.00)	76(65.0,90.0)	202.5	<0.001*
Positive score	9 (7.0,13.0)	22 (16.5,27.0)	240.5	<0.001*
Negative score	11(7.0,13.0)	22 (15.0,26.5)	462	<0.001*
Cognitive score	17 (16.0,21.0)	35 (28.5,43.0)	181.5	<0.001*
Duration of illness	5 (3.0,13.0)	6 (2.25,10.0)	1144.5	0.644
Total no of drugs	3 (2.0,4.0)	3(2.5,4.0)	930.5	0.028*
Total no of antipsychotics	1 (1.0,2.0)	2 (1.0,2.0)	777.5	<0.001*

* p value of less than 0.05 was considered significant; # u value derived from Mann Whitney u test.

medication. Schizophrenia has been shown to have a strong genetic influence. The presence of family history has been highly associated with more severe illnesses that negatively impact medication adherence. Family plays a crucial role in providing medications to the patients. If the caregivers are also affected by symptoms, there might be a lack of family involvement, resulting in non-adherence.[9-11]

The factors which are associated with non-adherence to antipsychotic medication are patient-related factors like age, gender, educational status, and economic status of the patients; environment-related factors, mainly poor familial and social support; physician-related factors like poor relation with a therapist, inadequate discharge planning; treatment-related risk factors like adverse effects, complex medication schedule.[7]

Patients who were non-adherence to medication had higher PANSS scores, with higher positive, negative, and cognitive sub-scores. It is self-explanatory that non-adherence to antipsychotic medication results in worsen symptoms as the medication plays a key role in controlling them. Studies have shown that 20% reduction in adherence increases PANSS by 3 points.

Positive symptoms such as hallucinations, delusions, hostility and aggression, suspiciousness, and thought disorder; affect patients to lack awareness of surroundings and reality. This directly interferes with the intake of medications. Suspiciousness was the most common positive symptom among the positive symptoms observed in the non-adherent subjects. Most of the patients refused to take medications due to suspicion toward the caregivers. Cognitive scores have many components that need to be assessed, like; as anxiety, disorientation, insight, etc. Insight is a significant factor associated with non-adherence. Lack of illness insight has been directly associated with non-adherence.

Table 3. Predictors of Non-adherence to Medication

Predictors			Sig.*	ORϵ	95% C.I. for OR
Age			0.898	.995	(0.914,1.082)
Gender	Male Female	Ref	0.018*	.095	(0.014, 0.667)
Residence	Rural Urban	Ref	0.069	6.523	(0.865, 49.183)
Family History of MI	Present Absent	Ref	0.228	.284	(0.037, 2.197)
Past history	Present Absent	Ref	0.963	.952	(0.118, 7.70)
Positive score			0.009*	1.188	(1.044, 1.352)
Negative score			0.319	1.073	(0.934, 1.233)
CGP score			0.005*	1.258	(1.073, 1.475)
Total no of drugs			0.398	.634	(0.22, 1.824)
Total no of Antipsychotics			0.351	2.983	(0.300, 29.715)

ϵ OR odds ratio. 1 coded as nonadherent, 0 as adherent; *p- value of 0.05 was the level of significance

Table 4. Correlation of MARS score with PANSS Score Components

Gender	Pearson correlation coefficient		PANSS Positive Score	PANSS Negative Score	PANSS Cognitive Score
Spearman's correlation value	MARS Score	Correlation coefficient	0.0350		
		Significance	<0.001*	<0.001*	<0.001*
		N	100	100	100

*2 tailed significance – significant at 0.001
MARS Score- medication adherence rating scale score
PANSS- positive and negative symptom score
-values denotes negative correlation, ie.. as MARS decreases PANSS score increases.

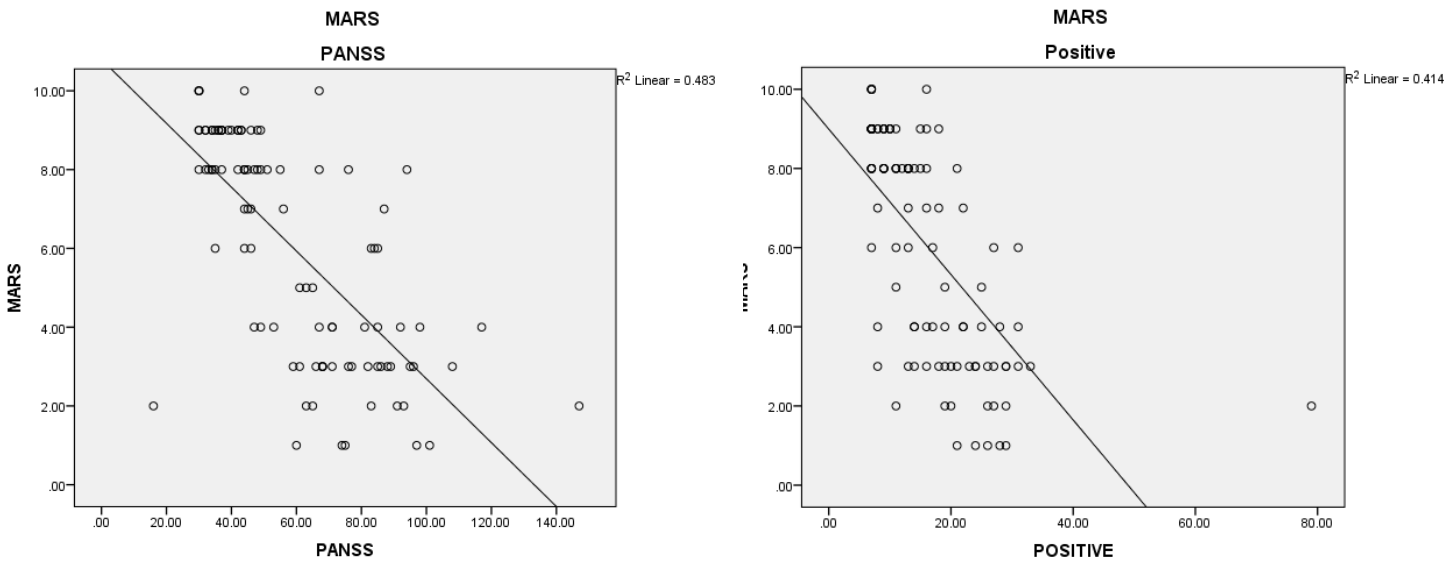

Figure 1. Correlation of Positive and Negative Symptom Score and Medication Adherence Rating Scale Score

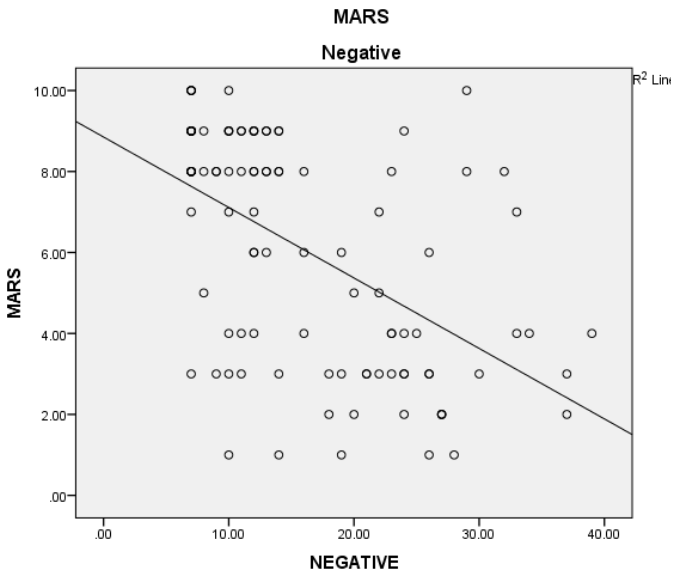

Figure 2. Scatter Plot Depicting Correlation of Negative Component of PANSS Score with MARS Score

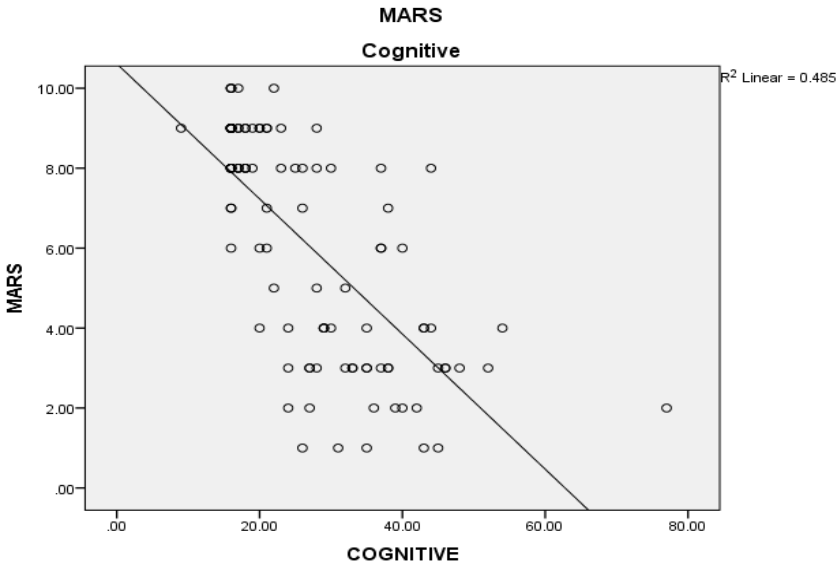

Figure 3. Scatter Plot Depicting Correlation of Cognitive Component of PANSS Score with MARS Score

These patients are unaware of the symptoms or refuse to accept the illness. Therefore, they are less motivated to take medications. Negative symptoms were significantly higher in a non-adherent group than in the adherent group but were not a potential predictor. This possibly is because patients with negative symptoms are depressed and socially withdrawn. But, they may not refuse or resist medications when given by the caregivers.[12–15]

The total number of drugs and antipsychotics prescribed for the non-adherent group was significantly higher than the adherent group. Patients on antipsychotic polypharmacy might experience higher rates of adverse effects leading to non-adherence. Non-adherent patients have severe symptoms and acute psychiatric admissions leading to antipsychotic polypharmacy.[16] (Table 2)

Binary logistic regression analysis showed that female gender, positive, and cognitive sub-scores of PANSS were predictors of non-adherence among patients with schizophrenia (Table 3).

In this study, the correlation of PANSS with MARS score was evaluated. (Figure 2) The scatter plot depicted a negative correlation between PANSS score with the MARS score. This indicates that when the symptom severity is high (PANSS score), the MARS score is low, which indicates that the patient is non-adherent to medication. The scatter plots show a significant negative correlation of the positive component, negative component, and cognitive component of PANSS score with MARS score. (Figures 1,2,3)

A study by Stentzel et al. reported that significant positive determinants for medication adherence were older age, being employed, higher level of global functioning, social support, and intake of typical antipsychotics, while the negative factor was the female gender.[17]

An observation study in Singapore in mental health settings reported that insight, religion, side effects, types of antipsychotics, social support from significant others, and nurse-client relationship, were significant predictive factors for medication adherence in schizophrenia.[18]

The factors consistently associated with non-adherence to medication in patients with schizophrenia are lack of insight, attitudes towards their illness and the medication, past experiences with their illness and its treatment, substance abuse, adverse drug reactions, and lack of social support. However, socio-demographic factors of the patients are not consistent predictors of poor adherence.[19,2]
The present study was the first attempt in our hospital to identify factors influencing non-adherence. The predictors of non-adherence were identified in a naturalistic design, and therefore results closely match clinical reality. The predictors were identified after statistically adjusting for other risk factors. But, the study was single-centered, so results cannot be generalized. It's a cross-sectional study, and hence causality of exposure to outcome could not be established.

Conclusion

About 45% of the patients included in the study were non-adherence to antipsychotic medication. Female gender and higher positive and cognitive sub-score of PANSS were the predictors of non-adherence in the present study. These findings corroborate with the existing literature. Strategies need to be framed for regular monitoring and follow-up of female patients on antipsychotics and patients with high PANSS. These steps could reduce the frequency of non-adherence among patients with schizophrenia in our institute.

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Conflict of Interest
None

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