ORIGINAL ARTICLE

Factors Affecting Adherence to Oral Medications in Chronic Psychiatric Patients at a Tertiary Care Hospital in Western India: A Cross-Sectional Study

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Abstract:

Background: Adherence to Medications has been identified as an important factor in determining the course of psychiatric illness and future recovery. Despite this fact, lower adherence rates have been reported.

Aim: To determine the level of adherence to oral medications in chronic psychiatric patients and to assess factors affecting adherence.

Methods: A cross-sectional study was conducted on 225 patients diagnosed with and on treatment for Psychiatric Conditions for more than three months at the Outpatient Department of Psychiatry of a tertiary care hospital in Western India from September to October 2023. Data were collected using a Case Report Form and a standardized Adherence to Refills and Medications Score (ARMS) Questionnaire. Both bivariate and multivariate logistic regression were used. Variables with p-value < 0.05 were considered statistically significant.

Results: Majority of the study population (87.6%) was found to be non-adherent. Through univariate logistic regression, it was found that the female gender (OR: 2.425; 95% CI: 1.020 – 5.766), higher education of head score (OR: 2.410; 95% CI: 1.063 – 4.758), and lesser number of class of medications (OR: 2.315; 95% CI: 1.037 – 5.166) were significant predictors of adherence. Multivariate logistic regression showed that higher education of head score (AOR: 2.705; 95% CI: 1.144 – 6.398) and lower frequency of consumption of medications (AOR: 0.335; 95% CI: 0.135 – 0.829) were associated with better adherence.

Conclusion: The study showed that further improvements in adherence are required. Factors contributing to non-adherence should be assessed and intervened.

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INTRODUCTION

Despite the significant progress made in the development of psychopharmacological agents in treating psychiatric patients, adherence to the prescribed treatment remains a humongous problem. WHO says adherence among patients suffering from chronic diseases averages about 50% in developed countries and the problem is even greater in developing countries where there is a scarcity of health resources and disparities in access to said limited resources.[1] It also often is the single greatest determinant of the effectiveness of prescribed psychiatric medication in the clinical setting.[2]

Medication Adherence is defined by the WHO as "the degree to which the person's behaviour corresponds with the agreed recommendations from a health care provider." It includes taking the prescribed number of pills each day and the timing of doses.[3] Medication nonadherence rates are significant among psychiatric patients. A review article mentioned how non-adherence ranges between 28% - 52% for major depressive disorder, 20%-50% for bipolar disorder, 20% - 72% for schizophrenia, and about 57% for anxiety disorders.[4]

The factors influencing adherence range from "sociodemographic (age, gender, and education), clinical (diagnoses, drug treatment, and treatment duration), attitudinal (attitudes toward psychopharmacological medication and preferences regarding participation in decision-making) to the perception of control over health (health locus of control, self-efficacy, and psychological reactance)."[5] A complex interplay of all these variables amounts to the actual adherence of the patient to the prescribed medication. Because nonadherence as a clinical problem is multifactorial, an individualized approach to assessment and treatment, developed in the context of an ongoing physician-patient relationship, is optimal. When nonadherence is differentially diagnosed, causative factors that are assumed to be present in each patient should be the focus of therapy, thus individualized interventions are the way to go.[6]

This nonadherence to psychiatric medications or treatments in turn takes a significant toll on the patient. It greatly affects the course of psychiatric illness, relapse & rehospitalization, and future recovery. In addition, there can be a profound impact on the cost of care and the patient's long-term functioning, be it social, vocational, or academic. It is also linked to violence such as reported aggression and arrests[8], suicide[9], and increased mortality in patients nonadherent to drug therapy.[10]

As is evident from above, the alarming degree of the nonadherence problem in clinical practice, its potentially dire consequences, and the high costs associated with it make it a worthwhile topic to explore. And this is what this study aims to do: quantify the adherence levels and determine the factors influencing it at an outpatient clinic in Western India. Improved understanding of the magnitude and underlying reasons for nonadherence would help design relevant & effective interventions. The WHO Report also emphasizes that increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments

METHODS

Study Design, Period, and Area

An institutional-based cross-sectional study was undertaken at the Psychiatry Outpatient Department from September to October 2023. Patients willing to participate in the study, with ages more than 18 years, diagnosed with a Psychiatric Condition, and who were on medications for the same for more than 3 months by a qualified psychiatrist, were included in the study. Patients unwilling to participate and those aged less than 18 years, were excluded.

Sample Size Determination and Technique

We determined the sample size using the Daniel Sample Size Formula, based on the 16.5% prevalence[11] of Chronic Psychiatric Patients; with 95% CI and 5% marginal error. The sample size was determined to be 221.

Data Collection Procedures and Instruments

Data was collected using a pretested structured questionnaire through face-to-face interviews with four trained medical students after obtaining written informed consent. The following are the assessment instruments: -

1. Case Report Form
   It was developed by the investigator and contains information about the patient's sociodemographic characteristics (age, gender, locality, living status with spouse, socioeconomic status according to Modified Kuppuswamy Scale) and clinical variables (psychiatric diagnosis, duration of psychiatric medication, class of psychiatric medications prescribed, number of different drugs taken and their frequency, comorbid conditions, addictions, medication taken by self or assisted).
2. Adherence to Refills and Medications (ARMS) Questionnaire[12]
   It is a pre-formed standard questionnaire containing 12 questions. The range of possible scores through the scale is 12 to 48. Lower scores indicate better adherence. Scores were dichotomized as 12 (adherent) or >12 (nonadherent)

Data Analysis

The collected data were entered into Microsoft Excel 2019 and then exported into Statistical Package for Social Sciences (SPSS) version 29 for analysis. Ordinal logistic regression was used to test the associations between independent and dependent variables. Variables with p-value <0.05 were considered statistically significant. The strength of association was described by using OR and 95% CI. Variables at bivariate analysis p <0.2 were candidates for multivariate analysis.

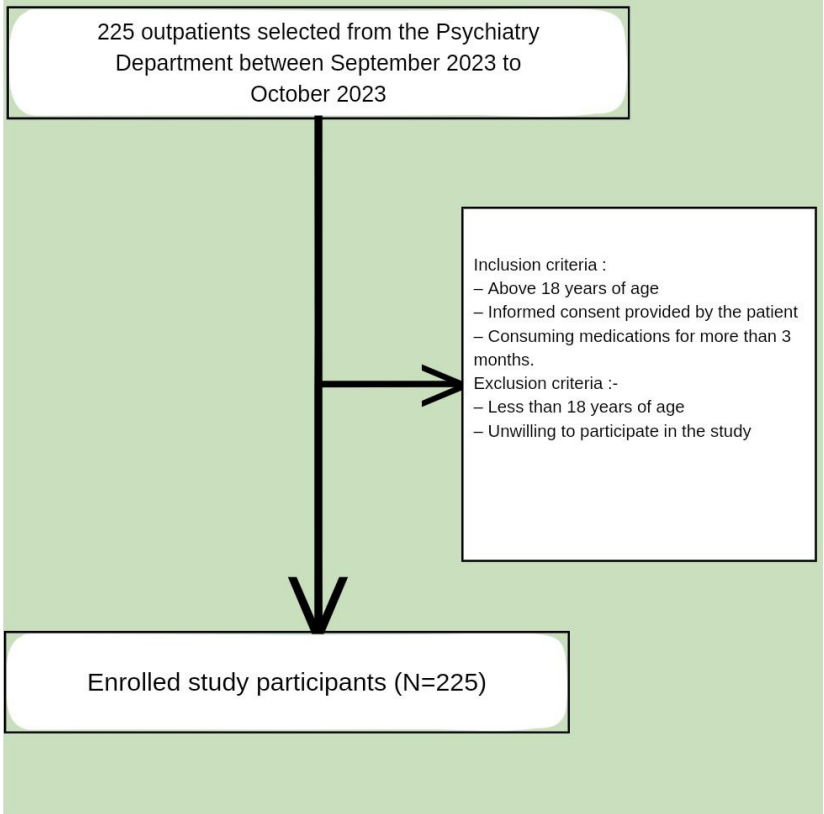

Figure 1 Schematic representation of the enrolment of subjects

RESULTS

Baseline Characteristics of Study Population

225 patients with Chronic Psychiatric Illness were approached for the study through a non-random convenience sampling method. The mean age of the respondents was 45.53 ± 13.61 (Range: 18-72 years). Of the study population, 105 (46.7) were males and 120 (53.3) were females. The majority belonged to Urban localities (185, 82.2) and the rest lived in rural areas. Eighty-four (37.3%) respondents had higher education (> 10th standard) as compared to the rest 62.7 % population. Lower socioeconomic status constituted 40.9 % of the study population while the rest (133, 59.1%) belonged to higher socioeconomic groups. A preponderance of patients consuming multiple classes of medications was found (137, 60.9%) over patients consuming medications of a single class (88, 39.1%).

Medication Adherence in Patients Using ARMS Score

Out of the study population (n=225), 28 (12.4%) were found to be adherent to oral medications (ARMS score = 12), and the majority, 197 (87.6%) were found to be non-adherent (ARMS score >12, range: 13-48)

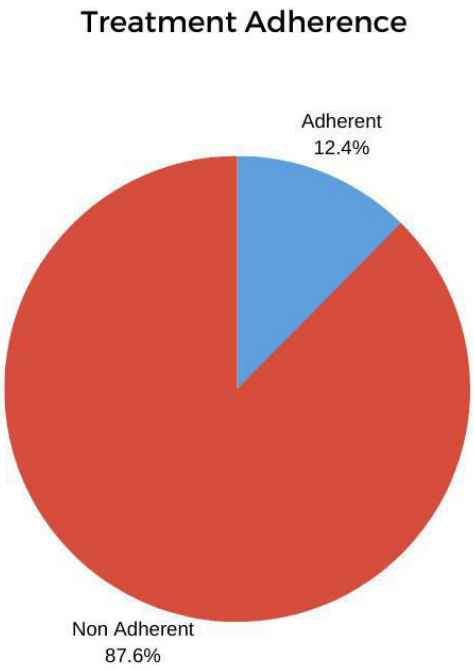

Figure 2 Magnitude of treatment adherence among study participants.

Factors Associated with Medication Adherence in Chronic Psychiatric Patients

The results of univariate analysis, as shown in **Table 1**, indicated that the patient's gender (OR: 2.425; 95% CI: 1.020 – 5.766), education of head score (OR: 2.410; 95% CI: 1.063 – 4.758), and the count of class of medications (OR: 2.315; 95% CI: 1.037 – 5.166) were significant predictors of adherence. The multivariate results, shown in **Table 2**, analysed with factors having significant p-value (<0.20) in the univariate model, indicated that having higher education of head score (AOR: 2.705; 95% CI: 1.144 – 6.398) and lower frequency of consumption of medications (AOR: 0.335; 95% CI: 0.135 – 0.829) were found to be significantly associated with better adherence. Age of patient, locality, comorbidity, addiction, and duration of consumption of medications had no statistically significant effect on adherence.

Characteristic	N(%)	Odds Ratio OR (95 % CI)	'p' value
Gender Male Female	 105 (46.7) 120 (53.3)	 1 2.045 (1.020 – 5.766)	 - 0.045 (p <0.05)
Living with Spouse Yes No	 150 (66.7) 75 (33.3)	 1 0.776 (0.325-1.855)	 - 0.569
Locality Urban Rural	 185 (82.2) 40 (17.8)	 1 0.150 (0.020-1.138)	 - 0.067
Education of Head Score <10th standard >10th standard	 141 (62.7) 84 (37.3)	 1 2.410 (1.063 – 4.578)	 - 0.048 (p <0.05)
Socioeconomic Status 1 to 3 3 to 5	 92 (40.9) 133 (59.1)	 1 0.556 (0.251 – 1.233)	 - 0.148

Characteristic	N(%)	Odds Ratio OR (95 % CI)	'p' value
Duration of Medication 3 months to 3 years >3 years	 166 (73.77) 59 (26.23)	 1 0.741 (0.285 – 1.928)	 - 0.539
Medication by Self Assisted	191 (84.1) 36 (15.9)	1 0.397 (0.90-1.755)	- 0.223
Comorbidity None Present	 191 (84.9) 34 (15.1)	 1 0.928 (0.300-2.865)	 - 0.896
Number of Medications 2 >2	 89 (39.6) 136 (60.4)	 1 0.725 (0.327 – 1.607)	 - 0.428
Addiction Absent Present	212 (94.2) 13 (5.8)	1 0.597 (0.071 – 4.568)	- 0.597
Frequency Once a day More than once a day	 47 (20.9) 178 (79.1)	 1 0.540 (0.290-1.007)	 - 0.053
Class of Medications Single Multiple	 88 (39.1) 137 (60.9)	 2.315 (1.037 – 5.166) 1	 0.040 (p<0.05) -
Diagnosis Neurotic disorder Psychotic disorder	 162 (72) 63 (28)	 1 0.521 (0.189 – 1.821)	 - 0.208
Age	45.53 ± 13.61	1.016 (0.987 – 1.046)	0.289

Table 1 Association of Sociodemographic characteristics of study population (n = 225) with Adherence to Medications (ARMS Score)

Characteristic	Adjusted OR (95% CI)	'p' value
Gender Male Female	 1 2.13 (0.189 – 1.176)	 - 0.107
Locality Urban Rural	 1 2.16 (0.189 - 1.176)	 - 0.143
Education of Head Score <3 >3	 1 2.705 (1.144 – 6.398)	 - 0.023 (p<0.05)
Frequency Once a day More than once a day	 1 0.335 (0.135 – 0.829)	 - 0.018 (p<0.05)
Class of Medications Single Multiple	 1.851 (0.788 – 4.349) 1	 0.158 -

Table 2 Final Multivariable model of association of various factors with Adherence (ARMS Score) among the study population (n=225)

DISCUSSION

The study was carried out to determine the levels of adherence in outpatients diagnosed with chronic psychiatric conditions, and to identify possible risk factors that might impact adherence. A total of 87.6% of the study population was found to be non-adherent according to the ARMS score. This contrasts with psychotropic medication non-adherence of 48%, 48%, 49%, and 57% in Africa, North America, Europe, and Asia, respectively (Semahegn et al., 2020). Various factors such as different healthcare systems, poor mental health awareness, inadequate mental health infrastructure, and wide treatment gap, might have contributed to the significantly lower adherence in our setting. Assessing medication adherence may lead to a better understanding of reasons for nonadherence in psychiatric patients and help give us the foundation for actions that may improve adherence.

The previous literature review suggested that medication adherence can be classified into four categories: patient-related, medication-related, illness-related, and external/environmental factors. The factors designed in this study are more focused on patient-related factors, including age, gender, locality, socioeconomic status, comorbidity, educational status, addiction, presence of insight, and number and duration of medications. It was found that females were 2.425 times more adherent than males (OR: 2.425; 95% CI: 1.020 – 5.766). This complies with four studies carried out in India where adherence was found to be better in females (Ansari et al[14], Rao et al[15], Chaudhari et al[16], Ramamurthy et al[17]) with only one study finding males to be more adherent to medications (Banerjee et al)[18] Education of Head Score was found to be statistically significant, with education higher than 10th standard depicting 2.41 times higher adherence than their counterparts. Similar findings of the correlation of lower educational status with non-adherence have been found in six studies carried out from 2005 to 2015 (Semahegn et al, 2020). The study further found that patients on a single class of medications are 2.31 times more adherent than those consuming medications of multiple classes. Additionally, with an increase in the dosing frequency, a reduction in adherence to medications has been found (AOR: 0.335; 95% CI: 0.135 – 0.829). A similar finding with dosing frequency has been noted in various systematic reviews (Coleman et al[19], 2012; Saini et al, 2009[20]).

Age is not found to be significant. However, through literature reviews, it has been found that older patients have greater adherence. This can imply that younger patients may have a more negative perception of medicine: they may think of them as more harmful and would want to exercise more personal control over their condition and its management. (Horne et al., 2013[21]). No significant effect of the presence of insight has been found on adherence in this study. In the studies carried out in the past, insight has been associated with adherence (Day et al., 2005[22])

Limitation

Since self-reports were administered for the assessment and measurement of adherence to medications, this may occasionally lead to unreliability and bias. This is due to self-reported measures being subject to recall bias, overestimation of adherence, and elicitation of responses that are socially acceptable, further leading to an unreliable ascertainment of medication adherence status. Secondly, the study was carried out for a limited duration i.e., 2 months with no longitudinal follow-up. Further, it is difficult to establish the cause-effect relationship due to the cross-sectional nature of the study. Lastly, a larger sample size can prove to be more extrapolative. Modifiable factors?

IMPLICATIONS

The study findings suggested a high degree of non-adherence, with 87.6 % of the study population reported as non-adherent. The results underline that necessary attention should be paid to addressing non-adherence among patients, especially in patients with lower education levels; those consuming multiple classes of medications; and those with more than a single dosing frequency. Strengthening the guidance and supervision of patient's adherence to medications is required.

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Conflict of interest

Nil

Author's contributions

This work was carried out in collaboration among all authors. All authors have read and approved the final manuscript.

Consent

As per the ICMR guidelines, the informed written consent has been obtained and preserved by the corresponding author.

Ethical approval

As per the National standards, the ethical approval letter/ certificate from local IEC has been obtained and preserved by the authors.

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