

Original Article

Determinants of Medication Nonadherence and Irregular Follow-Up Among Psychiatric Patients after Hospital Discharge in Qazvin, Iran (2024)

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Abstract

Background: Medication nonadherence in psychiatric patients can lead to symptom exacerbation, relapse, and prehospitalization. Regular follow-up visits with psychiatrists are also an important behavioral indicator of treatment adherence. This study aimed to evaluate the prevalence and factors associated with medication nonadherence and irregular visits to a psychiatrist among psychiatric patients after hospital discharge in Qazvin, Iran, in 2024.

Materials and Methods: This prospective cohort study included all psychiatric patients admitted to the psychiatric clinic of Qazvin, Iran, during one month (23 August 2024 to 22 September 2024) using a census sampling method. Patients were followed by telephone at 6 and 12 months post-discharge to assess medication adherence and follow-up behaviors. Data were collected using a self-designed checklist covering demographic characteristics, psychiatrist visits, medication use, reasons for nonadherence, and relapse. Statistical analysis was performed using SPSS version 24, and associations were examined using Chi-Square Tests and t-tests, with significance set at $p < 0.05$.

Results: A total of 97 patients were included (66 males, 68.0%). Forty-nine patients (61.9%) had irregular psychiatrist visits, and 21 (21.6%) did not use prescribed medications after discharge. The most common reason for avoiding psychiatrist visits was drug-related complications (38.1%). Irregular follow-up was significantly associated with a higher number of prior hospitalizations ($p = 0.04$), non-use of prescribed medications ($p < 0.01$), disease recurrence ($p < 0.01$), and readmission ($p < 0.01$).

Conclusion: Both irregular psychiatrist visits and non-use of prescribed medications were common indicators of medication nonadherence among psychiatric patients after hospital discharge. Drug-related complications were the most frequently reported cause of poor adherence. Improving post-discharge monitoring, side-effect management, and patient education may enhance treatment adherence.

Keywords: Psychotropic, Adherence, Mental disorders

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Introduction

The World Health Organization (WHO) has globally reported 1 out of 4 people experience psychiatric disorders at some point during their lifetime. Nearly 450 million people currently suffer from mental or neurological disorders, which are the leading causes of ill-health and disability in the world, and more than 80% of these disorders are reported in low-and middle-income countries¹.

These disorders are estimated to contribute 14% of the overall global burden due to disease, and medication nonadherence in patients can lead to substantial worsening of illness and death. In addition, they have a profound impact on healthcare costs, including the value of lost production due to unemployment, work absences, and premature mortality. In 2010, the global cost (direct and indirect) of mental health problems was estimated at US\$2.5 trillion and is projected to go up by US\$6.0 trillion by 2030².

Over one-third of people experiencing a mental health condition end up with a long-term disability and dependency. Several factors, such as female sex, low education level, low income status, unemployment, and lack of access to hygiene facilities, have been significantly associated with a higher prevalence of mental disorders, especially among older individuals.^{3,4}

Therefore, adherence to prescribed treatment, particularly pharmacotherapy, is essential for achieving optimal outcomes. Despite this, several studies have demonstrated that nonadherence to the prescribed treatments among patients with different mental disorders constitutes a complex and multidimensional problem of public health significance⁵⁻⁷. The WHO defines medication nonadherence as, "a process in which a patient's behavior in taking medication does not correspond with agreed recommendations from a healthcare provider."⁸ Multiple factors leading to poor medication adherence amongst patients especially major psychiatric disorders, are classified into 5 different dimensions, including: 1) socioeconomic factors, 2) therapy-related factors, 3) patients-related factors, 4) condition-related factors, and 5) health

system/ care team-related factors⁹.

Psychotropic medication nonadherence may lead to symptom exacerbation, reduce treatment effectiveness, or prevent patients from responding to subsequent treatment. Other clinical consequences of nonadherence include relapse, rehospitalization, low quality of life, greater suicide risk, and poor economic outcomes¹⁰⁻¹⁵.

According to the available evidence, patients with severe psychiatric disorders experience frequent hospitalizations and it is estimated that 30 to 50% of these patients will need to be re-hospitalized within a year after being discharged from the hospital. Therefore, providing active and persistent services after discharge can be effective in reducing relapse and rehospitalization and improving patients' clinical outcomes.

In addition to direct medication use, psychiatrist follow-up visits were also considered as behavioral indicators of medication adherence in this study, since regular follow-up is essential for continuous prescription refills and adherence to psychotropic treatment plans.

The primary purpose of this study was to investigate the condition of patients with mental disorders 6 and 12 months after discharge from the hospital in terms of persistence in treatment, follow-up, and re-visit to a psychiatrist in Qazvin city.

Methods

This prospective cohort (longitudinal) study included all psychiatric patients admitted to the psychiatric clinic in Qazvin, Iran, during one month (23 August 2024 to 22 September 2024), using census sampling (n=97). Patients were followed up by telephone at 6 and 12 months post-discharge to assess medication adherence and to schedule follow-up visits.

Our patient inclusion criteria were as follows: (1) provided informed consent, (2) all genders, (3) patients with psychiatric disorders according to the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5), and (3) the completeness of the file information. Exclusion criteria included (1) not answering the phone, (2) unwillingness to participate in the study, and (3) unreliability of the phone answerer's information.

Informed consent was taken from the patients. The study was approved by the Ethics Committee from Qazvin University of Medical Sciences code number IR.QUMS.REC.1401.147.

The tool used in this research was a self-designed checklist comprising two parts. Based on the patients' files, part 1 of the checklist was completed, including demographic information (age, gender, residence, level of education, marital status), psychiatric diagnosis, and number of hospitalizations. Then, the questions in the second part of the checklist were completed by phone for the first time 6 months after hospital discharge and again 1 year after discharge. This information includes the number of visits to a psychiatrist, reasons for avoiding visits to a psychiatrist, the place to visit a psychiatrist, regular use of prescription drugs, recurrence of the disease, Drug abuse, and follow-up by the health center.

Therefore, Medication adherence was assessed both directly, based on patients' self-reported regular use of prescribed medications, and indirectly, based on their regularity of visits to the psychiatrist during 6- and 12-month follow-ups.

Finally, the data was entered into SPSS software version 24. Qualitative and quantitative data were presented as frequency (percent) and mean \pm SD, respectively. T-test and the chi-square test or Fisher's exact test were used to compare variables. A p-value of $0<05$ was considered statistically significant.

Results

A total of 97 patients were included in the study; 66 (68.0%) were male. The mean age of patients in our series was 36.52 ± 12.30 (16–73) years. Sixty-one percent (61.9%) of the study population lived in urban areas. More than half (52.6%) of the patients were not married. The majority (59.8%) of the participants had less than a high school education.

Bipolar disorder was the most common psychiatric disorder among participants. Almost half of the patients (49.5%) had a history of hospitalization. Among the 97 patients studied, 49 (50.5%) had irregular visits to a psychiatrist after hospital discharge. During the last 6 and 12 months, 11 patients (11.3%) had no referral to a psychiatrist. Among the patients studied, 21 (21.6%) did not use the prescribed

medications after discharge. Also, 24 patients (24.7%) had a relapse and 21 patients (21.6%) were hospitalized again (Table 1).

The findings showed that there is no relationship between gender, age, place of residence, marital status, education status, and type of psychiatric illness with regular and irregular visits to a psychiatrist ($P>0.05$). While patients with fewer hospitalizations had more regular referrals to psychiatrists than patients with more hospitalizations, this difference was statistically significant ($P=0.04$). In addition, the findings showed that patients who did not take prescription drugs after discharge and patients who used drugs had more irregular visits ($P<0.01$). Also, in patients who had disease recurrence and rehospitalization after discharge from the hospital, irregular visits to psychiatrists were more frequent ($P<0.01$) (Table 2). Among the reasons for avoiding visiting a psychiatrist, patients who mentioned insurance problems and negative attitudes towards psychiatrists and hospitals took fewer prescription drugs than others ($P<0.01$). Also, patients who stated negative attitudes towards psychiatrists and hospitals as the reason for avoiding visiting a psychiatrist had more recurrence of the disease and readmission than other patients ($P<0.01$). The most frequently reported reason for avoiding psychiatrist visits was drug-related complications (38.1%) (Figure 1).

However, patients who mentioned drug complications also showed a higher average number of psychiatrist visits during the 6- and 12-month follow-ups ($P<0.01$). This may indicate that, while some patients reduced visits due to side effects, others sought more frequent consultations to manage or adjust their medications

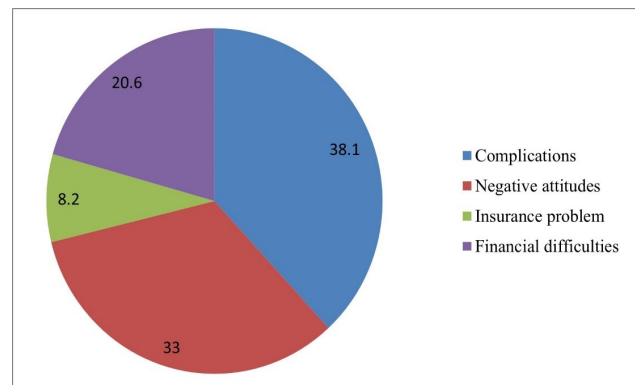


Figure 1: The reasons for avoiding to visit a psychiatrist.

(Table 3). common reason given for avoiding or delaying

Table 1: Sociodemographic characteristics of the respondents.

Variables		Frequency	Percent
Age (Mean ± SD)		36.52 ± 12.30	
Gender	Male	66	68.0
	Female	31	32.0
Marital status	single	51	52.6
	married	46	47.4
Education status	Less than a high school degree	58	59.8
	diploma	34	35.1
	Bachelor's degree	5	5.2
Residence	City	60	61.9
	Rural	37	38.1
Psychiatric diagnosis	Personality disorder	6	6.2
	Obsessive- compulsive disorder	3	3.1
	Major depressive disorder	13	13.4
	Major cognitive impairment	1	1.0
	Intellectual disorder	1	1.0
	Schizophrenia	24	24.7
	Bipolar disorder	28	28.9
	Substance-dependent psychotic disorder	11	11.3
	Substance-dependent bipolar disorder	5	5.2
	Delusional disorder	3	3.1
	Other	2	2.1
Number of hospitalizations	Once time	48	49.5
	Twice times	17	17.5
	Three times and more	32	33.0
Visiting a psychiatrist after discharge	Regular	37	26.8
	Irregular	49	50.5
	No	11	11.3
The number of visits to a psychiatrist in the last 6 months	No referral	11	11.3
	once time	17	17.5
	Twice times	34	35.1
	Three to Five times	36	36.1
The number of visits to a psychiatrist in the last 12 months	No referral	11	11.3
	once time	12	12.4
	Twice times	14	14.4
	Three to Seven times	60	61.8
Place to visit a psychiatrist	No referral	11	11.3
	Hospital clinic	66	68.0
	Office	20	20.7
Regular use of prescription drugs		76	78.4
Recurrence of the disease		24	24.7
Readmission		21	21.6
Drug abuse		16	16.5
Follow-up by the health center		23	23.7

Discussion

The present study focused on treatment nonadherence and related behaviors (including irregular visits to psychiatrists and discontinuation of prescribed medications) among psychiatric patients admitted to the psychiatric clinic in Qazvin, Iran, in 2024. Among the 97 patients studied, 49 (50.5%) had irregular visits to a psychiatrist after hospital discharge. The most

psychiatrist visits was drug-related complications (38.1%). Interestingly, patients who reported such complications also tended to visit psychiatrists more frequently overall.

This dual finding suggests two opposite patient behaviors: some avoided visits due to unpleasant side effects, while others required more frequent appointments to adjust their medications.

Many factors may influence the decision to return. In this

Table 2: Relationship of sociodemographic characteristics with regular visits of patients to a psychiatrist.

Variables		Regular N (%)	Irregular N (%)	P-value
gender	Male	23 (62.2)	43 (71.7)	0.37
	Female	14 (37.8)	17 (28.3)	
Residence	City	22 (59.5)	38 (63.3)	0.83
	Rural	15 (40.5)	22 (36.7)	
Marital status	Single	17 (45.9)	34 (56.7)	0.40
	Married	20 (54.1)	26 (43.3)	
Age (Mean \pm SD)		37.14 \pm 12.35	36.13 \pm 12.36	0.69
Education status	Less than a high school degree	20 (54.1)	38 (63.3)	0.13
	Diploma	13 (35.1)	21 (35.0)	
	Bachelor's degree	1 (10.8)	4 (1.7)	
Psychiatric diagnosis	Personality disorder	0 (0)	6 (10.0)	0.07
	Obsessive- compulsive disorder	2 (5.4)	1 (1.7)	
	Major depressive disorder	8 (21.6)	5 (8.3)	
	Major cognitive impairment	1 (2.7)	0 (0)	
	Intellectual disorder	1 (2.7)	0 (0)	
	Schizophrenia	9 (24.3)	15 (25.0)	
	Bipolar disorder	11 (29.7)	17 (28.3)	
	Substance-dependent psychotic disorder	2 (5.4)	9 (15.0)	
	Substance-dependent bipolar disorder	0 (0)	5 (8.3)	
	Delusional disorder	2 (5.4)	1 (1.7)	
Number of hospitalizations	Other	1 (2.7)	1 (1.7)	0.04
	Once time	34 (64.9)	24 (40.0)	
	Twice times	7 (18.9)	10 (16.7)	
Three times and more		6 (16.2)	26 (43.3)	
Regular use of prescription drugs		34 (91.9)	42 (70.0)	<0.01
Recurrence of the disease		2 (5.4)	22 (36.7)	<0.01
Readmission		2 (5.4)	19 (31.7)	<0.01
Drug abuse		1 (2.7)	15 (25.2)	<0.01

Table 3: Relationship of sociodemographic characteristics with the reasons for avoiding to visit a psychiatrist.

		Drug complications N (%)	Negative attitudes N (%)	Insurance problem N (%)	Financial difficulties N (%)	P-value
Age (Mean \pm SD)		37.1 \pm 12.3	35.2 \pm 12.8	36.2 \pm 9.4	37.5 \pm 12.3	0.90
Gender	Male	23(62.2)	24(75)	6(75)	13(65)	0.66
	Female	14(37.8)	8(25)	2(25)	7(35)	
Education status	Less than a high school degree	20(54.1)	16(50)	5(62.5)	17(85)	0.11
	Diploma	13(35.1)	15(46.9)	3(37.5)	3(15)	
	Bachelor's degree	4(10.8)	1(3.1)	0 (0)	0 (0)	
Marital status	Single	17(45.9)	20(62.5)	5(62.5)	9(45)	0.44
	Married	20(54.1)	12(37.5)	3(37.5)	11(55)	
Residence	City	22(59.5)	22(68.8)	5(62.5)	11(55)	0.77
	Rural	15(40.5)	10(31.3)	3(37.5)	9(45)	
Place to visit a psychiatrist	Hospital clinic	27(75)	19(73.1)	5(62.5)	15(93.8)	0.29
	Office	9(25)	7(26.9)	3(37.5)	1(6.3)	
Regular use of prescription drugs		34(91.9)	21(65.6)	3(37.5)	18(90)	<0.01
Recurrence of the disease		2(5.4)	17(53.1)	2(25)	3(15)	<0.01
Readmission		2(5.4)	15(46.9)	2(25)	2(10)	<0.01
Drug abuse		1(2.7)	11(34.4)	1(12.5)	3(15)	<0.01
The number of visits to a psychiatrist in the last 6 months (Mean \pm SD)		3.1 \pm 0.7	1.8 \pm 0.6	1.4 \pm 0.5	1.7 \pm 0.5	<0.01
The number of visits to a psychiatrist in the last 12 months (Mean \pm SD)		5.6 \pm 0.9	2.6 \pm 1.1	2.0 \pm 0.7	1.3 \pm 2.6	<0.01

study, it was seen that there is no relationship between

gender, residence, marital status, education status, and

type of psychiatric illness with regular and irregular visits to a psychiatrist ($P>0.05$). This study reported that unmarried patients had more frequent visits to a psychiatrist than married patients, but the difference wasn't significant. In addition, the mean age of patients with regular visits was higher than that of patients with irregular visits, although this difference was not substantial ($P=0.69$). Consistent with the present study, a structural equation modeling study on adherence to psychopharmacological medications in the population with mental illness showed a weakly positive correlation between adherence and age¹⁶; in patients with depression, younger age was related to dropout¹⁷. From the patients' perspective, through telephone follow-up, we found that multiple relevant factors, such as the number of hospitalizations, non-use of prescribed medicines post-discharge, disease recurrence, and readmission, were associated with irregular visits to psychiatrists.

Another relevant factor for irregular visits to psychiatrists in this study was related to drug abuse. This could be due to inadequate explanation to patients on their illness status. This finding is also similar to the reports of the Ethiopian study¹⁸. The small sample size in our study may not fully represent the population from which it is drawn.

Poor adherence may reduce the probability of receiving the treatment, impair outcomes, and even cause serious health problems. However, poor adherence to mental illness is a global challenge for psychiatric practices¹⁹.

In our study, during the last 6 and 12 months, 11 patients (11.3%) had no referral to a psychiatrist. According to the National Comorbidity Survey Replication, the 12-month mental health treatment dropout rate in the general medical sector was 31.6%.

Our findings showed that 28.3% of patients with bipolar disorder and 25.0% of patients with schizophrenia visited psychiatrists irregularly. Contrary to the present study, Lotts et al. (2021) reported a high nonadherence prevalence of 63-74% in patients with schizophrenia and approximately 50% in patients with bipolar disorder, and they aimed to review systematically²¹.

Drug complications, negative attitudes, insurance problems, and financial difficulties, respectively, were the main factors for not visiting a psychiatrist after discharge. Another study, Chen et al. in 2022, found

that individuals with negative attitudes towards pharmacotherapy had the worst timely return visit (TRVR) rate of 44.2%, and refusal of medication was a key predictor, with the highest OR of 2.265 for poor adherence²².

Some limitations to this study should be noted them. This study had a relatively small number of participants, all enrolled at a university hospital. Although frequency may reflect severity to some extent, this study did not use specific instruments to assess patient adherence. Medicines prescribed during hospitalization and patients' reactions may also be essential for evaluating initial adherence. Additionally, factors related to doctor-patient communications could also influence it.

Therefore, health care providers can increase patients' adherence to treatment by providing additional explanations about the time lag to treatment response, the benefits of the prescription, and potential side effects, particularly when follow-up is irregular.

Conclusion

In this study, both irregular psychiatrist visits and non-use of prescribed medications after discharge were common among psychiatric patients, indicating a high rate of medication nonadherence. The most frequently reported reason for avoiding psychiatrist visits was drug-related complications. Because regular follow-up appointments are necessary for prescription renewal and monitoring of side effects, irregular visits can be considered an important behavioral indicator of medication nonadherence. Therefore, improving post-discharge follow-up, medication counseling, and patient education may enhance adherence to psychotropic treatment.

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Conflict of interest

The authors further declare that they have no conflict of

interest.

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