

ORIGINAL RESEARCH

Treatment Adherence in Patients with Bipolar Disorder and Beliefs Related to Non-Adherence

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Abstract

Objective: Our aim in this study was to identify treatment adherence in bipolar disorder patients who regularly use medications and to examine the factors and beliefs associated with treatment compliance.

Methods: Our sample consisted of 92 patients who were followed up by bipolar disorder. Participants assessed for diagnosis and remission by criteria of affective disorders part of SCID I then Sociodemographic data form, Morisky Medication Adherence Scale (MMAS) and The Beliefs about Medication Compliance Scale (BMCS) was given.

Results: Treatment non-adherence rate were %29,3. Variables that differ significantly in non-adherent group then adherent as follows: low education ($p=0.03$), medications that causes sedation ($p=0,001$), not educated about treatment ($p=0,05$), young age ($p=0,04$), difficulty in obtaining medicine ($p=0,003$) and treatment complexity ($p=0,01$). Particularly training the patient with written/visualized materials were higher in adherent group ($p=0,02$). While there was no significant difference in terms of BMCS benefit subscale ($p=0,47$), patients with poor treatment compliance reported significantly higher scores on the BMCS barrier subscale ($p=0,01$). In the logistic regression analysis, sedative medications, difficulty in obtaining medication and treatment complexity were found to be significant predictors of treatment non-adherence.

Conclusion: providing access to medication, informing the prescribing medicines with using visual material and patient-centered approaches would increase the compliance of the medication, especially with minimal use of sedative drugs.

Keywords: Beliefs, Bipolar Disorder, Treatment Adherence

INTRODUCTION

For patients with chronic illness, treatment compliance is an important factor affecting recovery. (1). In the long term, 30-50% of patients do not take their medication as prescribed and this is reflected as a burden to both individual and the health system (2). Treatment adherence in patients with mental disorders is higher than in other medical conditions (3). Treatment adherence in bipolar disorder (BD) is

crucial for symptom control, prevention of recurrences, protection of cognitive functions, and most importantly for improving daily functioning and quality of life (4). However, it is known that up to 52% of patients with bipolar disorder do not follow the treatment program offered to them (5). In the FACE BD study, treatment adherence rate was 25% in patients with bipolar disorder, while in India, the rate of non-adherence patients of bipolar disorder in remission was reported to be 60% (6–8).

Treatment non-adherence increases the severity of the disease and the cost of treatment and reduces the beliefs about psychiatric treatments (9). Recent studies have clearly demonstrated that treatment non-adherence predicts poor prognosis, more frequent hospital admissions and hospitalizations, violent behavior, suicide and short life-time (10–12).

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In order to change a behavior, we need to understand why and how it occurs. Also, it is same with behavior of treatment non-adherence. In order to understand the drug compliance, we have to understand the person's treatment considerations and perspective. Two beliefs play a key role in this point; individual's need for medication (in other words, the belief that treatment will be beneficial) and thoughts related to side effects of medication (in other words, the negative effects of treatment on life of the patient) (11). Levin and colleagues reported that factors such as young age, being single, poor social support, substance use, suicide attempt story, beliefs about treatment and side effects due to treatment are related to treatment compliance in bipolar disorder (7).

Our aim in this study is to identify treatment adherence in bipolar disorder patients who regularly use medications and to examine the factors and beliefs associated with treatment compliance. Hypotheses of our study are; the percentage of patients who do not exactly take the medication as prescribed is high even in those patients who declare regularly use the medications (H1), from the patient-related factors there is a positive relationship between age and education level and treatment adherence (H2), from the treatment-related factors, the number of medication taken, significant side-effect profile of the treatment (i.e. sedation), lack of providing treatment education, and having trouble accessing the medicine has a negative effect on treatment adherence (H3). The belief that the patient's treatment is beneficial is related to the treatment adherence in positive way while the belief that the treatment affects the life negatively and preventive manner is related to the treatment adherence in negative way (H4).

METHODS

Sample

The study sample was consisted of out-patients with bipolar disorder who applied to Bakırköy Mazhar Osman Mental Health and Neurological Diseases Training and Research Hospital during July of 2017. Inclusion criteria were as follows: patients who were between 18-65 years old, have diagnosis of bipolar disorder, clinically recovering (in remission) during the interview and who gave their consent to participate in the study. Patients who do not give the approval and illiterate are excluded from our study.

Procedure

Ethical committee approval of the study was taken from the local ethics committee of Bakırköy Mazhar Osman Mental Health and Neurological Diseases Training and Research Hospital. Patients who applied to Bakırköy Mazhar Osman Mental Health and Neurological Diseases Training and Research Hospital outpatient clinic on the specified dates and who were followed up for at least 1 year with a diagnosis of bipolar disorder were referred to a psychiatrist who was in the research team. That psychiatrist assessed participants for diagnosis and remission by criteria of affective disorders part of SCID I. Sociodemographic and clinical data form was filled in that interview then participants took to another room and left alone to complete Morisky Medication Adherence Scale and The Beliefs about Medication Compliance Scale.

Tools

Sociodemographic and Clinical Data Form: The sociodemographic and clinical data form included questions on the sociodemographic characteristics of the patients (age, gender, education, marital status), about the illness (number of hospitalizations, recurrence story, follow-up status) and treatment information (medicine type and number, whether it is difficult to obtain the medicines, whether or not informed about medicine).

Morisky Medication Adherence Scale (MMAS): MMAS-4 are developed to describe the medication taking behavior of patients by Morisky (1986) and consist of four yes/no questions (13). Validity and reliability study of Turkish version of bipolar disorder was performed by Bahar et al. and it was concluded that MMAS is a valid and reliable measurement instrument for bipolar disorder (14). With scores > 2 from the Morisky Drug Compliance Scale were considered to be non-adherent (13).

The Beliefs about Medication Compliance Scale (BMCS)

The scale was adapted from a scale developed for patients with chronic heart failure by Bennett et. al. (15). While adaptation 3 questions related to "heart failure" changed as "mental illness". The validity and reliability of the Turkish version of BMCS was made by Oğuz and his colleagues (16). The beliefs about drug compliance scale consist of totally 12 items and 1, 2, 7, 10, 11. questions of them measure the person's benefit while 3, 4, 5, 6, 8, 9, 12. questions measure barrier perception. The high score on the benefit subscale (total score can be minimum 6 and maximum 30) indicates that the

benefits of the behavior are more perceived whereas the high score on barrier perception shows the person perceives barriers more in behavior. The scale with the five-point Likert type is scored in the range of 1-5.

Statistical Analysis

Obtained data from data collection tools were entered into the database in SPSS 20.0 software and descriptive analyzes were made. Chi-square test for categorical variables, and student t-test for continuous variables were used in examining the differences between sociodemographic and clinical variables between patients with and without treatment adherence. The relationship between meaningful continuous variables and treatment adherence was also assessed by Pearson correlation test. In order to

establish the determinants of low drug compliance, a logistic regression analysis was used in which drug compliance was entered as a dependent variable and outcomes related to adherence were entered as independent variables. Statistical tests were two-tailed and significance was taken as $p < 0.05$.

RESULTS

In our study, 94 patients with bipolar disorder were included. Two participants were not able to complete study forms, thus statistical analyzes were performed with outcomes from 92 patients. Average age of the participants was 37.2 ± 11.5 years (min: 19 and max: 65). The demographic characteristics of the participants are given in Table 1.

Table 1. Socio-demographic characteristics of participants

Baseline characteristic		N:92	%
Gender			
	Female	62	67.4
	Male	30	32.6
Education status			
	Primary school	33	36.7
	High school	36	38.9
	University	23	24.4
Marital status			
	Single	31	33.7
	Married	51	55.4
	Divorced/widow	10	10.9
Working status			
	Working	53	59.8
	Not working	39	40.2
N:92			Mean±S.D.
Age		Min. 19 Max. 65	37.2±11.5

Min.: Minimum, Max.: Maximum, S.D.: Standard Deviation

Treatment non-adherence rate were calculated as (MMAS score > 2) %29.3 (n:27). Variables that differ significantly between treatment adherent and non-adherent patients as follows: education status ($\chi^2:10.8$ and $p=0.03$), medications that causes sedation ($\chi^2:6.4$ and $p=0.001$), not educated about medication and treatment by the health worker ($\chi^2:3.8$ and $p=0.05$), age ($t=1.9$ and $p=0.04$), difficulty in obtaining medicine ($\chi^2:8.7$ and $p=0.003$), the complexity and frequency of medication use ($\chi^2:8.1$ and $p=0.01$) and particularly training the patient with written/visualized materials by the health personnel ($\chi^2:4.7$ and $p=0.02$) (Table-2). There was no significant difference between the two groups in terms of BMCS benefit

subscale ($t:0.71$ and $p=0.47$). Patients with poor treatment compliance reported significantly higher scores on the BMCS barrier subscale than those compliant patients ($t:-2.3$ and $p=0.01$) (Table 2).

Negative moderate correlation was found between MMSA scores and BMCS barrier subscale scores ($r:0.41$ and $p<0.05$). No significant correlation was found between BMCS benefit subscale score and treatment adherence ($r:-0.11$ and $p>0.05$). Significant relationship was found between MMSA scores and age ($r:-0.22$ and $p=0.04$), number of inpatient admission ($r:-0.27$ and $p=0.01$), BMCS barrier subscale score ($r:0.32$ and $p=0.04$).

Table 2. Comparison of Treatment Adherence with Clinical and Social Factors (Chi-square test)

		Adherent (n:65)		Non-adherent (n:27)		χ^2	P
		n	%	n	%		
Gender	Female	45	69.2	17	62.9	0,34	0,55
	Male	20	30.8	10	37.1		
Education status	Primary school	27	41.5	5	18.5	10,8	0,029*
	High school	22	33.8	15	55.6		
	University	16	24.6	7	25.9		
Marital status	Single	18	27.7	13	48.1	3,8	0,14
	Married	40	61.5	11	40.7		
	Divorced/widow	7	10.8	3	11.1		
Working status	Not working	40	62.3	14	53.8	0,54	0,46
	Working	25	37.7	13	46.2		
Income level	Bad	7	10.8	5	18.5	3,28	0,19
	Avarage	40	61.5	18	66.7		
	Good	18	27.7	3	11.1		
Does the patient followed up regularly?	Yes	53	81.5	20	74.1	0,64	0,42
	No	12	18.5	7	25.9		
Recurrence history	Yes	29	44.6	12	44.4	0,21	0,64
	No	17	26.2	9	33.3		
	Unknown	19	29.2	6	22.2		
The presence of sedative medicines in treatment	Yes	40	61.5	19	70.4	6,4	0,01*
	No	25	38.5	8	29.6		
Does the medicine seem complicated to you?	Yes	6	9.2	9	33.3	8,12	0,004*
	No	59	90.8	18	66.7		
Does your family interest in your medicines?	Yes	54	83.1	23	85.2	0,06	0,80
	No	11	16.9	4	14.8		
Having any difficulty on providing medicines?	Yes	5	7.7	10	37.0	8,7	0,003*
	No	60	92.3	17	63.0		
Informing the patient by the health personnel	Yes	29	45.3	11	40.7	3,8	0,05
	No	35	54.7	16	59.3		
Informing the patient with written/visualized materials	Yes	13	46.4	1	9.1	4,7	0,02*
	No	15	53.6	10	90.9		

S.D.: Standard Deviation, M: Mean, * values in bold indicate statistical significance ($p < .05$), BMCS: Beliefs about Medication Compliance Scale

In the logistic regression analysis conducted to examine the determinants of drug compliance, the presence of sedative medications in the treatment, and difficulty in accessing the medication, and patients' confusion related to treatment regimen were found to be significant predictors of treatment non-adherence (Hosmer and Lemeshow test result: χ^2 :26.1 and $p < 0.001$) (Table 3).

Table 3. Comparison of Treatment Adherence with Parametric Variables (student t tests)

	Adherent (n:65)		Non-adherent (n:27)		t	p
	M	SD	M	SD		
Age	38,7	11,6	33,5	10,4	1,9	0,04*
Number of medicines	2,5	1,4	2,0	1,3	1,4	0,16
Number of hospitalizations	2,2	5,2	0,7	0,8	2,3	0,02*
BMCS benefit subscale scores	21,7	4,2	21,1	3,7	0,71	0,47
BMCS barrier subscale scores	14,5	3,9	16,9	4,9	-2,3	0,01*
Number of medicines	38,7	11,6	33,5	10,4	1,9	0,04*

S.D.: Standard Deviation, M: Mean, * values in bold indicate statistical significance ($p < .05$), BMCS: Beliefs about Medication Compliance Scale

Table 4. Binominal Logistic Regression Analysis of Significant Difference Variables

Treatment Adherent	Estimate	95% CI		p
		LL	UL	
Education	0,416	0,365	1,19	,169
Coming to controls regularly	1,507	,297	7,65	,508
The presence of sedative medicines in treatment	,265	,063	1,10	,037*
Number of medicines	,749	,448	1,25	,153
Does the using medicine seem complicated to you?	,743	1,355	40,81	,011*
Having any difficulty on having medicines	,063	,008	,49	,009*
Informing the patient by the health personnel	,521	,142	1,91	,573
BMCS benefit subscale scores	1,004	,876	1,15	,859
BMCS barrier subscale scores	1,109	,949	1,29	,097
Age	,952	,897	1,01	,099
Hospitalization history	2,066	,443	9,63	,263
Education	0,416	0,365	1,19	,169

OR: Odd Ratio, CI: OR for %95 of confidence interval, * values in bold indicate statistical significance ($p < .05$). BMCS: Beliefs about Medication Compliance Scale, LL = lower limit; UL = upper limit, Hosmer and Lemeshow test result: $\chi^2:26.1$

DISCUSSION

In our study; age, education status, getting informed of treatment, medicines with sedative side effects, complex treatment regimen, difficulty in accessing medications and high level of barrier perception for treatment were found to be significantly different between patients who are adherent or nonadherent to treatment. From these variables, informing the patients about treatment, the presence of sedative effects of medications in the treatment, and the problem accessing to medicines have been identified as factors that determining treatment compliance.

In our study, treatment compliance rate was found as 29% in bipolar patients who stated that they regularly used their medicine. Selvakumar et al. (2018) found 60% of incidence of non-compliance in bipolar disorder patients (6). Demirkol and colleagues reported 16.7% of total treatment adherence and 41% in partial treatment adherence of bipolar disorder (17). Data shows that treatment adherence in bipolar disorder must be questioned in follow-up interviews, and treatment adherence may be present even in patients who say they take

their medications. In addition to clinical inquiry, measuring medicine levels at regular intervals will facilitate the detection of drug compliance.

In our study, we found that treatment non-compliance was higher in younger patients and low education level. Similarly, in recent study Karadağ et al. (2018) found that, bipolar patient with low treatment adherence were likely low educated (18). Likewise, Kay et al. (2007) found that bipolar patients with higher education levels are more likely to be adherence to treatment (19). In review of Greene et al. (2018) younger age was one of the factors which are most consistently associated with higher non-adherence to pharmacotherapy among bipolar disorder patients (20). Our finding is consistent with the literature.

In line with the literature, we found that treatment nonadherence is higher in patients who are taking sedative medications that would affect their daily performance. Some medications may cause more treatment nonadherence related to their side effect profiles (21–24). For example, Chang et al. (2012) in their studies of antipsychotic compliance reported different nonadherence types correlate with different antipsychotic types (25). Yilmaz and Buzlu (2012) reported that schizophrenic patients who have low medication compliance were more likely to express drug side effects (26). Soykan (2013) reported that side effect profiles of medications, especially weight gain and sedation, were more likely to lead treatment nonadherence (4). In summary, clinicians should be careful when prescribing medications with sedative side effects in order to improve treatment compliance.

In our study, we found that the treatment non-compliance was significantly higher in patients who had difficulty in obtaining medicines and reported medication as "It seems very complicated." We also found that patients who were informed about the medications in our study (those who used visual material while giving an information) were better at treatment compliance. Üstünsoy et al. (2003) reported that drug-related factors such as complication of drugs and their use and difficulty in obtaining drugs effects drug compliance (21,27). It was also found that patients who were

informed about treatment were more adherent to treatment (10). Alataş et al. (2007) reported that psychoeducation involving the nature and treatment of the disease positively affects the prognosis, the quality of life and treatment adherence of the patients with mood disorders (28). Selvakumar et al. (2018) found that inpatients had higher drug compliance, which indicated that patients could receive more psychoeducation of illness and treatment while they were in the hospital (6). In the direction of these findings, it can be said that informing the patient about treatment and utilization of visual and written materials can make learning easier and permanent and have a positive effect on treatment adherence. Chapman and Horne (2013) classified two factors in treatment adherence: perceptual factors (beliefs about the patient's treatment and illness) and practical factors (patient's capacity and providing medicines). They suggested that the treatment adherence mainly shaped by the perceptual factors (10). Moreover, studies show that perceptual factors can also influence practical factors (29). In other words, it can be said that the effects of practical factors such as the number of hospitalizations, side effects of medications and difficulty in providing medications can be reduced by discussing the doubts and worries about treatment and increase motivation.

Another important finding of our study is that the "barrier" subscale scores are significantly higher when the "benefit" perceptions of patients with treatment nonadherence are similar to those of adherent patients. Yilmaz and Buzlu (2012) reported that schizophrenic patients with poor treatment adherence expressed more side effects (26). In their systematical review form 13 studies, Sendt et al. (2015) reported that the most important determinants of treatment compliance are the attitudes towards treatment and the therapeutic relationship between the psychiatrist and the patient, rather than the social and demographic characteristics (30). Hence, it can be said that treatment adherence is more likely to be affected by negative effect of medicines on daily activity than treatment benefits.

The most important limitations of our study; data

were taken from one center, the lack of a control group and using self-report measuring instruments. Taking data from one center makes it difficult to generalize and the lack of a control group makes it difficult to assess the non-compliance rates. Moreover, the results of the scales based on self-report can cause memory errors to be affected. Finally, many factors could affect treatment adherence such as the fear of becoming addicted to psychiatric treatment, prolonged hospital stays, information level or consciousness of the properties of the disorder, and cognitive dysfunction but, these factors didn't have been assessed.

CONCLUSION

In conclusion; Generally knowing that patients are partially adherent and determining the factors that affect adherence, solution recommendation will increase the treatment adherence and decrease the disruption caused by the illness, treatment cost and loss of work power (9). In line with the data obtained from our study; we think that providing access to medication and informing the prescribing medicines with using visual material if it's possible and eliminating the confusion that the person is experiencing with medicines may play a role in increasing the compliance of the medication, especially with minimal use of sedative drugs. Moreover, we should be careful about side effect of medicines especially for sedation to make patients more adherent. In addition, patient-centered approach should be done to increase drug compliance.

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