

ORIGINAL ARTICLE

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Effect of the COVID-19 pandemic on medication adherence in psychiatric disorders**●Bahadır Demir, ●Esra Güneysu, ●Muhammet Sancaktar, ●Sengül Kocamer Sahin, ●Gulcin Elboga,
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**Abstract**

The aim of this study is to investigate the effect of COVID-19 pandemic and the restrictions taken on the medication, thus treatment adherence of patients with psychiatric disorders. A semi-structured form prepared by the authors and the Morisky treatment adherence scale were applied to the patients who were regularly followed up in Gaziantep University Medical Faculty Psychiatry outpatient clinic for 6 months before March 11, 2020, which was the first date of the COVID-19 case in Turkey and who visited the outpatient clinic for follow-up after the pandemic. 206 patients who met the study criteria were evaluated. Of these patients, it was found that 29 (14.1%) had their medication adherence impaired due to non-pandemic reasons. Analysis was performed with the remaining 177 patients. The average age of patients was 41.73 ± 13.48. According to the general characteristics of the participants, 117 were women and 60 men. With regard to the treatment adherence rates, 69 patients (39%) were not affected by the pandemic in which treatment adherence was high, 46 (26%) had moderate treatment adherence, and 62 (35%) showed poor treatment adherence. The comparison of patients in terms of treatment adherence according to their diagnosis revealed no statistically significant difference ($p = 0.100$). To the best of our knowledge, this is the first study investigating the medication (treatment) adherence of patients with psychiatric disorders who were on treatment before the pandemic. Studies with large samples are warranted to better understand the effect of the pandemic on treatment adherence.

Keywords: COVID-19, pandemic, outbreaks, adherence, treatment, psychiatric disorders**Introduction**

The whole world is struggling with the Coronavirus Disease 2019 Outbreak (COVID-19) caused by the virus called SARS-Cov-2 (severe acute respiratory syndrome coronavirus 2), which is believed to have emerged in Wuhan, China. While COVID-19 mainly affects the respiratory system, it was also shown to affect other organs including the brain. The emergence of neurological and psychiatric symptoms due to COVID-19 have also been recently reported [1]. From a psychiatric perspective, other than the direct effects of the virus, the quarantine, restrictions, and the number of people reaching millions who lost their lives in the world due to epidemic caused serious impairments in mental health. Also, this epidemic caused serious problems in those who benefit from or are a candidate for psychiatric care [2].

Adherence to treatment includes regular visits to outpatient clinic, taking recommended medication on time and at sufficient levels, and complying with the recommended behavioral changes [3]. As in other specialties, treatment adherence is also very important in psychiatry because non-adherence to treatment increases the exacerbation of the existing disease, hospitalizations, morbidity, and mortality [4]. Many studies have been conducted to investigate the causes that impair adherence to treatment in psychiatric disorders. In these studies, prior involuntary hospitalization, side effects of drugs, inadequate information about treatment, less family support, thoughts of helplessness, hopelessness, substance and alcohol abuse, and lack of insight were among the reasons that impair adherence to treatment [5-8]. Currently, apart from these factors, COVID-19 and outbreak-related measures that have been ongoing for about 1 year also affect treatment adherence.

This study aims to investigate the effect of the COVID-19 pandemic and the measures taken on the medication, thus treatment adherence of patients with psychiatric disorders.

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Materials and Methods

Ethic Procedure

At baseline, the study was approved by Gaziantep University Clinical Trials Ethics Committee and the Ministry of Health (Ethics Committee Decision No: 2020/355). The study was conducted in accordance with the Helsinki Declaration. Informed consent was obtained from all patients participating in the study.

Sample

The study sample consisted of patients who were regularly followed up in Gaziantep University Medical Faculty Hospital Psychiatry outpatient clinic for 6 months before March 11, 2020, which was the first date of the COVID-19 case in Turkey, and who visited the outpatient clinic for follow-up after the pandemic. During the study period, 1511 patients applied to the psychiatry outpatient clinic, of which 206 patients were included in this study. Patients admitted to the outpatient clinic were evaluated by a psychiatry research assistant according to the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) criteria. Frequencies of admissions of the patients were examined from the hospital data for the last 6 months. The clinical information in these control admissions, drug compliance information, and participation in the recommended control visits were evaluated, and the decision of 'regular-irregularly followed-up patient' was made.

Inclusion criteria were;

To have a definitive diagnosis of a psychiatric disorder, regular follow-ups, and medication used for the last 6 months before the pandemic, voluntary consent to participate in the study and to be between the ages of 20 and 65.

Exclusion criteria were;

The patients who did not have regular follow-ups, who were not on any medication before the pandemic, whose psychiatric disorder had not been yet diagnosed, and those who were not between the ages of 20 and 65.

Assessment Tools

Sociodemographic data form: It is a semi-structured form prepared by the authors based on literature review and clinical experiences. All participants had their age, gender, marital status, education level, place of residence, psychiatric diagnosis, family history of psychiatric illness and comorbid diseases noted. The authors also asked 7 questions about pandemic conditions that may impair the adherence to medication and related psychiatric myths. These questions are given in Table 1.

Morisky Treatment Adherence Scale: It is a test developed by Morisky measuring the adherence to medication that was studied for validity and reliability in 1986 [9]. It is self-reported by the patient. It consists of four closed-ended questions with two options. Questions are answered with a “yes” or “no”. Medication adherence is considered low if three or four questions are answered yes; moderate, if one or two questions are answered yes, and high if all questions are answered no [10]. The study of validity and reliability of the scale in Turkish was held by Bahar et al. [10].

Table 1. Pandemic-related factors that impair adherence to medication

Please check the most appropriate pandemic-related items that impair your medication adherence.	
1	I did not use psychiatric drugs because they weaken immunity.
2	Psychiatric drugs are too relaxing and reduce my attention to hygiene rules.
3	I couldn't get an appointment as outpatient psychiatry clinics in hospitals receive a limited number of patients because of the pandemic.
4	I did not come to follow-up because the risk of COVID-19 transmission would be high.
5	I couldn't come for follow-up as I couldn't afford my treatment expenses because of the pandemic-related economic challenges.
6	I did not use my psychiatric drugs because if I have COVID-19, the treatments given could interfere with psychiatric treatments.
7	I couldn't come for follow-ups with the concern that I would carry COVID-19 to the elderly I care for.

Statistical Analyses

The descriptive characteristics of the data obtained in the study are given with frequency, percentage distribution, mean, and standard deviation values. Also, χ^2 test was used to compare categorical variables. All significant levels were 2-tailed and set at the level of 0.05. SPSS 22.0 (IBM Corporation, Armonk, New York, United States) software was used in the analysis of variables.

Results

206 patients who met the inclusion criteria were evaluated in our study. While analyzing the data, 29 patients (14.1%) with low or moderate medication adherence due to non-pandemic reasons such as forgetting to use medication, drug side effects, and addiction were excluded from the study. The study sample consisted of 177 patients. The average age of patients was 41.73 ± 13.48 . According to the general characteristics of the participants, 117 were women and 60 men. Education level is mostly primary (36.2%) and high school (38.4%). Most of the patients' marital status (66.7%) was “married”. The diagnoses of the patients were major depression (n: 86, 48.6%), anxiety disorders (n: 45, 25.4%), obsessive-compulsive disorder (n: 23, 13%) and psychotic disorders (n: 9, 5.1%) respectively. Sociodemographic and clinical characteristics of the patients are given in Table 2.

According to patient’s treatment adherence rates, 69 patients (39%) showed high treatment adherence and were not affected by the pandemic, while 108 (61%) patients were affected. Of those with impaired adherence, it was found that 46 (26%) had moderate treatment adherence, and 62 (35%) showed low treatment adherence. The treatment adherence rates of the patients are given in Table 3. Considering the “Pandemic-related factors that impair adherence to medication” created by the authors in patients whose

treatment adherence is negatively affected, the ranking was: 4th item (n: 75, 69.4%), 3rd item (n: 58, 53.7%), 7th item (n: 15, 13.9%) and others. The distribution of the reasons for impaired medication adherence is given in Table 4.

The comparison of treatment adherence by the diagnoses of the patients showed no statistically significant difference among the psychiatric disorders in terms of treatment adherence ($p = 0.100$).

Table 2. Patients' sociodemographics and clinical characteristics

Characteristics	Mean $\pm$ SD or N (number)	% (percentage)
Age	41.73 $\pm$ 13.48	
Gender		
Women	117	66.1
Men	60	33.9
Marital Status		
Single	47	26.6
Married	118	66.7
Divorced	6	3.4
Widower	6	3.4
Education level		
Illiterate	10	5.6
Literate	13	7.3
Primary education	64	36.2
High School	68	38.4
University	22	12.4
Place of residence		
City	147	83.1
County	28	15.8
Village	2	1.1
Psychiatric diagnosis		
Major Depression	86	48.6
Anxiety Disorder	45	25.4
Obsessive Compulsive Disorder	14	7.9
Bipolar Disorder	23	13
Psychotic Disorders	9	5.1
Family history of psychiatric disorder		
Yes	62	35
No	115	65
Non-psychiatric comorbidity		
Yes	84	47.5
No	93	52.5

Categorical data were presented as numbers and percentages, and numerical data as mean $\pm$ standard deviation.

Table 3. Patients' adherence rates by Morisky treatment adherence scale

Treatment adherence	N (number)	% (percentage)
High	69	39
Moderate	46	26
Low	62	35

Data were presented as numbers and percentages

High-medium-low treatment adherence rates and comparison by diagnoses are shown in Table 5.

The comparison of treatment adherence by gender, marital status,

education level, place of residence, family history of psychiatric illness, and presence of comorbid diseases showed no statistically significant difference between these characteristics and treatment adherence ($p > 0.05$ for all).

Table 4. Distribution of causes impairing medication adherence in the pandemic

	Yes	No
Item 1*	7 (6.5%)	101 (93.5%)
Item 2*	5 (4.6%)	103 (95.4%)
Item 3*	58 (53.7%)	50 (46.3%)
Item 4*	75 (69.4%)	33 (30.6%)
Item 5*	6 (5.5%)	102 (94.5%)
Item 6*	2 (1.9%)	106 (98.1%)
Item 7*	15 (13.9%)	93 (86.1%)

*All data are expressed as number and percent

Table 5. Rates and comparison of treatment adherence by diagnosis

Treatment adherence	Major Depressive Disorder	Anxiety Disorder	Obsessive Compulsive Disorder	Bipolar Disorder	Psychotic Disorders	p
High*	34 (39.5%)	18 (40%)	4 (28.6%)	9 (39.1%)	4 (44.4%)	0.100
Moderate*	30 (34.9%)	5 (11.1%)	5 (35.7%)	5 (21.7%)	1 (11.1%)	
Low*	22 (25.6%)	22 (48.9%)	5 (35.7%)	9 (39.1%)	4 (44.4%)	
	86	45	14	23	9	

*All data are expressed as number and percent. Diagnostic groups were compared with the chi-square test in terms of treatment compliance.

Discussion

This study was designed to investigate how the pandemic and restrictions affected the treatment adherence of patients who had regular follow-ups and were adherent to treatment for at least 6 months before the COVID-19 pandemic. Patients' treatment adherence was investigated using the Morisky treatment adherence scale and by questioning the causes of impaired treatment adherence according to the list created by the authors of reasons that could be related to the pandemic.

In our study, it was observed that 39% of the patients who attended regular follow-ups and adhered to treatment before the COVID-19 pandemic were not affected by the pandemic and had high treatment adherence, and 61% of them had their adherence affected. Among the reasons for impaired treatment adherence, "I did not come to follow-up because the risk of COVID-19 transmission would be high" and "I couldn't get an appointment as outpatient psychiatry clinics in hospitals to receive a limited number of patients because of the pandemic" were the most common.

In clinical practice, patients' adherence to treatment and appointments is a big problem in all medical specialties. While patients' adherence to clinical follow-up and medication schedules is an important problem in psychiatry, this problem has redoubled with the COVID-19 pandemic. In a previous study, it was shown that 40% of re-hospitalizations within 1 year after discharge from the psychiatry clinic were due to treatment non-adherence [11]. In another study, this rate was in the range of 50-75% [12]. Based on the outpatient clinic data on treatment adherence, the rates are in a wide range. In a study investigating adherence to outpatient appointments, the rate of missed follow-up was reported as 48% [13]. In another study, this rate was found to be 19% [14]. It has also been shown that in treatment non-adherence of psychiatric patients, not attending the first appointment is higher than not attending follow-ups, and partial non-adherence to treatment

is higher than discontinuation of treatment [14]. Our study has shown the negative effects of the COVID-19 pandemic on these routine treatment non-adherences. The treatment non-adherence rate of 61% that we detected in our study is quite noticeable. Among the treatment non-adherence rates, our study particularly suggests that the low treatment adherence increases with the effect of the pandemic compared to the moderate treatment adherence. Considering the causes associated with the pandemic that led to this non-adherence in our study, the risk of viral infection, inability to receive care due to pandemic restrictions, and the risk of transmitting the virus to their dependents have come to the fore in patients who cannot continue their treatment. Countries have had to take many measures such as quarantine, social distance, and restriction of transportation to prevent the COVID-19 epidemic and related deaths. These measures have also been taken in our country according to the pandemic. After the first case was detected in our country, these restrictions were more intense due to the lack of knowledge and uncertainty on SARS-CoV-2 in the world. A study conducted in the UK has associated many of the COVID-19 measures directly or indirectly to the emergence of mental health problems and exacerbation of pre-existing psychiatric disorders [15]. Again, Yang et al. reported that precautions and restrictions in transportation prevent patients from reaching outpatient clinics and medications that are important for stabilization [16]. A more global study involving mental health professionals from 23 different countries demonstrated that the COVID-19 pandemic hindered mental healthcare and this impact was highly intense (61%) [17]. These studies have also shown that COVID-19 and restrictions not only cause psychiatric disorders but also prevent these people from accessing health institutions. Our study also provided information that supports the literature on the effects and causes of treatment adherence rates. The fact that items 1 and 2, among the questions regarding the pandemic-related factors that impair adherence to medication cause lower rates of treatment non-adherence, can be attributed to the increasing psychoeducation programs related to psychiatric drugs and diseases.

In our study, based on the stratification of patients according to their diagnoses, COVID-19 related treatment adherence levels did not differ significantly in terms of diagnosis. Previous studies on this subject reported that treatment adherence varies between psychiatric diseases. [5, 18, 19]. In a study investigating treatment adherence in depressive patients, it was found that 26.8% of the patients were non-adherent to treatment [5]. In psychotic disorders such as schizophrenia, which involves a lack of or poor insight in nature, it was reported that approximately 50% of the patients were partially non-adherent and 20% were fully non-adherent within the first 3 months after discharge [20]. As in our study, treatment adherence in psychiatric disorders was investigated in a study involving outpatient clinic patients, and non-adherence to treatment was found to be 52.5% in major depressive disorder, 16.7% in bipolar disorder, 34% in psychosis and related disorders, 27.3% in anxiety disorder and 68.8% in alcohol-substance abuse disorders [19]. Since pandemic-related treatment non-adherence was evaluated and the sample was relatively small in our study, treatment adherence rates between psychiatric disorders may not have been different.

No statistically significant difference was found between the patients' sociodemographic characteristics such as gender, marital status, education level, place of residence, family history of psychiatric illness, and comorbid diseases, and treatment adherence. Our results are similar to that of studies on treatment adherence not associated with the pandemic [19].

Limitations

Among the limitations of our study, the relatively small sample is the most important. Another limitation was the patients having Axis I disorders and no structured scale being applied for comorbid Axis II disorders. The small sample size and another limitation may be due to the presence of a Community Mental Health Center within the site of the study where patients with psychosis and related disorders are followed.

Conclusions

Psychiatric disorders caused by COVID-19 and the measures taken have been investigated in many studies, but as far as we know, the strength of our study is being the first study evaluating the medication (treatment) adherence of patients on treatment before the pandemic. Our study revealed that treatment non-adherence, which is seen in routine psychiatric disorders, is as high as 61% with the effect of the COVID-19 pandemic. The results reveal that policies should be developed to increase the treatment possibilities of patients with psychiatric disorders, where treatment compliance is of great importance. It also gives an important warning about treatment compliance rates for psychiatrists. In order to better understand the effect of pandemic on treatment adherence, studies in large samples involving Axis-II disorders and geriatric age group are needed.

Conflict of interests

The authors declare that they have no competing interests.

Financial Disclosure

All authors declare no financial support.

Ethical approval

At baseline, the study was approved by Gaziantep University Clinical Trials Ethics Committee and the Ministry of Health (Ethics Committee Decision No: 2020/355).)

References

1. Vindegaard N, Benros ME. COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain Behav Immun*. 2020;89:531-42.
2. Brooks SK, Webster RK, Smith LE, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet*. 2020;395:912-20.
3. Chen A. Noncompliance in community psychiatry: a review of clinical interventions. *Psychiatric Services*. 1991;42:282-7.
4. Cobanoğlu ZSU, Aker T, Cobanoglu N. Treatment adherence problems in patients with schizophrenia and other psychotic disorders. *Dusunen Adam J Psychiatry Neurol Science*. 2003;16:211-8.
5. Ervatan SO, Ozel A, Turkcapar H, et al. Compliance to Treatment in Depressive Patients: A Naturalistic Follow-up Study. *J Clin Psy*. 2003;6:5-11.
6. Swartz MS, Swanson JW, Hannon MJ. Does fear of coercion keep people away from mental health treatment? Evidence from a survey of persons with schizophrenia and mental health professionals. *Behavioral sciences & the law*. 2003;21:459-72.
7. Perkins DO. Predictors of noncompliance in patients with schizophrenia. *Journal of Clinical Psychiatry*. 2002;63:1121-8.
8. Kampman O, Laippala P, Väänänen J, et al. Indicators of medication compliance in first-episode psychosis. *Psychiatry Res*. 2002;110:39-48.
9. Morisky DE, Green LW, Levine DM. Concurrent and predictive validity of a self-reported measure of medication adherence. *Medical Care*. 1986;67-74.
10. Bahar G, Savas HA, Unal A, et al. Reliability and validity of the Morisky Medication Adherence Scale for bipolar mood disorder. *Anatolian J Psychiatry*. 2014;15: 141-9.
11. Byerly MJ, Nakonezny PA, Lescouffair E. Antipsychotic medication adherence in schizophrenia. *Psychiatric Clin North Am*. 2007;30:437-52.
12. Masand PS, Roca M, Turner MS, et al. Partial adherence to antipsychotic medication impacts the course of illness in patients with schizophrenia: a review. *Prim Care Companion J Clin Psychiatry*. 2009;11:147.
13. Alpak G, Aksoy I, Demir B, et al. Missed appointments and medication non-compliance among consecutive psychiatric patients. *Psychiatry Behavioral Sci*. 2015;5:151.
14. Mitchell AJ, Selmes T. Why don't patients take their medicine? Reasons and solutions in psychiatry. *Advances Psychiatric Treatment*. 2007;13:336-46.
15. Holmes EA, O'Connor RC, Perry VH, et al. Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *Lancet Psychiatry*. 2020.
16. Yang Y, Li W, Zhang Q, et al. Mental health services for older adults in China during the COVID-19 outbreak. *Lancet Psychiatry*. 2020;7:e19.
17. Thome J, Deloyer J, Coogan AN, et al. The impact of the early phase of the COVID-19 pandemic on mental-health services in Europe. *World J Biol Psychiatry*. 2020:1-10.
18. Ates M, Algul A. Medication non-adherence in bipolar disorders. *Turkiye Klinikleri J Int Med Sci*. 2006;2:60-4.
19. Demirkol M, Tamam L, Evlice Y, et al. Adherence to the treatment in psychiatric patients. *Cukurova Med J*. 2015;40:555-68.
20. Olfson M, Mechanic D, Hansell S, et al. Predicting medication noncompliance after hospital discharge among patients with schizophrenia. *Psychiatric Services*. 2000;51:216-22.

