



Original Article

Adherence to prescribed treatment by adolescent outpatients with mental disorders at a regional psychiatric hospital

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Abstract

Objectives: The aim of this study was to evaluate adherence to treatment by adolescents with mental disorders who applied to the child and adolescent psychiatry outpatient clinic of a regional psychiatric hospital.

Methods: This descriptive and cross-sectional study was conducted with 142 adolescents who were followed while attending the child and adolescent psychiatry outpatient clinic of a regional psychiatric hospital for twelve months between November 2018 and November 2019. They had been using psychotropic medications for at least three months. In this study, an Information Form with 31 open- and closed-ended questions was used to collect the data. Frequency, percentage, mean, and standard deviation were used to evaluate the data.

Results: In this study, 55.6% of the adolescents who participated were female, and the mean age was 14.51 ± 1.98 years. 93.7% of adolescents continued their education and 70.4% lived in a nuclear family structure. Adolescents were followed up with Attention Deficit-Hyperactivity Disorder (ADHD), and the Anxiety, Mood, and Psychotic Disorders, respectively. Among them, 50.7% use stimulants, 50.7% use antidepressants, and antipsychotic medications. Adolescents used their medications regularly, most (50.7%) did not experience any side effects; those who experienced side effects more often used ineffective coping methods. 37.3% had no difficulty in remembering to take their medications and 24.6% did not forget to take them. Adolescents who found that using regular medication is important often stated that they did not give up whether they felt good or bad; they frequently used support and reminder systems (such as alarms or notes) to get their medications regularly. 61.3% of the adolescents stated that they always came to their appointments regularly; however, some stated that they could often interrupt their appointments in order not to miss classes.

Conclusion: It is recommended that mental health and psychiatric nurses perform experimental studies in different groups of adolescents with mental disorders, using a larger sample in which interventions increase the adherence with treatment, determine the factors affecting the adherence to treatment, and develop standard measurement tools.

Keywords: Adherence; child and adolescent psychiatry; psychiatric nursing.

The increases in the number of prescribed psychotropic medication, which is directly related to the increase in the prevalence of mental disorders during childhood and adolescence, suggests the importance of adherence to treatment with the psychotropic medication used among this population.

^[1-4] Adherence to treatment is defined as patients' acceptance

and implementation of medical recommendations,^[5-7] whereas non-adherence is the failure to use or irregular use of prescribed medications, use of non-prescribed medication, and also the failure to keep appointments, continue treatments or therapy programs, and failure to follow recommended dietary and exercise programs.^[7] The factors affecting adherence to

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Submitted Date: March 04, 2020 **Accepted Date:** June 03, 2020 **Available Online Date:** December 04, 2020

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What is known on this subject?

- Adherence to treatment is problematic; lack of adherence is frequently seen in patients with the mental disorders, causing rehospitalization and loss of coping abilities. Studies on adherence to treatment are often limited to samples consisting of adults with mental disorders.

What is the contribution of this paper?

- This study was conducted to assess the adherence to treatment among adolescents who were monitored in the child and adolescent psychiatry polyclinic of a regional psychiatric hospital. The participants consisted of 142 adolescents; most of them used their medications regularly, and more than one-half of them experienced no side effects.

What is its contribution to the practice?

- Psychiatric nurses play a key role in reducing non-adherence to treatment. It is recommended that nurses who work in the field of child and adolescent psychiatry conduct descriptive studies based on diagnoses and medications used by the adolescents; further, they should perform appropriate interventions to reduce adolescents' potential non-adherence to treatment.

treatment are defined under five categories in the literature:

- Patient-related factors, including low educational status, use of illegal substances, suffering from legal issues, unemployment, history of physical abuse, deficiency of insight, attitudes arising from mental disorders and internalized stigma;
- medication-related factors, including side effects, long-term use of medication, failure to control the effects of medication, complications of medication regimen;
- psychopathological factors, including psychotic symptoms, paranoid delirium cases, displaying positive symptoms, frequent relapses turning into chronic problems, depressive disorders where guilt is felt intensely;
- factors related to the health system, including attitudes and prejudices among treatment team, absence of therapeutic cooperation, receiving treatment with too short periods of hospitalization; and
- social and economic factors such as deficiency of social support, difficulties in social adaptation, and/or financial problems.^[3,7,8]

Non-adherence to treatment is a significant issue seen in many disorders; it decreases quality of life. The problem of non-adherence to mental disorders is more frequent than the non-adherence to other medical disorders, which increases healthcare expenses.^[1] Non-adherence to treatment increases the rate of rehospitalization among patients with mental disorders^[3,9] and consequently causes problems in occupational and domestic environments, decreases patients' quality of life, and increases morbidity and mortality rates.^[3,7,10,11]

Psychosocial interventions should be developed to decrease or prevent non-adherence to treatment among patients with mental disorders to avoid rehospitalization and more serious problems. To develop effective and useful methods for increasing adherence to treatment, the rates of non-adherence to treatment and the factors affecting adherence among different age and disorder diagnostic groups needs to be known. Relevant published studies have examined the attitudes of patients with mental disorders in terms of adherence to treat-

ment. Although adolescents are at a greater risk in regard to non-adherence to treatment, the number of studies examining their adherence to treatment is limited.^[1,5] It is fair to state that more studies should be conducted among patients in this age group, considering that mental disorders among children and adolescents^[3] and that the psychotropic medication they use have increased in the last 20 years.^[4] The study by Varol-Taş et al.^[12] reported that all inpatients treated in a child and adolescent psychiatric service were administered psychotropic medication and that the most preferred (80.4%) were antipsychotics, followed by antidepressants, anxiolytics, and mood stabilizers, respectively. In addition, 78.2% of patients used two or more psychotropic medication. Various studies indicate that the usage rate of psychotropic medication among the children and adolescents in the United States ranged from 13% to 40%^[13] and that these rates are even higher among the children who reside in public institutions.^[13,14] Considering that many mental disorders begin to emerge during adolescence, adherence of adolescents to treatment is important, both in terms of preventing a transformation into a chronic form and also to minimize loss in the number of abilities. The study by Gau et al. examined the adherence of children who were treated with methylphenidate: impactful factors indicated that non-adherence to treatment was often related to forgetting to use medications, believing that the medications do not have any effects, or rejecting the use of medications entirely.^[15] In another study, parents of children and adolescents who had bipolar disorder were asked to assess their children's adherence to their treatment, and the rate of those who displayed complete adherence to medication therapy was only 34.2%.^[16] The systematic review performed by Hage et al. that examined 15 relevant studies indicated that the rate of adolescents' non-adherence to treatment ranged from 6% to 62%, with the median value at 33%.^[1] No studies that examined the adherence rate of inpatients in the clinics of child and adolescent psychiatry or that investigated the rate regarding the adolescent outpatients' adherence to treatment have been carried out in Turkey. Accordingly, the present study aimed to evaluate the adherence to treatment of adolescents who were monitored in the child and adolescent psychiatry polyclinic of a regional hospital in Turkey and used psychotropic medication.

Materials and Method

Study Type and Objective

This descriptive and cross-sectional study aimed to determine the adherence to treatment of adolescents who were monitored in a child and adolescent psychiatry polyclinic and had been diagnosed with mental disorders.

Population and Sample

The population of this study consisted of all adolescents who were monitored in the child and adolescent psychiatry polyclinic of a regional psychiatric hospital in Turkey for one year, between November 2018 and November 2019. A sample size

of 131 was deemed the targeted sample size calculated in accordance with the sampling formula with a known population. Adolescents who were included were those who had applied to the child and adolescent psychiatry polyclinic between the established dates, were between 12 and 18 years of age, had used a psychotropic medication for at least three months, and agreed to participate were included. Considering the potential decreases in sample size, 150 adolescents monitored between the afore-mentioned dates were contacted. Eight questionnaire forms where 80% of items were unanswered were excluded, and analyses were performed based on the data from 142 adolescents.

Data Collection Tools

The Information Form created by authors after reviewing the relevant literature^(3,5,12,15) was used to collect data. The form consisted of 31 open and close-ended items questioning adolescents' sociodemographic characteristics as follows: age, gender, continuous school attendance, grade, social security, place of residence, economic status, employment status, experience of migration, cohabitants of participants; various habits such as smoking; alcohol consumption and use of substances; diagnosis of physical-psychiatric diseases; duration of the disorder; number of hospitalization events; suicide attempts; medication used in treatment; side effects, management of side effects and form of this management; use and abuse of medications; and regular visits to the polyclinic for check-ups. The data were analyzed using the Statistical Package for the Social Sciences (SP22) 22.00 package program by IBM. Frequency, percentage, mean values, and standard deviation figures were used to assess the data.

Ethical Aspects of the Study

The Ethical Committee of Non-Interventional Clinical Studies within a university hospital gave permission (Decision No. 322, dated 10.10.2018) to conduct the study. Moreover, written permission (dated 15.11.2018 and numbered 76379986-604.02) was obtained from the hospital management and Provincial Directorate of Health. The data were collected after adolescents and their families provided written consent.

Limitations of the Study

Inability to use a standard scale as a data collection tool is the main limitation of this study. There are no measurement tools in Turkey that have been developed and specialized for use with children and adolescents, that have been tested for reliability and validity, or that assess the adherence to treatment. Moreover, results of this study are limited by the self-reports of the participating adolescents. It is recommended that self-reports of adolescents and families and objective assessment tools, including the number of medication, pharmacy records, and follow-up with electronic monitoring, be used collectively. This study was conducted with a large sample. It is the first

Table 1. Adolescents' sociodemographic characteristics

Sociodemographic characteristics	Mean±SD	Min-Max
Age	14.51±1.98	12-18
	n	%
Gender		
Female	79	55.6
Male	63	44.4
Place of residence		
Village	18	12.7
District	55	38.7
City	36	25.4
Metropolis	33	23.2
Experience with migration		
No	123	86.6
Internal migration	12	8.5
External migration	7	4.9
Family type		
Nuclear family	100	70.4
Extended family	23	16.2
Fragmented family	13	9.2
Raised in an orphanage	6	4.2
Social security		
Yes	116	81.7
No	26	18.3
Socioeconomic status		
Good	55	38.7
Moderate	73	51.4
Poor	14	9.9
Employment status		
Employed	5	3.5
Unemployed	137	96.5
Continuity to school		
Continuing	133	93.7
Not continuing	9	6.3
Educational status*		
Second level in primary school (5 th -8 th grade)	50	35.2
Secondary school (9 th -12 th grade)	74	52.2
Not continuing	9	6.3
No response	9	96.3
Total	142	100.0

*Adolescents selected more than one option in items with several statements; SD: Standard deviation.

study in this field in Turkey, and despite its limitations, it provides significant data to the relevant literature.

Results

Of the adolescents who applied to the child and adolescent psychiatry polyclinic of a regional hospital and participated

in this study, 55.6% were female, and their mean age was 14.51 ± 1.98 years. In addition, 38.7% of the adolescents lived in districts, and 86.6% had no internal or external migration experiences. Of the adolescents in this study, 70.4% had a nuclear family, 51.4% had moderate socioeconomic status, 81.7% had social insurance, 96.5% were unemployed, and 93.7% continued their education. Of the adolescents who continued going to school, 52.2% were secondary school students and 35.2% were primary school students (Table 1).

An examination of the medical histories of the participants indicated that 16.2% smoked, 2.8% consumed alcohol, and 2.8% used illegal substances. In addition, 13.4% had a chronic physical disease (cardiac disorder, diabetes, respiratory disorder, epilepsy, obesity, myope or astigmatism). Of the adolescents, 50.7% had attention deficit-hyperactivity disorder (ADHD), 21.8% had an anxiety disorder, 9.9% had a mood disorder, 7.7% had a psychotic disorder, and 24.5% had other mental disorders. Moreover, 83.3% of the adolescents who had mental disorders for 2.92 ± 2.40 years on average had never been hospitalized. Also, 18.3% of the adolescents had a history of suicide attempt. The prescribed medication adolescents used included stimulants (28.9%), antidepressants (21.1%), and antipsychotics (20.4%) (Table 2).

Adherence of the participating children and adolescents to treatment are shown in Table 3. Of the adolescents, 69.0% always used their medication regularly, whereas 23.9% used their medication "generally regularly." In addition, 50.7% of participants stated that they never experienced any side effects from medication, whereas 23.2% rarely felt these effects, and 12.7% occasionally experienced them. Of these side effects, 16.9% affected the digestive system, 14.8% disturbed sleeping patterns, 9.2% caused headache and dizziness, and 7.8% induced moodiness. The adolescent participants stated that they made efforts to cope with these side effects by eating or drinking something (7.8%), directing their attention to something else (6.3%), consulting a physician and taking prescribed medication (4.9%), sleeping (3.5%) or using relaxation methods (2.8%). When asked whether they forgot using medication and had difficulties in remembering to use their treatment medication, 24.6% of the adolescents stated that they never forgot, whereas 37.3% forgot rarely, 28.2% forgot occasionally; 37.3% had no difficulties at all, 31.7% rarely had difficulties in remembering, and 16.2% generally had difficulties in remembering to take medication. To remember taking medication, participants got support from the people around them (35.2%), put the medication to somewhere visible (6.3%), wrote a note to remember taking medication (4.9%), or set an alarm (4.2%).

An examination toward adolescents' stopping using medication after feeling well indicated that 60.6% never stopped using medication whereas 15.5% rarely stopped, and 14.8% occasionally stopped taking medication. Results indicated that 29.6% of the participants stopped using the prescribed medication owing to feeling well but restarted later, and that they

Table 2. Adolescents' medical history

Medical history	n	%
Smoking		
Yes	23	16.2
No	119	83.8
Alcohol consumption		
Yes	4	2.8
No	138	97.2
Addictive substance use		
Yes	4	2.8
No	138	97.2
Physical disorder		
Yes	123	86.6
No	19	13.4
Vascular disorders	4	2.8
Respiratory disorders	5	3.5
Endocrine disorders	3	2.1
Digestive disorders	3	2.1
Neurology	2	1.4
Ophthalmology	3	2.1
Mental disorder*		
Anxiety disorder	31	21.8
Psychotic disorder	11	7.7
Affective disorder	14	9.9
ADHD	72	50.7
Alcohol-substance abuse	1	0.7
Personality disorder	9	6.3
Adjustment disorder	11	7.7
Disorders diagnosed during childhood	6	4.2
Sexual identity disorder	8	5.6
No response	1	0.7
	Mean±SD	Min-Max
Duration of mental disorder	2.92±2.40	0–9
	n	%
Number of hospitalization		
Never	119	83.8
Once	19	13.4
Twice or more often	4	2.8
Suicide attempt		
Yes	26	18.3
No	112	78.9
No response	4	2.8
Medication used*		
Medication used for the treatment of ADHD	41	28.9
Antipsychotic	29	20.4
Antidepressant	30	21.1
Other (Vitamins, etc.)	2	1.4
No response-unknown	12	8.5
Total	142	100.0

*Adolescents selected more than one option in items with statements. ADHD: Attention Deficit and Hyperactivity Disorder.

Table 3. Assessment of adolescents' adherence to the treatment

Displaying attitudes with adherence to treatment	Always		Generally		Occasionally		Rarely		Never	
	n	%	n	%	n	%	n	%	n	%
Regular use of medication	98	69.0	34	23.9	7	4.9	0	0	1	0.7
Experience of side effects	6	4.2	13	9.2	18	12.7	33	23.2	72	50.7
Forgetting to use medication	4	2.8	10	7	40	28.2	53	37.3	35	24.6
Difficulty in remembering to use medication	7	4.9	23	16.2	14	9.9	45	31.7	53	37.3
Stopping using medication after feeling well	2	1.4	11	7.7	21	14.8	22	15.5	86	60.6
Stopping using medication after feeling unwell	2	1.4	5	3.5	12	8.5	20	14.1	103	72.5
Feeling well after using medication	37	26.1	75	52.8	18	12.7	9	6.3	3	2.1
Skipping medication dose	0	0	9	6.3	23	16.2	35	24.6	74	52.1
Using non-prescribed medication	7	4.9	3	2.1	3	2.1	7	4.9	122	85.9
Providing information about the use of a psychiatric medication	78	54.9	29	20.4	8	5.6	5	3.5	22	15.5
Regular arrival at appointments	87	61.3	46	32.4	8	5.6	0	0	1	0.7
Forgetting about the appointments	1	0.7	4	2.8	7	4.9	37	26.1	93	34.5

stopped using those medication and restarted later 0.60 ± 1.25 (min:0–max:6) times on average. In addition, after feeling unwell, 72.5% of the adolescents never stopped using medication, whereas 14.1% rarely stopped and 8.5% occasionally stopped taking medication. Of the participants, 19% stopped using medication owing to feeling unwell and restarted later, and that participants stopped using medication and restarted later 0.36 ± 0.99 (min:0–max:4) times on average. According to the results, 52.1% of the adolescents never skipped a dose. When asked about whether they used a medication that was not prescribed by their psychiatrists, 85.9% responded that they never used a non-prescribed medication. When adolescents saw a physician for their non-psychiatric complaints, 54.9% always stated they used a psychiatric medication, whereas 20.4% mentioned that they occasionally did so. Adolescents were asked to score the importance they attributed to using their medication regularly and how much they trusted themselves in terms of using their medication regularly, with points ranging from 1 to 10; the mean score for the importance they attributed to using their medication regularly was 7.66 ± 2.95 (min:0–max:10), whereas the mean score regarding how much they trusted themselves to use their medication regularly was 7.52 ± 2.61 (min:0–max:10).

Among the adolescents, 61.3% always made it to their appointments regularly, whereas 32.4% made it “generally” regularly. Adolescents who could not keep their appointments on time mentioned the following reasons: continuing to attend the classes/school (20.4%); daily busyness-urgency (4.2%); distance to the hospital (3.5%); economic insufficiency (2.1%); difference between the parents' working hours and appointment time (2.1%); reluctance to go to the location of appointment (2.1%); and inability to make an appointment (1.4%). Of the adolescents, 34.5% stated that they never forgot about appointments, whereas 26.1% forgot rarely, 4.9% forgot occa-

sionally, 2.8% forgot generally, and 0.7% always forgot. Results indicated that participants used the following methods to remember their appointments: receiving support from the people around them (11.3%); taking notes to remember (8.5%); setting alarms (8.5%); and calling their doctor (1.4%).

Discussion

Adolescence is a period during which children experience many bio-psychosocial changes. Being diagnosed with a disease and participating in a treatment program cause adolescents to think that they are different than their peers, which may cause them to have difficulties in adhering to the pre-determined treatment program. In addition, adolescents may reject the treatment program prepared by the physicians due to their tendency to feel conflicts with authorities. During this period, adolescents may stop using their medication out of concern for potential side effects and fears related to distortion of their body image.^[17] Adolescents with mental disorders are at a greater risk of non-adherence to treatment, and the number of studies in the relevant literature is limited. Accordingly, this study was conducted to determine the attitudes of adolescents treated as outpatients in a regional psychiatric clinic in Turkey and to assess their adherence to treatment.

The majority of the adolescents participating in this study were female, their mean age was 14.51 ± 1.98 years, they lived in a nuclear family and districts, they had no migration experiences, they perceived their socioeconomic level as moderate, they had social security, they did not work as they continued with their education, and they were students at secondary schools. The study by Dikeç et al. involved adolescents with the mean age of 15.13 ± 1.73 years; the majority of the participants were female and lived with their families in cities, had no experience of migration and had social insurance.^[18] Moreover,

the study conducted by Timlin et al.^[19] to determine the adherence of adolescents with mental disorders to treatment found that more than half of the adolescents were female and aged between 16 and 17 years. The results of this study are in line with the findings of other relevant studies.

The adolescents in this study (16.2% smoked, 2.8% consumed alcohol and 2.8% used illegal substances) were found to misuse psychoactive substances. Adolescents may have the belief "I am one and only in this world, nothing can happen to me" and consequently display risky behaviors (with the most frequent ones using alcohol and substances).^[20] Use of alcohol and addictive substance decelerates the prescribed medication activity, causes patients to experience side effects more intensely, and adversely affects adherence to treatment.^[21,22] Adolescents may believe that they will not be negatively affected by the whole process even if they do not adhere to their treatment. In addition, they may use alcohol and illegal substances or even discontinue the treatment,^[17] which may result in physical health problems. Accordingly, it is critical to assess the comorbid substance abuse while evaluating the adherence to treatment. Of the adolescents in this study, 13.4% were found to have a chronic physical disease. Comorbidity between a physical and mental disorder, the use of medication for the physical problems, and presence of medical controls may distort the adherence to treatment and increase the care-related burdens of patients' relatives.^[18] Thus, it is critical to monitor the adolescents who have a physical problem in addition to a mental disorder.

This study examined the diagnoses for adolescents' mental disorders and found that more than half of the adolescents were diagnosed with ADHD, followed by anxiety, mood and psychotic disorders, respectively. The study conducted by Ercan et al.^[23] with the screening activities performed on the children and adolescents whose ages ranged from 6 to 13 and that is still the largest epidemiological study in Turkey found that children and adolescents were most often diagnosed with ADHD, followed by anxiety disorder. Another epidemiological study conducted by Ercan et al.^[24] also indicated that ADHD and anxiety disorders were the most frequent disorders diagnosed among the Turkish children. The children and adolescents treated as inpatients were often concurrently diagnosed with conduct, substance abuse, mood and psychotic disorders. The results of the present study conducted with adolescents treated as outpatients are similar to those in the literature.^[23,24] In addition, the adolescents in this study were found to use stimulants, antidepressants, and antipsychotics the most in explaining the diagnoses of their disorders. The relevant literature indicates that adolescents often use antipsychotics.^[4,12] The study conducted by Rettew et al. to examine the use of psychotropic medication by the children receiving social welfare found that 37.2% of the participants had a mood disorder whereas 32% had ADHD, 24.1% had an anxiety disorder, 20% used an antipsychotic medication owing to autism, and 8.4% used an anti-psychotic medication; whereas the control group was noted to use more than one medication.^[4]

The present study found that adolescents were diagnosed with a mental disorder for 2.92 ± 2.40 years on average, and that most of them were never hospitalized. The result that 83.8% of the adolescents were never hospitalized during a three-year period was considered to be related to high adherence levels to treatment. Longitudinal studies with larger samples and that prospectively or retrospectively examine adolescents' adherence to treatment based on their mental disorders should be conducted.

This study found that every one of five or six adolescents (28.3%) attempted to commit suicide. Such an attempt may arise from adolescents' desire to end their lives during a depressive episode or could be an impulsive act. The relevant literature reports that adolescents who were diagnosed with depression and attempted to commit suicide displayed worse adherence to their treatment,^[5,10] meaning that adolescents who attempted to commit suicide should be monitored more closely in terms of their adherence to their treatment. The study conducted by Ghaziuddin et al.^[5] with 71 adolescents in 1999 assessed their rate of non-adherence to treatment after the researchers got in touch with the adolescents six or eight months after the discharge from hospital; that study reported the non-adherence rate as 33.8%, noting that adolescents who experienced difficulties in adherence to the treatment were often diagnosed with depression. In addition, the study conducted by Burns et al.^[10] with 85 adolescents whose ages ranged from 13 to 18 years and who had attempted to commit suicide monitored the adolescents at intervals of six months and two years and found that the adherence of adolescents with conduct disorder to psychotherapy and adherence of those with anxiety disorder to psychotropic medication was poor.

Of the adolescents in this study, 69% always used their medication, whereas 23.9% used their medication generally regularly, and most of them were found to have made it to their appointments always or generally regularly. Adolescents' adherence to treatment in the literature is often considered to be related to medication therapies, and adherence rates show differences. The study by Timlin et al.^[19] found that 79% of adolescents displayed adherence to medication therapies, whereas 61% adhered to the non-pharmacological treatments. According to Staples and Bravender,^[17] adolescents' rate of adherence to treatment was over 50%, a rate higher than that of adults; this result was believed to have arisen from parents' control over the treatment of adolescents. The systematic review authored by Edgcomb and Zima^[21] indicated that the rate regarding the adherence of adolescents with mental disorders to treatment was 65.9%. In addition, Moses^[25] found that 62% of the adolescents with mental disorders discontinued the treatment process and that there was a correlation between the adherence to treatment and receiving antipsychotics, family support, treatment team, and inability to ensure cohesion. The systematic review where Timlin et al.^[3] assessed 15 studies indicated that the rate of adolescents' adherence to treatment varied from 34% to 67%, that the non-adherence rates were high, and that adolescents often preferred aban-

doing the treatment. This difference in the literature results reflecting adolescents' adherence to their treatments might be explained by the use of different assessment tools in the studies, socio-cultural differences, and different sample groups (i.e., with outpatients or inpatients).

This study found that most of the adolescents experienced side effects and used ineffective methods to cope with these effects. Adolescents are more sensitive to the metabolic syndrome, movement disorders, gaining weight, and sedation than adults.^[4] The study by Rettew et al.^[4] found that adolescents used more than one medication, particularly the antipsychotic medication, along with stimulants and antidepressants, and that these adolescents were not metabolically monitored. The study by Dikeç et al.^[26] indicated that adolescents who used atypical antipsychotics gained weight and had increased risks in terms of the metabolic syndrome. Determining these side effects experienced by the adolescents and training them to cope effectively with side effects may be key in increasing the adherence to treatment.

Results of the present study indicated that more than half of the adolescents did not forget or have difficulty using their medication, and they used various methods to remember using medication and about their appointments, such as receiving support from the people around them, putting the medication somewhere visible, writing a note to remember, or setting an alarm. Behavioral techniques, such as those just mentioned and also psychoeducational methods, are recommended to increase adolescents' adherence to treatment.^[17] Adolescents can be asked about the methods they can use in their daily lives to facilitate the medication therapy process, and they can be shown how to integrate these methods to their lives. Moreover, parents should be informed about the importance of treatment for the psychiatric diseases through psychoeducational programs, and adolescents can be directed to effective treatment through family support. The study conducted by Bai et al.^[27] to examine the impact of psychoeducational programs for parents on the adherence and symptoms of adolescents with ADHD and on parents' knowledge level indicated that adolescents' adherence increased in the third month, that the intensity of symptoms decreased, and that parents' knowledge level regarding ADHD increased. The study by Nagae et al.^[28] found that the adherence of the adolescents in their study was high, and that there was a positive correlation between the adherence to treatment and trust-based relationship between the adolescents and their mothers. It should be noted that parents' attitudes affect adolescents' adherence to treatment and that psychosocial interventions examining parents' attitudes could be effective in increasing the adherence to treatment.^[10]

This study found that more than half of the adolescents did not forget their appointments, and that adolescents who could not keep their appointments on time stated the following reasons: continuing to attend the classes/school, daily busyness-urgency, distance to the hospital, economic insuff-

iciency, difference between the parents' working hours and appointment time, reluctance to go to the location of appointment, and inability to make an appointment. Adolescents can be reminded about the appointments via phone calls to increase their adherence to treatment, and obstacles should be studied before their treatment begins.^[29] Considering the result that most of the adolescents in this study continued their formal education, psychosocial interventions can be conducted at school for the adolescents, who are diagnosed with a mental disorder and receive treatment, in cooperation with psychiatric health team, school, and adolescents' families. Accordingly, adolescents can be supported in their schools and encouraged to keep their appointments regularly. In addition, arrangements can be developed to enable adolescents who undergo an ongoing treatment process to make an appointment more easily. Importantly, medical staff should be accessible for adolescents. Adolescents can be reminded about their appointments a day before via a short message, or they can contact with medical professionals for their problems with appointments or medication. Financial matters are also among the reasons preventing adolescents from their appointments. Adolescents with mental disorders can be provided medical services through tele-psychiatric services before they arrive at the institutions, or a certain sum can be granted to them to ensure they keep their appointments or use their medication regularly. Munson et al.^[30] stated that structural interventions to be conducted to increase the rate of keeping a routine appointment are needed along with financial aid to be granted to families. Moreover, psychiatric health staff may advocate for patient rights by stating that a smaller fee can be granted to adolescents with a poor economic status.

This study found that more than half of the adolescent participants felt better after using their medication, that they never skipped a dose, that they did not use a medication other than those prescribed, and that they mentioned that they used a psychiatric medication when they went to see a physician. The systematic review conducted by Leclerc et al.^[8] to examine the adherence of young patients upon the first episode to their treatment indicated that patients, particularly the young ones, with schizophrenia spectrum disorder had poor adherence to their medication therapy. Considering the literature data indicated that adherence of patients with psychosis and mood disorder was poorer,^[11,22] the higher rate of adolescents with ADHD in the sample of this study is believed to explain the result of better adherence to treatment regardless of whether adolescents felt well or unwell. In addition, sharing mental disorders and treatments with non-psychiatric medical professionals is critical in preventing a potential medication-medication and medication-food interaction. Some of the adolescents admitted concealing that they used a psychotropic medication. Stigmatization during adolescence is an obstacle before initiating and maintaining the treatment.^[31] During this period, adolescents may hide their psychiatric diagnoses, the medication they use, and their regular visits for controls because dominant relationships with their peers and concerns

that they could be stigmatized by their friends may adversely affect their adherence to treatment. The systematic review performed by Timlin et al. found that adolescents' positive attitudes toward mental disorders and treatment positively affected their adherence to treatment,^[20] whereas Munson et al.^[30] revealed that families' attitudes toward the mental disorders affected adolescents' adherence to treatment. Accordingly, it is fair to state that attitudes of psychiatric health staff, adolescents, and their parents in regard to mental disorders and treatments should certainly be assessed.

All therapeutic medication show activity when used under the recommended circumstances at recommended dosages. Accordingly, the psychiatric health team should work in cooperation with the adolescents with mental disorders and their families. Following a cooperation with the adolescents, positive attitudes regarding medication and mental disorders can be established that may increase the adherence to treatment, improve the healing period, and decrease the duration of treatment and relapses. The psychiatric health staff should be aware of factors affecting adolescents' adherence to treatment, and cooperation should be established in this regard. Adherence to treatment, problems which might arise, solutions to these problems, and potential obstacles should be collectively examined, and adolescents should be trained in problem-solving skills.^[20] It is recommended that the psychiatric services staff, particularly the psychiatric nurses who are in contact with the patients for the longest period, perform interventional studies that examine the factors affecting the adherence to treatment. This should be done using different disorder groups and larger samples to develop standard measurement tools, and that have methods and actions to increase adherence to treatment.

Methods such as peer counseling, simplifying the dosage regimen, talking about past and proposing future adherence conditions, reviewing the objectives in this regard, or determining the convenient times for using the medication—for instance, always taking the dosage in the afternoon—can enable cooperation that will increase adolescents' adherence to the treatment and be helpful for them.^[17] The psychiatric health team should plan interventions with the goal of ensuring cooperation in the family and the adolescent's school. Accordingly, the medication that might affect the adolescents' academic performance should not be administered in the morning, and new strategies increasing the adherence to treatment and preventing the stigma against the adolescents should be developed.

Conclusion

More than half of the adolescents in this study were found to have used their medication as frequently as prescribed and made it to their appointments regularly. Conducting this study with standardized measurement tools and with a larger sample is critical for revealing the factors that affect the adherence to treatment and developing psychosocial interventions

that increase the adherence to treatment. Moreover, studies that examine the factors related to the therapeutic medication, family, and psychopathology that can affect the adherence to treatment and that review the attitudes, insights, and internalized stigma of adolescents in terms of medication and mental disorders, should be conducted.

Psychiatric nurses are recommended to develop psychosocial interventions using the latest technology to increase the adherence of adolescents with mental disorders to treatment. These nurses have roles and responsibilities such as explaining the treatment programs, therapeutic medication and their mechanism of action, as well as describing potential side effects and how to cope with these effects, to adolescents and their families. Psychiatric nurses should monitor patients when they start to use a medication and while they continue to use it, provide counseling service, avoid non-adherence to treatment and thereby reduce healthcare expenses, and finally, advocate for patients' rights.

Conflict of interest: There are no relevant conflicts of interest to disclose.

Peer-review: Externally peer-reviewed.

Authorship contributions: Concept – G.D., L.B.A.; Design – G.D.; Supervision – G.D., L.B.A.; Fundings – G.D., L.B.A., Ö.B.; Materials – G.D., L.B.A., Ö.B.; Data collection &/or processing – Ö.B.; Analysis and/or interpretation – G.D., L.B.A.; Literature search – G.D.; Writing – G.D., L.B.A., Ö.B.; Critical review – L.B.A.

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