Psychiatria Danubina, 2026.; Vol. 38, No. 1, pp. 68-79 https://doi.org/10.24869/psyd.2026.68 *Research article*

Effectiveness of adherence therapy in patients with bipolar disorder: A randomized controlled study

Mehtap Budak[1] & Arzu Yıldırım[2]

[1]Erzincan Binali Yıldırım Mengücek Gazi Training and Research Hospital, Erzincan, Türkiye
[2]Yalova University Faculty of Health Sciences, Department of Psychiatric Nursing, Yalova, Türkiye

received: 29 December 2023; revised: 7 February 2026; accepted: 17 February 2026

Summary

Background: *Treatment adherence improves the quality of life and functional outcomes in patients with bipolar disorder (BD) by supporting effective disease management and fostering the development of self-esteem and self-efficacy. This study aimed to determine the effect of Adherence Therapy (AT) on medication adherence (MA), self-efficacy, and self-esteem in patients diagnosed with BD.*

Subjects and Methods: *This randomized controlled study was conducted with patients diagnosed with BD admitted to the psychiatry outpatient clinic of an Application and Research Hospital in Türkiye. The participants were randomly assigned to either an intervention group (n = 31), who received AT individually, or a control group (n = 30), who continued with their routine outpatient clinic follow-up. Data were collected using the Patient Descriptive Questionnaire, the Morisky Medication Adherence Scale (MMAS), the Self-Efficacy Scale (SES), and the Coopersmith Self-Esteem Inventory -Adult Form (CSEI).*

Results: *There was a significant difference in the MMAS scores, which assess MA, between the intervention and control groups after the AT intervention ($p < 0.01$). Logistic regression analysis revealed that participants in the intervention group had a significantly lower likelihood of poor MA than those in the control group (OR = 0.060; $p < 0.01$). An increasing trend was observed in the SES scores of the intervention group; however, this difference was not statistically significant. The CSEI scores increased significantly in the intervention group, but no significant difference was found between the groups.*

Conclusions: *The AT administered to patients with BD played a role in increasing patients' adherence to treatment. The results of this study suggest that it is important for mental health professionals to use evidence-based strategies to improve patients' MA.*

Keywords: *adherence therapy, bipolar disorder, medication adherence, self-efficacy, self-esteem*

* * * * *

INTRODUCTION

Mood disorders represent a significant public health concern due to their high prevalence, chronicity, and substantial impact on individuals' psychosocial functioning (Tavormina, 2024). Bipolar disorder (BD) is a mood disorder characterized by mania or periods of mania, hypomania, and depression (bipolar-I) and occasional periods of hypomania between recurrent periods of depression (bipolar-II) (American Psychiatric Association [APA], 2013; Öztürk & Uluşahin, 2020). It has a chronic course and impairs psychosocial and occupational functioning, as well as quality of life, imposing a significant socio-economic burden on patients, their families, and society (Aytaç et al., 2025; Youn et al., 2022).

Pharmacotherapy is the primary approach to the treatment of patients with BD; however, non-adherence to treatment remains one of the major barriers to achieving optimal medication efficacy in this population (Tamene et al., 2025).

Non-adherence to treatment is common among patients with BD (Jawad et al., 2018; Karaytuğ et al., 2022; Tung et al., 2025). Non-adherence rates in these patients have been reported to be 39.9% in Northwestern Ethiopia (Tamene et al., 2025), 56.2% in Vietnam (Tung et al., 2025), 70.6% in Turkey (Karaytuğ et al., 2017), and 44% in a systematic review and meta-analysis (Semahegn et al., 2020).

Medication non-adherence in patients with BD is associated with increased rates of hospitalization, depressive episodes, and suicide (Jawad et al., 2018; Karaytuğ et al., 2022). In addition, these patients had higher rates of mixed episodes and medical comorbidities and were more frequently prescribed atypical antipsychotics, benzodiazepines, and antidepressants.

The management of BD requires effective self-management skills; however, low perceived self-efficacy may lead to persistent symptoms, reduced quality of life, and decreased adherence to treatment. Low self-efficacy in individuals with BD is a significant barrier to

self-management, optimal psychosocial functioning, and lifestyle implementation skills (Smith et al., 2020). Medication adherence has been suggested to improve self-esteem in patients (Gandhi et al., 2014). Self-esteem levels in bipolar patients, who experience negative emotions frequently and see themselves as worthless, are low in both periods of depression and well-being (Nilsson et al., 2010; Öztürk & Uluşahin, 2020). Therefore, treatment adherence is important for increasing patients' self-esteem and self-efficacy, especially in mental disorders in which mood fluctuations are seen (Gray, 2006).

Complementary psychotherapeutic interventions along with medication treatment in BD can be effective in preventing relapses by increasing treatment adherence, improving psychosocial functioning, and reducing symptoms (Haffner et al., 2018). MacDonald et al. (2016) conducted a systematic review and meta-analysis of randomized controlled intervention studies to increase MA in BD and found that these interventions were highly varied. One of these methods is the structured adherence therapy (AT) in mental disorders developed by Gray et al. (2006). AT includes different approaches such as determining the reasons for individuals' non-adherence to treatment, creating solutions to problems, developing positive beliefs and attitudes, and eliminating concerns about the future (Li et al., 2023). In addition, AT applied to patients with schizophrenia spectrum and psychotic disorders is effective in increasing treatment adherence (Chien et al., 2024; Staring et al., 2010).

In this context, AT is a structured, manual-based psychosocial intervention designed to enhance treatment adherence by addressing patients' beliefs and attitudes toward treatment through a collaborative approach (Gray, 2006). However, the literature does not include studies that have directly implemented and evaluated AT, as originally defined by Gray (2006), in patients with BD. Available evidence in this field is limited to a single randomized controlled study that examined a medication adherence-focused intervention in inpatients with BD, rather than AT itself (Balikai et al., 2022).

The AT is based on compliance therapy (CT). Compliance therapy differs from AT in that it can be applied to outpatients with low adherence to treatment, in addition to inpatients. First applied in the 1990s, CT is based on Motivational Interviewing (MI), the Cognitive Behavioral Approach (CBA), and psychoeducation (PE) (Dikeç & Kutlu, 2015; Li et al., 2023). The AT includes five key approaches: solving treatment-related problems, recalling the past, eliciting the dilemma, talking about beliefs, and exploring the patient's future plans (Li et al., 2023). The AT is patient-centered, based on collaboration with the patient, and sessions are implemented as face-to-face individual interviews (Dikeç & Kutlu, 2015) (Table 1).

The National Mental Health Action Plan (2011-2023), published by the Ministry of Health in Türkiye, aims to base the treatment and care of individuals with mental disorders on a person-centered approach and to establish a community-based mental health service model in the country. However, within the scope of community-based services, traditional psychosocial interventions such as PE are at the forefront. Mental health workers can implement programs such as ATs to help patients improve mental symptoms and increase their self-esteem and self-efficacy (Gray et al., 2016).

Within this context, this study aimed to evaluate the effect of an AT in increasing treatment adherence, self-efficacy, and self-esteem of patients with BD.

Hypotheses of the study:

H_1: Treatment adherence is higher in patients with BD who receive an AT compared to those who do not receive it.

H_2: Perception of self-efficacy is higher in patients with BD who receive an AT compared to those who do not receive it.

H_3: Self-esteem is higher in patients with BD who receive an AT compared to those who do not receive it.

SUBJECTS AND METHODS

Participants and procedure

This randomized controlled trial was conducted between February and November 2017. The population of the study consisted of registered patients diagnosed with BD according to Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) criteria in the psychiatry outpatient clinic of an Application and Research Hospital in the Central Anatolia Region in Türkiye (N= 288). No sampling method was applied; instead, all patients who met the inclusion and exclusion criteria were recruited. (n = 74).

Inclusion criteria

- Being diagnosed with BD according to DSM-5 criteria,
- Being in clinical remission and being followed up as an outpatient,
- Being in the city center,
- Being ages 18–65,

Table 1. Adherence therapy sessions

Session	Objective	Application	Method
1 and 2 (40–60 min)	- Meeting and sharing of feelings, introduction of the AT - Measuring knowledge, thoughts, and attitudes about the treatment, talking about the benefits, harms, negative experiences, side effects, identifying difficulties and problems - Measuring confidence, competence, and satisfaction with treatment - Raising awareness about treatment and building motivation for change	- The patient's thoughts, attitudes, and beliefs about the disease were measured and evaluated using structured questions related to the AT in a collaborative approach with the patient without discussing or judging. - Patients' experiences during the treatment process were shared. Problems and obstacles preventing receiving treatment were discussed and the patient's reactions were observed. - Patients' satisfaction and self-confidence in receiving treatment were measured and evaluated using the measurements in the AT. - At the end of the session, all evaluations were discussed with the patient gently and awareness about the causes of resistance to treatment was raised.	- Information exchange - Cooperation - Asking open-ended and structured questions - Using a trust-satisfaction chart - Using structured forms - Reflective listening - Summarizing
3, 4, and 5 (60–90 min)	- Identifying problems related to treatment, creating solutions, and evaluating the advantages and disadvantages of solutions. - Recalling past positive and negative experiences related to treatment. - Identifying the favorable and unfavorable aspects of discontinuing the treatment. - Exploring treatment dilemmas and reducing resistance - Reinforcing positive aspects of treatment, identifying false beliefs about the treatment - Talking about change and building motivation for change - Developing coping strategies for problems and helping patients adopt problem-solving skills - Creating solution-oriented long-term goals, strengthening self-esteem and self-efficacy	- The patient was asked to define the problems in their own words and to list all solution suggestions for these problems. - The patient was asked to write the favorable and unfavorable aspects of the listed suggestions and to create solution steps by targeting the best solution suggestion for themselves. - The patient was asked to talk about their past experiences and write the favorable and unfavorable aspects of receiving treatment on the forms used in the AT. Awareness was raised and the dilemma between receiving and discontinuing treatment was attempted to be solved. The notes were evaluated one by one and positive feedback was given to the positive aspects of receiving treatment. - The patient's beliefs affecting treatment were questioned to clarify the unfavorable aspects of receiving treatment. The percentage of the impact of these beliefs on treatment adherence was asked through which false beliefs and their level of influence were clarified. - The patient was presented with evidence from their own experience about each negative belief. They were asked to write and target a solution proposal against the false beliefs. Advice was given without bias. Reducing resistance by developing self-confidence in treatment adherence was aimed.	- Asking open-ended and key questions - Using structured forms - Cooperation - Elaborating - Looking at past - Creating an agenda - Using the importance scale - Disclosing the balance of decision - Emphasizing personal choice and control - Supporting self-efficacy - Summarizing
6 and 7 (40–60 min)	- Re-discussing beliefs, attitudes, and concerns about treatment - Reevaluation of the importance of treatment and confidence in treatment uptake - Emphasizing the importance of treatment and empowering change - Discovering goals and values for treatment - Increasing confidence in receiving treatment - Creating solution-oriented long-term goals and providing future plans - Strengthening self-esteem and self-efficacy	- The patient was asked to write their treatment and future goals on the structured tables in the AT. - The patient was questioned about their successes in the past and the answers were evaluated one by one with the patient. - Awareness was raised by talking about what the patient needs for their future goals and how the treatment will affect their future life. - Kinds of unexpected situations and possibilities that may occur in the patient's plans were discussed. - Precautions and solutions that can be taken against possible problems and obstacles were planned. - The patient was encouraged to achieve their goals and given the opportunity to gain self-confidence.	- Cooperation - Using structured forms - Evaluating adherence - Strengthening motivation - Reframing - Supporting self-efficacy - Giving feedback - Looking at the future - Summarizing

- Agreeing to participate in the study.

Patients assessed by the physician to be in clinical remission (based on clinical interviews) were included in the study.

Exclusion criteria

- Having any physical (hearing, vision, and speech impairment), neurological, or mental disorder/disability that would affect completing the data collection tools,
- Receiving an additional psychiatric diagnosis,
- Full adherence to treatment according to the Morisky Medication Adherence Scale (MMAS).

Patients were taking medications such as lithium, atypical antipsychotics (risperidone, quetiapine), and antiepileptics such as valproate, carbamazepine, or a combination of these drugs. Patients were asked about the reasons for medication non-adherence during the pre-test phase, and those in the intervention group were asked again during the first session of the AT. According to the patients, the reasons for non-adherence were the side effects of medication (frequent weight gain, tremors in hands, drowsiness, and dizziness) and not believing in the therapeutic effect of medication. Among the patients, 21 in the intervention group and 18 in the control group stated that they experienced at least one side effect related to the drugs.

Data collection

The objective, method, and benefits of the study were explained to the patients included in the study and pre-test forms were administered. Then, the patients were randomized by dividing them into intervention (n = 38) and control (n = 36) groups.

Randomization

Patients were randomized to ensure unbiased assignment to intervention and control groups and to avoid bias. To perform randomization, a list of participants was created by a third person who was not involved in the study and numbers were generated using the website https://www.randomizer.org/. The generated numbers were randomly assigned to the intervention and control groups.

Patients in the intervention group were verbally informed about the application and method of the AT, which was administered to each patient individually once a week for a total of three weeks, ranging from 40–90 min. Patients in the control group did not receive any intervention; they were informed about the importance of routine outpatient follow-up. The control group continued to have their routine outpatient clinic appointments.

The post-test forms were administered to the patients in the intervention group two months after the end of the AT and to the patients in the control group two months after they were informed about the importance of routine outpatient follow-up. Of the patients, 65 filled out the forms themselves, and nine (four from the intervention group and five from the control group) did not want to fill out the forms themselves, so the researcher completed their forms using the face-to-face interview method. The forms were completed in 25–30 min on average (Fig. 1).

The place where the pre-test and post-test forms were filled out and the AT sessions were held was planned in advance according to the preferences of the patients. Accordingly, three patients completed the forms and AT sessions at home, five at their workplaces, four at three different care centers, and the remaining patients in a suitable hospital environment.

Data collection tools

Patient descriptive questionnaire

This form included 10 questions about the patient's sex, marital status, employment status, perception of economic status, educational status, persons they live with, presence of a support person during the disease process, age, duration of the disease, and number of hospitalizations.

Morisky Medication Adherence Scale (MMAS)

The MMAS was developed by Morisky, Gren, and Levine in 1986 and its validity and reliability study in bipolar patients in Türkiye was conducted by Bahar et al. (2014). The scale includes four closed-ended questions and two choices (yes/no). Medication adherence is considered high when "no" is answered to all questions, moderate when "yes" is answered to one or two questions, and low when "yes" is answered to three or four questions. The MMAS has adequate internal consistency (0.62) and test-retest reliability (0.64–0.96) (Bahar et al., 2014). The Kuder Richardson-20 (KR-20) reliability coefficient for this study was 0.51. If the Kuder Richardson-20 coefficient is applied to scales with few items (up to 15 items), 0.50 is an acceptable value. When the number of items is more than 50, the coefficient should be above 0.80 (Şencan, 2005). Since there were four items in this scale, the KR-20 coefficient was considered sufficient.

Self-Efficacy Scale (SES)

The SES was developed by Sherer et al. (1982) and its Turkish validity and reliability study was conducted by Gözüm and Aksayan (1999). A 5-point Likert-type scale,

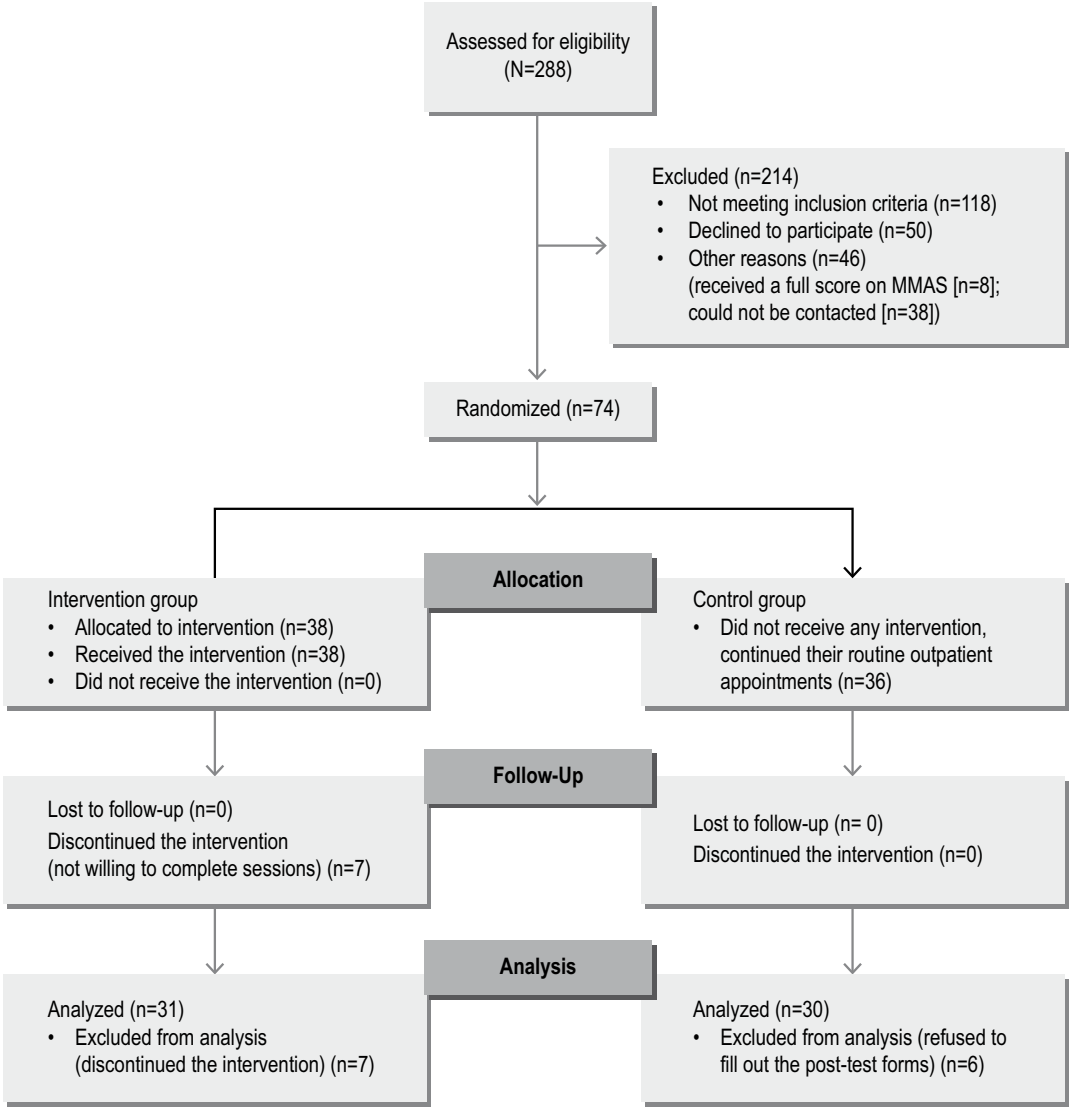

Figure 1. Flowchart of the study

SES includes 23 items and measures the general self-efficacy perception that is not specific to any situation. A minimum score of 23 and a maximum score of 115 can be obtained from the scale and a high score indicates that the individual's self-efficacy perception is good. Cronbach's alpha coefficient of the scale was 0.81 (Gözüm & Aksayan, 1999) in the original version and 0.87 in this study.

Coopersmith Self-esteem Inventory-Adult Form (CSEI)

The CSEI was developed by Coopersmith (1959) and its Turkish validity and reliability study was conducted by Turan (1987). The scale includes 25 items about the person's perspective on life, family, and social relations, evaluation of themselves, and how they see themselves. On the scale, a score of 0–30 indicates "low," 30–70 indicates "medium," and 70–100 indicates "high" self-esteem. Cronbach's alpha coefficient of the scale was 0.76 (Turan & Tufan, 1987) and it was 0.71 in this study.

Intervention

The AT is implemented once a week for a total of seven weeks. The first two sessions are for diagnostics (getting to know the patient and identifying adjustment problems). The third, fourth, and fifth sessions focus on general practices (solving problems, remembering the past, and exploring dilemmas). The last two sessions are for evaluation and conclusion (concerns, beliefs, and future plans) (MacDonald et al., 2016). Accordingly, an AT can be implemented in separate sessions as well as

in combined sessions (McKenzie & Chang, 2015; Dikeç & Kutlu, 2015; Staring et al., 2010). In this study, the AT was completed in three weeks by combining some sessions because the patients found that seven weeks was too long, they could not find time to participate in the AT, and they did not want to meet continuously for seven weeks (Table 1). The AT was administered to each patient individually in line with their wishes at home, the workplace, the hospital, and care centers.

The content of the AT included meetings and sharing of feelings, introduction of the disease, treatment-related problems, past experiences, patients' knowledge and beliefs about treatment, future plans, and their evaluations. The sessions were based on CBA, MI techniques, and PE and were presented in a patient-centered, concise, and comprehensible language, with mutual interactions, continuous repetition, and feedback. *Adherence Therapy* and *Psychoeducation in Bipolar Disorder* manuals and *Motivational Interviewing Techniques* books were used in the sessions. In addition, learning techniques such as exchanging information, asking open-ended questions, reflective listening, elaborating, creating an agenda, giving feedback, and summarizing were used in the sessions.

The researcher received an MI techniques application certificate after receiving training in MI techniques at a psychological research and counseling center and benefited from expert opinions.

Evaluation of the data

Data were analyzed using SPSS for Windows 17 package program and numbers, percentages, minimum and maximum values, and mean and standard deviation were used. The normality distribution of the data was tested according to kurtosis and skewness coefficients.

Table 2. Comparison of descriptive characteristics of patients

		Intervention group		Control group		Test and significance
		n	%	*n*	%	
Sex	Female	17	54.8	16	53.3	X^2=0.014
	Male	14	45.2	14	46.7	*p*=0.906
Marital status	Married	20	64.5	16	53.3	X^2=0.788
	Single/Widow/Widower/ Divorced	11	35.5	14	46.7	*p*=0.375
Employment status	Employed	11	35.5	12	40.0	X^2=0.132
	Unemployed	20	64.5	18	60.0	*p*=0.716
Perception of economic status	Bad	9	29.0	9	30.0	X^2=0.050
	Medium	14	45.2	14	46.7	*p*=0.975
	Good	8	25.8	7	23.3	
Educational status	Primary school	6	19.4	9	30.0	
	Middle school	6	19.4	4	13.3	X^2=1.720
	High school	8	25.8	5	16.7	*p*=0.633
	University	11	35.5	12	40.0	
Persons lived with	Spouse and children	18	58.1	14	46.7	
	Parents	7	22.6	12	40.0	X^2=3.419
	Alone	1	3.2	2	6.7	*p*=0.331
	Dormitory/Care center	5	16.1	2	6.7	
Presence of a support person	Yes	18	58.1	22	73.3	X^2=1.575
	No	13	41.9	8	26.7	*p*=0.210
Age		39.48 (12.93)		37.57 (8.60)		*t*=-0.684 *p*=0.500
Duration of disease (year)		12.42 (9.74)		13.07 (9.39)		*t*=0.26 *p*=0.729
Number of hospitalizations		6.13 (10.57)		5.80 (7.21)		*U*=431.500 *p*=0.625

χ^2 – Chi-square analysis, *t* – independent groups *t*-test

Chi-square analysis and independent samples *t*-test were used to compare descriptive characteristics and scales. The intervention and control group pre-test and post-test scale mean scores were compared within groups using the *t*-test in dependent groups and between groups using the *t*-test in independent groups. Chi-square analysis was used to compare the pre-test and post-test intervention and control groups' AT rates within groups, and McNemar's test to compare between groups. In addition, logistic regression analysis was performed to evaluate the effect of the intervention on the groups in terms of MMAS. Internal consistency was checked using Cronbach's alpha coefficient and KR-20.

Ethical considerations

Permission for the use of the AT in bipolar patients was obtained via e-mail from Dr. Richard Gray, who developed the AT, before starting the study. Ethical approval was obtained from the Ethics Committee of a university (28/12/2016- E.53514), and official permission was obtained from the relevant hospital. Patients included in the study were informed that they could leave the study at any time. Written and verbal consent was obtained from patients who agreed to participate in the study; the study adhered to the principles of the "Helsinki Declaration."

RESULTS

Comparison of descriptive characteristics between groups

Individual and disease-related descriptive characteristics of the patients in the intervention and control groups are shown in Table 2.

Comparison of medication adherence between groups

There was no statistically significant difference between the MMAS rates of the intervention and control groups at baseline ($p > 0.05$). After the intervention, intra-group and inter-group comparisons showed that there was a significant difference between MMAS rates in the intervention group ($p < 0.001$), whereas there was no difference in the control group ($p > 0.05$) (Table 3).

Comparison of self-efficacy and self-esteem between groups

No significant difference was found when the mean SES and CSEI scores of the intervention and control groups were compared at baseline and post-test ($p > 0.05$). When the pretest-posttest mean SES scores of the patients in the intervention group were compared, the difference was not statistically significant ($p > 0.05$) but showed a tendency to improve; however, the mean CSEI scores increased significantly ($p < 0.05$). The difference between the pre-test and post-test SES and CSEI mean scores of the patients in the control group was not significant ($p > 0.05$) (Table 4).

Effect of the intervention on the groups

Logistic regression analysis was performed to examine the effect of the intervention on the intervention and control groups. The effect of the group on MMAS was statistically significant ($p < 0.01$). The risk of poor MA was 0.060 times lower in the intervention group compared to that in the control group (OR = 0.060; $p < 0.01$). The regression model explained 25.2% of the data (Table 5).

Table 3. Comparison of the pre-test and post-test MMAS levels of patients in the study groups

		Intervention group		Control group		X^2	p
		n	%	*n*	%		
MMAS							
Pre-test	Medium adherence	17	54.8	20	66.7	0.894	0.344
	Low adherence	14	45.2	10	33.3		
Post-test	Medium/High adherence	29	93.6	13	43.3	23.639	**<0.001**
	Low adherence	2	6.5	17	56.7		
McNemar							
p		**0.002***		0.065			

MMAS – Morisky Medication Adherence Scale, χ^2 – Chi-square analysis, *$p < 0.01$

Table 4. Comparison of the mean pre-test and post-test SES and CSEI scores of patients in the study groups

		Intervention group (*n* = 31) Mean (SD)	**Control group (*n* = 30) Mean (SD)**	**Test value****	***p***
SES	Pre-test	77.90 (17.02)	77.30 (16.96)	-0.139	0.890
	Post-test	80.29 (13.42)	77.30 (19.06)	-0.706	0.483
	Test value*	-1.549	0.000		
	p	0.132	1.000		
CSEI	Pre-test	52.13 (16.83)	58.40 (19.84)	1.333	0.188
	Post-test	56.26 (13.22)	59.47 (19.76)	0.743	0.461
	Test value*	-2.221	-0.496		
	p	**0.034*****	0.624		

SES – Self-Efficacy Scale, CSEI – Coopersmith Self-Esteem Inventory, **t*-test in dependent groups,
***t*-test in independent groups, ****p* < 0.05

Table 5. Examination the effect of the intervention on the study groups

Dependent variable	**Independent variable**	**β**	**Standard error**	**Wald**	***p***	**Exp (B)**	R^2
MMAS	Group	-2.808	0.818	11.794	**0.001***	0.060	0.252
	Stable	2.674	0.731	13.379	<0.001	14.500	

**p* < 0.01

DISCUSSION

This study aimed to determine the effect of an AT on treatment adherence, self-efficacy, and self-esteem in patients diagnosed with BD.

The adherence to treatment is expected to improve patients' perceptions of self-efficacy and self-esteem by enhancing their sense of control over their lives, beyond merely alleviating symptoms. The findings of the present study indicate that direct empirical evidence regarding AT in BD remains limited. In the existing literature, AT, as originally defined by Gray (2006), has not been directly implemented or systematically evaluated in patients with BD. The available evidence is confined to a single study that examined a medication adherence-focused intervention in inpatients with BD; however, this intervention did not involve AT as a structured therapeutic model (Balikai et al., 2022). Within this context, the present study addresses an important gap in the literature by examining the application of AT in outpatients with BD.

It is important to emphasize that MI and PE are not equivalent to AT when considered as independent interventions. Rather, these approaches constitute core theoretical and therapeutic components that inform the conceptual framework of AT (Gray, 2006; Chien et al., 2016). Accordingly, references to studies based on MI, CBA and PE do not imply methodological equivalence with AT but instead provide contextual evidence regarding psychosocial strategies targeting treatment adherence in BD. Consistent with this perspective, previous studies have independently examined the effects of MI, CBA, and PE on treatment adherence in BD populations (Başkaya & Demir, 2022; Erkuş & Babaoğlu, 2025; Etain et al., 2018; Gülcü & Kelleci, 2022; Yılmaz, 2024; Harmancı & Yıldız, 2023; MacDonald et al., 2016; Pakpour et al., 2017). Despite these studies, few experimental investigations have focused on self-efficacy (McKenzie & Chang, 2015) and self-esteem (Etain et al., 2018; Richardson & White, 2019) in patients with BD.

The present study found that the treatment adherence levels of patients in the intervention group increased significantly after the implementation of the AT compared to those of the patients in the control group. This result confirms the first hypothesis of the study, which is "Treatment adherence is higher in patients with BD who receive an AT compared to those who do not receive it." Studies examining the effect of MI and/or PE monitoring on treatment adherence in patients with BD found that the

treatment adherence levels of patients in the experimental group increased compared to those in the control group (Başkaya & Demir, 2022; Gülcü & Kelleci, 2022; Yılmaz, 2024; Harmancı & Yıldız, 2023; Pakpour et al., 2017). Individual PE (Gümüş et al., 2015) and group PE administered to patients with BD increased patients' treatment adherence levels (Yılmaz et al., 2020; Rahmani et al., 2016). The reported study findings support the outcome of the present study.

Previous studies have reported that the AT improves treatment adherence in patients diagnosed with schizophrenia and psychosis (Chien et al., 2024; Dikeç & Kutlu, 2015; Staring et al., 2010). In a randomized controlled trial conducted by Chien et al. (2016) with patients with schizophrenia spectrum disorders, the experimental group (n = 67) received the AT in a total of six sessions based on MI and behavior analysis. The study reported that after 12 months of follow-up, patients in the intervention group showed significant improvement in disease symptoms, number of hospitalizations, treatment adherence, disease and/or treatment insight, and functioning compared to those in the control group. In another study conducted in Türkiye with patients with schizophrenia, the experimental group (n = 15) received an AT including seven sessions once a week, with each session lasting an average of 40 min. The study reported that the AT increased patients' treatment adherence but had no effect on insight and internalized stigma (Dikeç & Kutlu, 2015).

A systematic review and component network meta-analysis of randomized controlled trials showed that psychosocial interventions, when used in addition to pharmacotherapy, are effective in improving treatment adherence, functioning, and quality of life in individuals with BD. In particular, the combination of PE and Cognitive Behavioral Therapy (CBT) has been shown to have a significant effect on enhancing treatment adherence and reducing manic symptoms (Miklowitz et al., 2021). Furthermore, MA was found to be twice as high in the intervention groups compared to the control group, and even short-term interventions were shown to improve MA (MacDonald et al., 2016). The AT was implemented based on CBA, MI techniques, and PE in the present study. The AT was applied to patients through face-to-face and individual interviews, taking into account the patient's needs, based on cooperation with the patient and in a patient-centered manner. In the AT, patients were included in the process and their personal preferences were respected. They were informed that their choices were their responsibility and were helped to make decisions based on information. They were also empathized with and supported to develop useful skills. Accordingly, the AT was effective in increasing patients' treatment adherence significantly.

In mood disorders characterized by mood fluctuations, treatment adherence plays a crucial role in enhancing patients' self-esteem and self-efficacy and there is a significant relationship between self-efficacy and treatment adherence (Gray et al., 2016). In the present study, there was no significant increase in the perception of self-efficacy of the patients in the intervention group after the AT compared to those in the control group; however, a tendency toward improvement was observed in patients within the intervention group. This result does not confirm the second hypothesis of the study, which was "Perception of self-efficacy is higher in patients with BD who receive an AT compared to those who do not receive it". McKenzie and Chang (2015) conducted a study including MI and two follow-up telephone interventions implemented for a period of weeks and found that there was a significant improvement in patients' adherence to treatment, self-efficacy, and motivation to change. These findings do not support the result of the present study which suggests that treatment adherence is largely maintained through external motivation, and the individual's perception of internal control is insufficiently supported. In this context, it can be argued that structured skill training and active participation components should be intensively incorporated into the program to achieve a significant effect on self-efficacy. Furthermore, since self-efficacy is a dynamic construct that develops over time, longer-term interventions and follow-up studies may be necessary for this change to appear.

In BD, where negative emotions are common and patients feel themselves worthless, self-esteem is reported to be low in both depressed and well-being periods (Nilsson et al. 2010; Öztürk & Uluşahin, 2020). A meta-analysis study reported that bipolar patients in remission had lower self-esteem than normal, healthy individuals and higher self-esteem than patients with major depressive disorder (Nilsson et al., 2010). The present study found that after the AT, the number of patients with low self-esteem decreased, while the number of those with medium self-esteem increased. No change was observed in the number of patients with high self-esteem. Additionally, the mean CSEI score increased significantly. However, there was no difference between the participants in the intervention and control groups in terms of self-esteem. This result does not confirm the third hypothesis of the study, "Self-esteem is higher in patients with BD who receive an AT compared to those who do not receive it". These findings may be partly attributable to contextual factors. The relatively small size of the intervention group (n = 31) may have reduced the statistical sensitivity of the analyses, whereas the high unemployment rate within the sample (64.5%) likely constituted a substantial psychosocial burden. Although the impact of unemployment on

AT outcomes has not been directly examined, evidence from individuals with BD demonstrates a strong negative association between internalized stigma and self-esteem and indicates that unemployed individuals report higher levels of internalized stigma (Özdamar Ünal et al., 2022). Given the strong association between internalized stigma and self-esteem, sociodemographic stressors such as unemployment may have indirectly constrained improvements in self-esteem and, consequently, attenuated the observable effects of AT.

Etain et al. (2018) observed significant improvements in social functioning and MA following PE, while changes in self-esteem were not statistically significant, although a tendency toward improvement was noted. Additionally, they identified illness perception as a strong determinant of improvement in social functioning. CBT-based PE has been reported to enhance perceived recovery in individuals with BD, without significantly affecting self-esteem (Richardson & White, 2019). In a cross-sectional study, Türk and Uğurlu (2023) found that 26% of patients with BD had low self-esteem and there was no significant relationship between self-esteem and treatment adherence and controls. A study that included patients with BD participating in psychosocial rehabilitation services reported a positive but non-significant relationship between MA and self-esteem (Gandhi et al., 2014). The findings of the reported study are consistent with those of the present research.

CONCLUSIONS

This study showed that the AT, which was applied for the first time to patients with BD, increased patients' treatment adherence. Although self-esteem increased in the patients in the intervention group, it did not make a difference for the patients in the control group. In addition, it did not have a significant effect on patients' perceptions of self-efficacy.

Based on these results, the following are recommended:

- Evidence-based interventions should be developed to increase treatment adherence, self-efficacy, and self-esteem in patients with BD,
- The development of group-based interventions that intensively incorporate structured skill training and active participation components is recommended.
- Furthermore, it is suggested to expand the applications of long-term psychosocial rehabilitation programs for individuals with various psychiatric disorders and to conduct follow-up studies.

LIMITATIONS

This study has several limitations. First, the intervention was conducted in different settings (home, workplace, hospital, and care centers), which may have introduced variability in the delivery of the therapy. Second, the relatively small sample size may limit the generalizability of the findings. In addition, pharmacological treatment characteristics, including medication type and treatment regimen, which may influence treatment adherence in patients with BD, were not systematically examined or controlled; therefore, this should be taken into account when interpreting the study findings.

Acknowledgements: We would like to thank the patients who participated in our study, as well as the staff of the community mental health center.

Ethical considerations: Authors confirmed the compliance with all relevant ethical regulations.

Conflict of interests: The authors report no actual or potential conflicts of interest.

Funding sources: No funding was received.

Authors' contributions: Concept – M.B., A.Y., Design – M.B., A.Y., Supervision –A.Y., M.B., Resources – M.B., A.Y., Materials – M.B., A.Y., Data Collection– M.B., Analysis and/or Interpretation – A.Y., M.B., Literature Search – M.B., A.Y., Writing Manuscript – M.B., A.Y, Critical Review – A.Y., M.B.

This study was derived from the first author's master's thesis and was presented as an oral presentation at the 1st International Congress on Innovative Approaches in Nursing, June 20-22, 2019, in Erzurum, Türkiye

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: *American Psychiatric Publishing*.

Aytaç, H. M., Yazar, M. S., Oyacı, Y., & Pehlivan, S. (2025). Evaluation of the macrophage migration inhibitory factor (MIF) -173 G/C variant in bipolar disorder. *Psychiatria Danubina, 37*(1), 22–29. https://doi.org/10.24869/psyd.2025.22

Bahar, G., Savaş, H., Ünal, A., Savaş, E., Kaya, H., & Bahar, A. (2014). Reliability and validity of the Morisky Medication Adherence Scale for bipolar mood disorder. *Anadolu Psikiyatri Dergisi, 15*(2), 141–149. https://doi.org/10.5455/APD.39827

Balikai, S. I., Rentala, S., Mudakavi, I. B., & Nayak, R. B. (2022*).* Impact of nurse-led medication adherence therapy on bipolar affective disorder: A randomized controlled trial*. Perspect Psychiatr Care*, 58(4):2676-2686. https://doi.org/10.1111/ppc.13108

Başkaya, E., & Demir, S. (2022). Effect of treatment adherence training given to patients with bipolar disorder on treatment adherence, social functioning and quality of life: A pilot study. *Complementary Therapies in Clinical Practice, 46*, 101504. https://doi.org/10.1016/j.ctcp.2021.101504

Chien, W. T., Chong, Y. Y., Bressington, D., & McMaster, C. W. (2024). A randomized controlled trial of an acceptance-based, insight-inducing medication adherence therapy (AIM-AT) for adults with early-stage psychosis. *Psychiatry Research, 339*, 116046. https://doi.org/10.1016/j.psychres.2024.116046

Chien, W. T., Mui, J., Gray, R., & Cheung, E. (2016). Adherence therapy versus routine psychiatric care for people with schizophrenia spectrum disorders: A randomised controlled trial. *BMC Psychiatry, 16*, 42. https://doi.org/10.1186/s12888-016-0744-6

Coopersmith, S. (1959). A method for determining types of self-esteem. *Journal of Abnormal and Social Psychology*, 59, 87-94.

Dikeç, G., & Kutlu, Y. (2015). Method for increased treatment adherence in mental disorders: Adherence therapy. *Journal of Psychiatric Nursing, 6*(1), 40-46. https://doi.org/10.5505/phd.2015.62085

Erkuş, Ş., & Babaoğlu, E. (2025). Effect of motivational interviewing on medication adherence in patients with bipolar disorder: Systematic review. *Psikiyatride Güncel Yaklaşımlar, 17*(3), 481-492. https://doi.org/10.18863/pgy.1234567

Etain, B., Scott, J., Cochet, B., Bellivier, F., Boudebesse, C., Drancourt, N., et al. (2018). A study of the real-world effectiveness of group psychoeducation for bipolar disorders: Is change in illness perception a key mediator of benefit? *Journal of Affective Disorders, 227*, 713-720. https://doi.org/10.1016/j.jad.2017.11.072

Gandhi, S., Pavalur, R., Thanapal, S., Parathasarathy, N. B., Desai, G., Bhola, P., et al. (2014). Medication adherence, work performance and self-esteem among psychiatric patients attending psychosocial rehabilitation services at Bangalore, India. *Indian Journal of Psychological Medicine, 36*(4), 406-410. https://doi.org/10.4103/0253-7176.140702

Gözüm, S., & Aksayan, S. (1999). The reliability and validity of Turkish form of the Self-Efficacy Scale. *Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi, 2*(1), 21-34.

Gray, R. (2006). Adherence therapy: Working together to improve health. A treatment manual for health care workers. University of East Anglia. http://www.academia.edu/2436503/Adherence_therapy_manual

Gray, R., Leese, M., Bindman, J., Becker, T., Burti, L., David, A., et al. (2006). Adherence therapy for people with schizophrenia: European multicentre randomised controlled trial. *The British Journal of Psychiatry, 189*(6), 508–514. https://doi.org/10.1192/bjp.bp.105.019489

Gray, R., Bressington, D., Ivanecka, A., Hardy, S., Jones, M., Schulz, M., et al. (2016). Is adherence therapy an effective adjunct treatment for patients with schizophrenia spectrum disorders? A systematic review and meta-analysis. *BMC Psychiatry, 16*, 90. https://doi.org/10.1186/s12888-016-0801-1

Gülcü, G. Z., & Kelleci, M. (2022). The effect of motivational interviewing and telepsychiatric follow-up on medication adherence of patients with bipolar disorder: A randomized controlled trial. *Journal of Psychiatric Nursing, 13*(2), 101–107. https://doi.org/10.14744/phd.2022.24582

Gümüş, F., Buzlu, S., & Çakır, S. (2015). Effectiveness of individual psychoeducation on recurrence in bipolar disorder: A controlled study. *Archives of Psychiatric Nursing, 29*(3), 174–179. https://doi.org/10.1016/j.apnu.2015.01.005

Haffner, P., Quinlivan, E., Fiebig, J., Sondergeld, L. M., Strasser, E. S., Adli, M., et al. (2018). Improving functional outcome in bipolar disorder: A pilot study on metacognitive training. *Clinical Psychology & Psychotherapy, 25*(1), 50–58. https://doi.org/10.1002/cpp.2124

Harmancı, P., & Yıldız, E. (2023). The effects of psychoeducation and motivational interviewing on treatment adherence and functionality in individuals with bipolar disorder. *Archives of Psychiatric Nursing, 45*, 89–100. https://doi.org/10.1016/j.apnu.2023.04.026

Jawad, I., Watson, S., Haddad, P. M., Talbot, P. S., & McAllister-Williams, R. H. (2018). Medication nonadherence in bipolar disorder: A narrative review. *Therapeutic Advances in Psychopharmacology, 8*(12), 349–363. https://doi.org/10.1177/2045125318804364

Karaytuğ, M. O., Keskin, N., Tamam, L., Özpoyraz, N., Demirkol, M. E., & Gürbüz, M. (2017). Assessment of treatment adherence in patients with bipolar disorder. *Journal of Mood Disorders, 7*(4), 185–190. https://doi.org/10.5455/jmood.20170613090644

Karaytuğ, M. O., Tamam, L., Demirkol, M. E., & Namlı, Z. (2022). Treatment compliance and related factors in patients with bipolar disorder. *Archives of Medical Review Journal, 31*(1), 21–27. https://doi.org/10.17827/aktd.1055451

Li, I. H., Hsieh, W. L., & Liu, W. I. (2023). A systematic review and meta-analysis of the effectiveness of adherence therapy and its treatment duration in patients with schizophrenia spectrum disorders. *Neuropsychiatric Disease and Treatment, 19*, 1761–1775. https://doi.org/10.2147/NDT.S412341

MacDonald, L., Chapman, S., Syrett, M., Bowskill, R., & Horne, R. (2016). Improving medication adherence in bipolar disorder: A systematic review and meta-analysis of 30 years of intervention trials. *Journal of Affective Disorders, 194*, 202–221. https://doi.org/10.1016/j.jad.2016.01.002

McKenzie, K., & Chang, Y. P. (2015). The effect of nurse-led motivational interviewing on medication adherence in patients with bipolar disorder. *Perspectives in Psychiatric Care, 51*(1), 36-44. https://doi.org/10.1111/ppc.12060

Miklowitz, D. J., Efthimiou, O., Furukawa, T. A., Scott, J., McLaren, R., Geddes, J. R., & Cipriani, A. (2021). Psychosocial interventions for bipolar disorder: A systematic review and component network meta-analysis. *JAMA Psychiatry, 78*(2), 141-150. https://doi.org/10.1001/jamapsychiatry.2020.2993

Morisky, D. E., Green, L. W., Levine, D. M. (1986).Concurrent and Predictive Validity of a Self-reported Measure of Medication Adherence. *Medicial Care*, 24(1), 67-74.

Nilsson, K. K., Jørgensen, C. R., Craig, T. K., Straarup, K. N., & Licht, R. W. (2010). Self-esteem in remitted bipolar disorder patients: A meta-analysis. *Bipolar Disorders, 12*(8), 585–592. https://doi.org/10.1111/j.1399-5618.2010.00854.x

Özdamar Ünal, G., Önal, B., İşcan, G., & Atay, İ.M. (2022). The relationship between internalized stigma, perceived social support and self-efficacy in bipolar disorder. *Genel Tıp Dergisi*, 32(3), 350-357. https://doi.org/10.54005/geneltip.1104022

Öztürk, O., & Uluşahin, A. (2020). *Mental health and diseases* (14th ed., pp. 304-305). Nobel Medical Publishing.

Pakpour, A. H., Modabbernia, A., Lin, C. Y., Saffari, M., Ahmadzad Asl, M., & Webb, T. L. (2017). Promoting medication adherence among patients with bipolar disorder: A multicenter randomized controlled trial of a multifaceted intervention. *Psychological Medicine, 53*(1), 1–12. https://doi.org/10.1017/S003329171700109X

Rahmani, F., Ebrahimi, H., Ranjbar, F., Razavi, S. S., & Asghari, E. (2016). The effect of group psycho-education program on medication adherence in patients with bipolar mood disorders: A randomized controlled trial. *Journal of Caring Sciences, 5*(4), 287–297. https://doi.org/10.15171/jcs.2016.030

Republic of Türkiye Ministry of Health. (2011). *National mental health action plan 2011-2023*. Ministry of Health Publications.

Richardson, T., & White, L. (2019). The impact of a CBT-based bipolar disorder psychoeducation group on views about diagnosis, perceived recovery, self-esteem and stigma. *The Cognitive Behaviour Therapist, 12*, e29. https://doi.org/10.1017/S1754470X19000308

Semahegn, A., Torpey, K., Manu, A., Assefa, N., Tesfaye, G., & Ankomah, A. (2020). Psychotropic medication non-adherence and its associated factors among patients with major psychiatric disorders: A systematic review and meta-analysis. *Systematic Reviews, 9*(1), 17. https://doi.org/10.1186/s13643-020-1274-3

Sherer, M., & Adams, C. H. (1983). Construct validation of the self-efficacy scale. *Psychological Reports*, 53(3), 899–902.

Smith, L. M., Erceg-Hurn, D. M., McEvoy, P. M., & Lim, L. (2020). Self-efficacy in bipolar disorder: Development and validation of a self-report scale. *Journal of Affective Disorders, 262*, 108–117. https://doi.org/10.1016/j.jad.2019.10.019

Staring, A. B. P., van der Gaag, M., Koopmans, G. T., Selten, J. P., & van Beveren, N. J. M. (2010). Adherence therapy in people with schizophrenia: A randomized controlled trial. *British Journal of Psychiatry, 197*(6), 448-455. https://doi.org/10.1192/bjp.bp.110.077289

Şencan, H. (2005). *Reliability and validity in social and behavioral measurements* (pp. 135–136). Seçkin Publishing.

Tamene, F. B., Mihiretie, E. A., Zeleke, T. K., Sendekie, A. K., Belachew, E. A., & Wondm, S. A. (2025). Medication non-adherence and its predictors among patients with bipolar disorder in Northwest Ethiopia. *Scientific Reports, 15*, 1192. https://doi.org/10.1038/s41598-025-85379-3

Tavormina, G. (2024). Depression, mood disorders and bipolar spectrum: One or different diseases? *Psychiatria Danubina, 36*(2), 170–175. https://hrcak.srce.hr/en/327225

Tung, V. S., Ngoc, T. N., Huyen, L. T. T., Khiem, N. T., Hang, N. T. T., Van, N. T. A., et al. (2025). Factors associated with treatment nonadherence among patients with bipolar disorder in Vietnam. *East Asian Archives of Psychiatry, 35*(1), 32–36. https://doi.org/10.12809/eaap2312

Turan, N., & Tufan, B. (1987). A validity and reliability study of the Coopersmith Self-Esteem Inventory. In *Proceedings of the 7th National Psychology Congress* (pp. 118–122). Hacettepe University Press.

Türk, A., & Uğurlu, N. B. (2023). Internalized stigma and the quality of life and self-esteem of individuals with bipolar disorder. *Journal of Psychiatric Nursing, 14*(1), 49–58. https://doi.org/10.14744/phd.2022.02700

Yılmaz, G. T., Güriz, S. O., Kahiroğulları, A. K., Korucan, A., & Örsel, S. (2020). Effectiveness of the group psychoeducation program in bipolar disorder. *Journal of Cognitive Behavioral Psychotherapy and Research, 9*(2), 73–81. https://doi.org/10.5455/JCBPR.53752

Yılmaz, H. (2024). *The effect of motivational interviewing on coping, functioning, treatment adherence, and quality of life in patients with bipolar disorder* (Doctoral dissertation). Pamukkale University, Institute of Health Sciences.

Youn, H. C., Lee, M. S., Jeong, H. G., & Kim, S. H. (2022). Evaluation of factors associated with medication adherence in patients with bipolar disorder using a medication event monitoring system: A 6-month follow-up prospective study. *Annals of General Psychiatry, 21*(33), 2–10. https://doi.org/10.1186/s12991-022-00411-4

Correspondence:
Prof. Dr. Arzu Yıldırım,Yalova University, Faculty of Health Sciences, Department of Psychiatric Nursing, Yalova, Türkiye
arzu.yildirim@yalova.edu.tr