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Comparison of Behavioral Addictions Between Euthymic Bipolar Disorder Patients and Healthy Volunteers

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ABSTRACT

Objective: It is known that individuals with bipolar disorder have high rates of comorbidities with addictions such as alcohol and substance use disorders. This study aimed to compare behavioral addictions (gambling, shopping, internet, exercise) between euthymic bipolar disorder patients and healthy volunteers.

Methods: Sixty bipolar disorder patients in the euthymic state according to The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) diagnostic criteria and 60 healthy volunteers were included in the study. A sociodemographic data form, the South Oaks Gambling Screen, the Compulsive Online Shopping Scale, the Exercise Dependence Scale, and the Internet Addiction Scale were administered to all participants.

Results: No significant differences were found between the bipolar disorder group and healthy volunteers in the mean scores of South Oaks Gambling Screen, Internet Addiction Scale, and Exercise Dependence Scale ($P = .816$, $P = .478$, $P = .677$, respectively). On the other hand, the mean scores of Compulsive Online Shopping Scale in the bipolar disorder group were significantly lower than in the control group ($P = .044$).

Conclusion: It can be suggested that the prevalence of behavioral addiction in bipolar disorder patients in remission is similar to that of healthy controls.

Keywords: Bipolar disorder, behavioral addiction, internet, gambling, shopping

INTRODUCTION

Bipolar disorder (BD) is a chronic mood disorder characterized by recurrent episodes of depression, mania, hypomania, and mixed episodes, with a lifetime prevalence of up to 6.5%.[1] Behavioral addiction is defined as having an uncontrollable desire to perform and persistently repeat a certain behavior despite its adverse consequences. Recently, some behaviors such as internet use, shopping, gambling, playing video games, exercise, sexual activities, and overworking have been recognized to be addictive.[2] It is known that BD is highly comorbid with addictions such as alcohol and substance use disorders.[1] It has been reported in the literature that BD and addictions share a common etiology. The family history and course of BD and addictions suggest potentially important genetic overlaps.[3] Dopaminergic mechanisms are very important in the pathophysiology of BD. In addition, dopamine

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has been shown to be an important neurotransmitter for substance use and behavioral addictions. This common etiology has suggested that behavioral addiction rates may be high in BD.[4,5]

There are studies in the literature, examining behavioral addictions in BD. In a study on 368 patients, who presented with internet addiction, BD comorbidity rate was found as 30.9%, and it was reported that patients with internet addiction were more likely to meet the diagnostic criteria for BD.[6] Another study reported problematic internet use in 1 of 5 patients with BD.[7] The prevalence of gambling addiction was reported to be significantly higher in BD patients (6.3%) compared to the general population (2.0%) and patients with major depression (2.5%).[8] In a cross-sectional study on 200 healthy volunteers and 158 euthymic BD patients, higher behavioral addiction comorbidity was found in BD patients (33%) compared to healthy controls (13%). Patients with BD had significantly higher scores in pathological gambling, compulsive buying, sex addiction, and work addiction scales compared to healthy controls. However, it has been reported that exercise, unlike other behavioral addictions, may not be addictive for BD patients.[9]

Interest in behavioral addictions has increased in recent years. In this respect, we think that our study will make an important contribution to the literature. In our study, we especially evaluated patients in the euthymic period. Considering that there is a gap in the literature on this subject, we think that our study will make an important contribution to the literature. This study aimed to compare the prevalence of behavioral addictions (gambling addiction, shopping addiction, internet addiction, exercise addiction) between euthymic BD patients and healthy volunteers. Our H1 hypothesis is: behavioral addictions are more common in BD patients in remission than in healthy controls.

MATERIAL AND METHODS

Sample

Our study was carried out in Akdeniz University School of Medicine, Department of Psychiatry in the period between October 2020 and January 2021. Sixty euthymic patients diagnosed with BD according to DSM-5 diagnostic criteria and 60 healthy volunteers with similar sociodemographic characteristics were included in the study. Written informed consent was obtained from all participants before the commencement of the study. Inclusion criteria for the patient group were as follows: being diagnosed with BD according to DSM-5 diagnostic criteria, not having any other comorbid psychiatric disorders according to DSM-5, being in the age range of 18-65 years, being a graduate of at least primary school, being in remission at least over 3 months, and having a score of ≤ 5 in Young Mania Rating Scale (YMRS)[10] and ≤ 7 in Hamilton Depression Rating Scale (HAM-D).[11] Exclusion criteria for patients and controls included the presence of mental retardation, difficulties in completing and understanding the scales, or serious physical or neurological diseases. Our working procedure is as follows. Patients who applied to our BD outpatient clinic and accepted to participate in the study and who met the study criteria were referred to the study team. The study team obtained informed consent and informed patients about the study. The study team then applied the scales to the patients. When the number of patients was completed, healthy controls with similar sociodemographic characteristics were recruited. Healthy controls were determined by fieldwork. A sociodemographic data form, the South Oaks Gambling Screen (SOGS),[12] the Compulsive Online Shopping Scale (COSS),[13] the Exercise Dependence Scale (EDS),[14] and the Internet Addiction Scale (IAS)[15] were administered to all participants. In addition, YMRS and HAM-D were administered to BD patients.

South Oaks Gambling Screen: It is a self-reported test consisting of 26 questions. It is used to evaluate pathological gambling behavior and to determine its frequency. Duvarcı and Varan[16] conducted a validity and reliability study of the Turkish version. As a result of the studies on the SOGS Turkish Form, the cut-off point was determined as 8 points. The Turkish Form consists of 19 items.

Compulsive Online Shopping Scale: It is the Bergen Shopping Addiction Scale adapted to online shopping over the internet. A Turkish validity and reliability study was conducted. It is a 5-point Likert-type scale consisting of 28 questions in total. It can be taken between 0 and 112 points on the scale. The high score indicates that the level of online compulsive purchasing of the people increases.[17]

Exercise Dependence Scale: The scale is evaluated as "1-17 normal groups, 18-34 low-risk groups, 35-51 moderate-risk groups, 52-69 dependent groups, 70-85 high-dependent groups". The validity and reliability of the Turkish form were made.[18]

Internet Addiction Scale: It was developed by Hahn and Jerusalem[15] to measure the level of internet addiction of a person. There are 19 items in the scale, which was adapted into Turkish by Şahin and Korkmaz.[19] A total score of 19 to 95 can be obtained from the scale. High scores on the scale indicate a high level of addiction.

Ethics committee approval for the study was obtained from the Clinical Research Ethics Committee of Akdeniz University Faculty of Medicine with the date: September 9, 2020 decision number KAEK-717. The study was conducted in accordance with the Declaration of Helsinki.

Statistical Analysis

Continuous variables were presented as mean ± standard deviation, and categorical data in numbers and percentages. For the intergroup analysis of continuous variables, normality analyses were performed using the Kolmogorov–Smirnov goodness-of-fit test. In the analysis of data that did not conform to a normal distribution, the Kruskal–Wallis or the Mann–Whitney *U* test was used for the comparison of 3 or more groups or only 2 groups, respectively. The *t*-test was used for comparing normally distributed data between the 2 groups. Chi-square test (Fisher's exact test when necessary) was used for the comparison of categorical data. Linear relationships between the scales were established using the Pearson's correlation test. Analyses were performed using IBM Statistical Package for Social Sciences software version 24.0 (IBM SPSS Corp., Armonk, NY, USA). A *P* value of <.05 was considered statistically significant.

MAIN POINTS

- The mean scores of gambling, internet, and exercise addiction were similar in euthymic bipolar disorder patients and healthy controls.
- Compulsive online shopping mean scores are lower in euthymic bipolar disorder patients than in healthy controls.
- In bipolar disorder patients with psychotic symptoms and rapid cycling attacks, residual symptoms are more common in the euthymic period.

Table 1. Comparison of the Sociodemographic Characteristics of the Groups

		Bipolar Disorder (n=60) %		Healthy Controls (n=60) %		*P*
Gender	Female	34	56.7	36	60.0	.711**
	Male	26	43.3	24	40.0	
Education	Primary school	8	13.3	12	19.0	.707**
	High school	23	38.3	22	36.2	
	University	29	43.8	26	44.8	
Working status	Working	22	36.7	41	70.7	.001**
	Student/retired	16	26.7	10	15.5	
	Unemployed	22	36.7	9	13.8	
Marital status	Married	26	43.3	16	26.7	.146**
	Single	29	48.3	39	65,0	
	Divorced	5	8.3	5	8.3	
Family history of psychiatric disease (n=59)	No	29	49.2	46	78.0	.001**
	Yes	30	50.8	13	22.0	
Age (years) (mean ± standard deviation)		37.40 ± 12.08		41.25 ± 12.46		.088*

*t-test, **Chi-square.

RESULTS

In our study, the mean age was 37.40 ± 12.08 years in the BD group and 41.25 ± 12.46 years in the group of healthy volunteers (*P*=.088). Sociodemographic data are summarized in Table 1.

The mean disease duration in the BD group was 13.18 ± 8.94 years. Clinical characteristics of the patient group are summarized in Table 2.

If we look at the behavioral addiction scale scores, there were no significant differences in the mean SOGS scores between the BD group (0.88 ± 1.94) and the control group (0.60 ± 0.94) (*P*=.816). Mean IAS scores were similar between the BD (33.06 ± 14.93) and control groups (30.36 ± 12.55) (*P*=.478). Mean EDS scores were similar between the BD (39.20 ± 14.20) and control groups (40.16 ± 10.94) (*P*=.677). The mean scores of COSS were significantly lower in the BD group (13.81 ± 16.92) compared to the control group (19.06 ± 16.98) (*P*=.044) (Table 3).

No significant relationships were found between disease duration and IAS, EDS, COSS, and SOGS scores (*P*=.739, *P*=.366, *P*=.348, *P*=.833, respectively). In the patient group, no significant correlations were found between age and scores of IAS, EDS, COSS, and SOGS (*P*=.177, *P*=.558, *P*=.527, *P*=.988, respectively). In the control group, a significant negative correlation was found between age and IAS scores (*P*=.025, *r*=−0.290), but no significant correlations were found between age and EDS, COSS, and SOGS scores (*P*=.583, *P*=.455, *P*=.793, respectively). No significant correlations were found between the total number of episodes and IAS, EDS, COSS, and SOGS scores (*P*=.998, *P*=.955, *P*=.428, *P*=.489, respectively). No significant correlations were found between the number of hospital admissions and IAS, EDS, COSS, and SOGS scores (*P* =.712, *P* =.391, *P* =.144, *P* =.066, respectively). In the BD group, there was a significant positive correlation between the IAS and COSS scores (*r*=0.580, *P* < .001). In the control group, there was a significant positive correlation between SOGS and COSS scores (*r*=0.297, *P* =.021).

Table 2. Clinical Characteristics of the Bipolar Disorder Group

		n (60)	%
First episode of the disorder	Mania	37	61.7
	Depression	19	31.6
	Mixed	3	5.0
	Hypomania	1	1.7
Melancholic features	No	45	75.0
	Yes	15	25.0
Psychotic features	No	35	58.3
	Yes	25	41.7
Suicide attempts	No	45	75
	Yes	15	25
Disease duration (years) (mean ± SD)	13.18 ± 8.94		
Mania [median (min-max)]	2 (0-20)		
Mixed episode [median (min-max)]	0 (0-8)		
Depressive episode [median (min-max)]	2 (0-20)		
Hypomania [median (min-max)]	0 (0-10)		
Total episode [median (min-max)]	4 (1-50)		
Episode duration (weeks) (mean ± SD)	6.29 ± 5.26		
Number of hospitalizations [median (min-max)]	1 (0-15)		

SD, standard deviation.

DISCUSSION

In our study, no significant differences were found between the BD group and healthy controls in the mean scores of IAS, EDS, and SOGS, but the mean COSS scores were significantly higher in healthy controls than in the BD group.

Table 3. Comparison of the Groups by the Mean Scores of the South Oaks Gambling Screen, the Internet Addiction Scale, the Exercise Dependence Scale, and the Compulsive Online Shopping Scale

	Bipolar Disorder Group (n=60) (Mean ± SD)	Healthy Controls (n=60) (Mean ± SD)	*P*
South Oaks Gambling Screen	0.88 ± 1.94	0.60 ± 0.94	.816**
Internet Addiction Scale	33.06 ± 14.93	30.36 ± 12.55	.478**
Exercise Dependence Scale	39.20 ± 14.20	40.16 ± 10.94	.677**
Compulsive Online Shopping Scale	13.81 ± 16.92	19.06 ± 16.98	.044*

*Mann-Whitney *U* test, **t-test.
SD, standard deviation.

It has been reported that gambling disorder has significantly more axis I disorder comorbidities. A systematic review and meta-analysis reported that the presence of a comorbid manic episode of BD in gambling disorder ranged from 0% to 32.5% across various studies. The weighted mean prevalence of comorbid BD in problematic and pathological gambling was estimated to be 12.6%.[20] Another study reported that the prevalence of gambling addiction was significantly higher in BD patients during an episode (6.3%) compared to the general population (2.0%) and patients with major depression (2.5%). It has also been reported that individuals with bipolar I disorder are more affected by gambling problems.[8] In our study, gambling disorder was found at similar rates between the BD group and healthy controls. Some basic psychopathological characteristics such as impulsivity, anxiety, emotional lability, and impairments in judgment are shared between BD and gambling disorder.[21] Studies have reported that mood stabilizers such as lithium and valproic acid may be beneficial for the management of gambling addiction. As known, mood stabilizers are effective in the management of impulsive behaviors, which are common in substance use disorders. Mood stabilizers can be useful in treating impulsive behaviors via dopamine modulation and by decreasing the activity of pyramidal neurons in the medial prefrontal cortex through their gamma aminobutyric acid (GABA)ergic and glutamatergic activities.[22-24] All patients in our study were in remission and were using at least 1 mood stabilizer. This may explain the absence of significant differences between the study groups.

In our study, the level of exercise dependence in BD patients was similar to that of healthy controls. In a study on 60 patients, who had received treatment for BD for at least 18 years, participants were evaluated by accelerometry for 7 days. The BD group spent the majority of the monitoring period (78%) immobile. Time spent with mild physical activity constituted 21% of the monitoring period, with no patients achieving moderate/high activity levels.[25] A meta-analysis showed that BD patients spent more than 10 hours of their awake time immobile.[26] Considering BD patients' sedentary lifestyles resulting from depressive episodes, residual symptoms, or medication effects, it can be suggested that exercise dependence is not likely to develop more commonly in this population of patients compared to the general population.

In our study, internet addiction rates were similar between the BD group and healthy controls. In their study on a total of 795 secondary and high school students, Park et al[27] found that 9.4% of the sample had problematic internet use and that there was a significant relationship between problematic internet use and probable BD. Wölfling et al[6] screened 368 people, who presented with internet overuse, for BD using a mood disorder questionnaire. They found that BD comorbidity was more common in patients, who met the criteria for internet addiction (30.9%), compared to individuals with internet overuse (5.6%). The authors suggested that internet use in these individuals could be explained by a current manic episode, and therefore, BD should be the primary diagnosis.[6] Our study supports this hypothesis considering that the patients were in the euthymic period and their internet addiction levels were similar to those of healthy controls. Indeed, similar to our study, no differences were reported in the BD prevalence between individuals with normal and problematic internet use in a national cohort of 6510 Korean individuals.[28]

In our study, COSS scores were significantly higher in healthy volunteers compared to the BD group. It has been reported that compulsive buying disorder has high comorbidity with mood disorders, substance use, and impulse control disorders.[29] Kesebir et al[30] evaluated compulsive buying scores of 100 BD patients and 100 healthy controls. They found that compulsive buying scores were higher in BD patients compared to healthy controls, and cases with axis-1 and axis-2 comorbidities had higher compulsive buying scores. Moreover, it has been suggested that compulsive buying is associated with impulse control disorders rather than other disorders such as BD or obsessive-compulsive disorder.[31] A study conducted online surveys in various countries including the United States, China, India, and Pakistan during the peak periods of the pandemic. The study has shown that the pandemic and the associated sense of panic increased impulsive and obsessive buying behaviors.[32] Furthermore, the risk of developing problematic internet use has increased during the pandemic.[33] We carried out our study during the peak periods of the pandemic in our country and evaluated the online compulsive buying behaviors of the participants. We think that this may explain the higher COSS scores in the general population. In addition, the disease-associated disability and loss of work performance during episodes resulting in the low socioeconomic status of individuals with mental disorders may have affected their shopping behaviors in the euthymic period.

The important aspect of our study is that it is one of the few studies in the literature evaluating different behavioral addictions, such as gambling addiction, shopping addiction, internet addiction, and exercise addiction, in BD patients. The limitations of our study are the cross-sectional design of the study and the use of self-report scales. In addition, the fact that The Structured Clinical Interview for DSM-5 was not implemented and the low sample size are other important limitations.

In conclusion, it can be suggested that the prevalence of gambling addiction, internet addiction, and exercise addiction in euthymic BD patients is similar to that in healthy controls. It can be suggested that compulsive online buying disorder is less common in BD patients compared to the general population. Studies about behavioral addictions in BD patients are few in the literature, and prospective studies with large sample sizes including both patients in an active episode and patients in the euthymic state are needed to contribute to the literature to elucidate behavioral addiction comorbidity in this group of patients.

Ethics Committee Approval: Ethics committee approval for the study was obtained from the Clinical Research Ethics Committee of Akdeniz University Faculty of Medicine (Date: September 9, 2020, Decision number KAEK-717).

Informed Consent: Written informed consent of the patient was obtained. Patient details have been fully anonymized.

Peer-review: Externally peer-reviewed.

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