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Poor quality of life and functioning in euthymic mood disorders

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ABSTRACT

Aim: This study's aim is to examine the relationship between clinical/demographic characteristics the quality of life (QOL) and functionality in patients with mood disorders.

Material and Method: Total of 280 participants, including participants with bipolar disorder I (BD I), bipolar disorder II (BD II) major depressive disorder (MDD) in remission, and healty control subjects (HC), were included. Beck Depression Inventory (BDI), World Health Organization Quality of Life Instrument Short Form Scale (WHOQOL-BREF), Beck Anxiety Inventory (BAI), Young Mania Rating Scale (YMRS), and General Functioning Assessment Scale (GAF) were used. The data were evaluated with the SPSS 25.0 statistical program.

Results: Compared with HC, patients with MDD had the lowest scores in the QOL total and subdomain scores (p=.001). There was a significant negative correlation between the QOL scores and the BDI scores, but there was a positive correlation between the educational level and the total QOL and social, enviromental domain scores. There was a significant negative correlation between the total QOL and physical domain and the number of depressive episodes. There was a significant negative correlation between the social domain and the number of hospitalizations, but there was a significant positive correlation between the physical, enviromental domain scores and the age of first episode.

Conclusion: QOL between MDD is lower than that of BD. Educational level, number of depressive episodes and hospitalizations, suicide attemps, age of first episode, and BDI scores correlated with QOL. Additionally, it was determined that the main factor affecting the QOL was residual depressive symptoms rather than type of mood disorder.

Keywords: Bipolar disorder I, bipolar disorder II, major depressive disorder, quality of life, functionality

INTRODUCTION

Mood disorders which include bipolar and associated disorders and depression disorders have a rate of prevalence of 2.6-7.8 % and 5-17 %, respectively (1,2). Depression is a syndrome that includes worthlessness, guilt, inadequacy, unwillingness and retarded thinking, loss of attention and concentration, and fatigue accompanied by a sad and overwhelmed mood (3). Depression is one of the common psychiatric disorders which cause loss of ability by affecting 15.7 million adults aged 18 and over in the USA (4). Bipolar disorder (BD) is a severe psychiatric disorder characterized by fluctuations in mood, energy, and behavior (5) that affects about 45 million people around the world (6). Quality of life (QOL) is defined as the individual's perception of their status in life in terms of the cultural structure and system of values they live in, their purposes, expectations, standards, and concerns (7). In a study, that evaluate the QOL of patients diagnosed with BD, it was reported that the disorder had negative impacts in many aspects, mainly education, work, economic status, functionality, social support, and relationships with relatives (8).

Moreover, it is reported that a significant portion of bipolar patients experiences residual symptoms, negative life events, impairment in psychosocial functionality, and life quality in the remission period (9). Similarly, it was observed that patients with depression tend to perceive their existent QOL at a lower level due to impairments in both mental and physical functionalities. Therefore, these persons withdraw from daily life and experience problems in their professional life (10). Even after depression entered remission following efficient treatment, it was reported that QOL only improved in certain patients (11). A longitudinal

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research compared patients diagnosed with BD I and II with patients diagnosed with depression in terms of QOL demonstrated that BD I's psychosocial functionality and QOL were worse than those with BB II and depression (12). In another study, it was reported that there was no difference in terms of psychosocial functionality between depression and BD in an existent depressive period (13). The main study hypothesis is that QOL may be impaired in patients with mood disorders, who are in remission. The manifestations of this impairment may be affected by demographic and clinical characteristics. The aim of this study is to evaluate in comparison QOL and functionality in euthymic patients with BDs, major depressive disorder (MDD) and healthy controls. Secondly, the relationship between QOL and clinical/demographic variables in disease groups will be examined.

MATERIAL AND METHOD

Data Collection and Ethical Considerations

The study was carried out with the permission of Tokat Gaziosmanpaşa University Clinical Researches Ethics Committee (Date: 06.03.2019, Decision No: 83116987-178). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

This research is a descriptive and cross-sectional study. The study groups are consisted of 70 patients from each group of patients diagnosed with BD I, BD II, MDD and 70 healthy controls (HC) who did not have any mental disorder. Bipolar and depressive patients were randomly selected among the patients who had regular follow-up in psychiatry clinic. The inclusion criteria were as follows: i) diagnosis of BD I, or BD II, or MDD, according to DSM-5 criteria; ii) age between 18 to 65 years; iii) euthymia for at least 3 months before entering the study; iv) scored 17 points and under in the Beck Depression Inventory and 5 points and under in the Young Mania Rating Scale (for bipolar patients) which was applied during the interview . Exclusion criteria were as follows: i) intellectual disability and/or pervasive developmental disorder; ii) diagnosis of substance and/or alcohol related disorder, or any physical disorder. The healthy controls were included if they had no history of psychiatric, neurological and chronic medical diseases. Each stage of the research was carried out in accordance with the Helsinki Declaration's rules. Study data was collected between 10.03.2019-10.03.2020.

Measurements

Sociodemographic and data form: This form was prepared by the researchers. The participants' sociodemographic (Age, sex, marital status, level of education, living space, employment status, income level, physical illness), and clinical characteristics (Age at first episode, total number of depressive episodes, total number of hospitalizations, etc) were recorded.

Beck Depression Inventory (BDI): The ınventory developed by Beck et al., Turkish validity and reliability were completed (14). The cutoff score was calculated to be 17 points for the Turkish form of the scale, and higher points indicate the more severe depressive symptoms.

Beck Anxiety Inventory (BAI): This is a self-assessment ınventory comprised of 21 items used to evaluate the level and intensity of anxiety symptoms. Each item is rated on a four-point Likert scale ranging from 0=not at all to 3=severe. The total score ranged from 0 to 63. Score of 0-7 are categorized as normal/minimal anxiety, 8-15 as mild anxiety, 16-25 as moderate anxiety, and 26-63 as severe anxiety. The scale's validity and reliability for Turkish adaptation were completed (15).

Young Mania Rating Scale (YMRS): The scale was developed to measure the severity and alteration of the clinical symptoms in individuals who experience a manic episode. For the scale developed by Young et al., Turkish validity and reliability were completed. The scale is filled according to the interview made based on the patient's condition in the last 48 hours. The cut-off score was calculated as 5 point. (16).

Global Assessment of Functionality (GAF): In its form identified in the five-axis diagnosis system of the DSM, it is used to evaluate the individuals' functionality. It is commonly used in studies on the efficiency of treatment. The scale is scored between 1-100 points and comprises 10 different assessment steps in 10 point intervals. Higher scores on the scale mean better functionality.

World Health Organization Quality of Life Instrument (WHOQOL-BREF): The scale was developed to measure the quality of life associated with general health. The scale has 4 different domain, physical, psychological, social relationships, and environment, and the total score in these domains means the value for the quality of life. For the scale adopted by the World Health Organization, the Turkish validity and reliability study was completed (17).

Stastical Analysis

SPPS 25.0 statistical pack was used for data assessment. Descriptive statistics were provided for categorical and continuous variables in the study. The associations between categorical variables were analyzed using Chi-squared test. Moreover, among the prerequisites for parametric tests, the homogeneity of variances was controlled by the "Levene" test. The normality assumption was checked with the " Kolmogorov-Smirnov" test. To evaluate the differences between two groups, the "Student's t-test" was used when the parametric test prerequisite was fulfilled, and the "Mann Whitney-U test" was used when it was not fulfilled; for comparison of three or more groups, the ANOVA and among the multiple comparison tests, the

Tukey HSD test were used, and when it was not fulfilled, the Kruskal Wallis and among the multiple comparison tests, the Bonferroni-Dunn test were used. Stepwise multiple linear regression model was established to evaluate the sociodemographic and clinical characteristics that affect the participants' QOL. According to the model, the total QOL and subdomain scores was taken as the dependent variable, and sociodemographic (Age, sex, level of education, living space, employment status, physical illness), clinical variables (Age at first episode, total number of depressive episodes, number of manic episodes, number of hypomanic episodes, number of depressive episodes, BAI, BDI, number of hospitalization, attempted suicide), and group (BD I, BD II, and MDD) were taken as the independent variables, and the analysis was performed using the Backward method. A p-value less than .05 was considered to be statistically significant.

RESULTS

Total of 280 participants were included in the study; mean age was 43.55 (±11.75) years for the BD I group, 43.30 (± 12.78) years for the BD II group, 47.14(±9,13) years for the MDD group, and 41.83 (± 10.78) years for the HC. There was a significant difference among BD group (BD I, II) and the MDD group in terms of mean age (p<.005). The number of female participants in the BD II and MDD group was higher, and there was a significant difference compared to the other groups (p<.005). Demographic information of the participants is explained in **Table 1**.

When the patients were evaluated according to their clinical features, for the BD I group, hospitalization rates were statistically significantly higher than the BD II and, MDD group (p=.001). Age at first episode (years) were significantly higher in the MDD group, and there was a significant difference among bipolar groups (p=.001). The number of depressive episodes were higher in the MDD group but, there was not a significant difference among groups (p=.053). BDI and BAI scores were higher than the two BD groups in the MDD group, there was a significant difference between the groups (p=.001, p=.001, respectively). Considering the participants' QOL, it was found out that the total and subscale scores in the QOL scale were higher in healthy controls than patient groups (p=.001). The MDD group had lower scores for WHOQOL BREF subdomain (physical, psychological,

Table 1: Sociodemographic and clinical characteristics of the participants

Variables	Groups				$\chi 2/F$	P
	BD I (n=70)	BD II (n=70)	MDD (n=70)	Control (n=70)		
Age (years)	43.55(11.75)	43.30 (12.78)	47.14±9.13	41.83(10.78)	3.781	0.011
Sex Female	33 (47.1)	52 (74.3)	56 (%80)	37 (52.9)	23.256	<0.001
Marital status						0. 004
Single	15 (21.4)	21 (30)	5 (%7,1)	9 (12.9)	30.911	
Married	46 (65.7)	34 (48.6)	58 (%82,9)	56 (80)		
Divorced	7 (10)	6 (8.6)	4 (%5,7)	4 (5.7)		
other	2 (2.9)	9 (12.9)	3 (%4,3)	1(1.4)		
Level of education						0. 023
Primary school	34 (49.0)	27 (38.6)	40 (%57,1)	22 (31.4)	27.761	
Secondary school	9 (12.9)	10 (14.3)	4 (%5,7)	3 (4.3)		
High school	14 (20)	13 (18.6)	15 (%21,4)	26 (37.1)		
University	12 (17.1)	20 (28.6)	11 (%15,7)	18 (25.7)		
Living space						< 0.001
Village	11(15.7)	10(13.3)	3(43.3)	3(4.3)	39.000	
District	33(47.1)	22(31.4)	16(22.9)	10(14.3)		
City	26(37.1)	38(54.3)	51(72.9)	57(81.4)		
Employmentstatus						< 0.001
Unemployed	9(% 12.8)	6 (%8,6)	3 (%4,3)	1(%1.4)	30.212	
Housewife	24(34.3)	28(%40)	46(%65.7)	10(%14.3)		
Employee	12(%17.1)	10 (%14.9)	4(%5.7)	25(%35.7)		
Officer	8(%11.4)	12 (%17.1)	6 (%8.6)	20 (%28.6)		
Retired	17 (%24.4)	14 (%20)	11 (%15.8)	14 (% 20)		
Income level						0.007
<2800	65(%92)	61(%87)	26(%	26(%	70.019	
2800-3800TL	2(%3.5)	5(%7.1)	23(%	20(%		
>3800	3(%4.5)	4(%5.9)	23(%	24(%		
Physical illness						<0.001
Yes	22 (%31,4)	13 (%18,6)	41 (%58,6)	15 (%21,4)	31.827	

Results are presented as mean (standard deviation), or frequency (percentage). Results are from ANOVA or chi-squared test. BD I=bipolar disorder I; BD II=bipolar disorder II; MDD= major depressive disorder; TL=Turkish Lira.

social, and enviromental) than the BD I and BD II group (p=.006, p=.001, p=.001, p=.037, respectively). Considering the general functionality assessment, the MDD group had highest for GAF scores than the BD I and BD II group, while the highest mean score again belonged to the healthy control group (p=.001). The clinical characteristics of the groups were compared with ANOVA, data were presented in **Table 2**.

Multiple linear regression model was established to evaluate the sociodemographic and clinical characteristics that affect the participants' QOL. There was a significant negative correlation between the total QOL and, subdomains and the BDI scores (p<.001), but there was a positive correlation between the educational level and the total QOL and social, enviromental subdomain (p=.015, p=.004, p<.001, respectively). Additionally, there was a positive relationship between have a job and total QOL (p=.020). There was a significant negative relationship between the total QOL and physical subdomain and the number of depressive episodes (p=.049, p=.002, respectively). There was a significant negative relationship between the social subdomain and the number of hospitalizations (p=.045), but there was a significant positive relationship between the physical, enviromental subdomain and the age of first episode (p=.008, p=.022, respectively). There was a significant negative correlation between the history of suicide attemps and the enviromental subdomain (p=.047). There was a significant negative correlation between the group (BD I, BD II or MDD) and the total QOL and its psychological, social subdomain (p=.011, p=.014, p=.001, respectively). The data are shown in **Table 3**.

Multiple linear regression model was established to measure the sociodemographic and clinical characteristics that affect the patient group's QOL. In the BD I group, there was a negative correlation between the QOL subdomains (except enviromental), and the BDS scores (p=.003, p=.014, p=.029, respectively), but there was a positive relationship between the QOL physical subdomain and the number of manic episodes (p=0.024). In the BD II group, there was a significant negative correlation between the total QOL and, subdomains (except social) and the BDI scores (p<.001, p=.002, p<.001, p<.001, respectively), but there was a positive correlation between the enviromental subdomain and the educational level (p=.014). In the MDD group, there was a negative relationship between the total QOL and, subdomains and the BDI scores (p<.001), while there was a negative relationship between the physical subdomain and the number of depressive episodes, suicidal behavior (p=.015, p=.043, respectively), data were presented in **Table 4** and **Table 5**.

Table 2. Evaluation of scales and clinical features in groups

Scale	Groups	Mean±SD		F	p
GAF			HC>MDD>BD I. BD II	252.610	0.001[1**]
	BD I	56.93±7.288			
	BD II	56.29±7.357			
	HC	82.57±6.356			
	MDD	71.86±5.528			
WHOQOL-BREF total			HC>BD I. BD II. MDD	15.180	0.001[1**]
	BD I	66.42±9.313			
	BD II	64.61±7.940			
	HC	72.41±9.175			
	MDD	62.84±9.234			
Physical health			HC>BD I. BD II>MDD	4.253	0.006[1**]
	BD I	14.38±2.292			
	BD II	14.29±2.208			
	HC	14.70±2.444			
	MDD	13.36±2.377			
Psychological health			HC>BD I. BD II>MDD	11.167	0.001[1**]
	BD I	13.55±2.357			
	BD II	13.38±2.454			
	HC	14.80±2.150			
	MDD	12.61±2.105			
Social health			HC>BB I. BB II>MDD	5.605	0.001[1**]
	BD I	13.27±9.953			
	BD II	12.00±2.814			
	HC	14.26±2.710			
	MDD	10.65±2.832			
Enviromental health			HC>BD I. BD II. MDD	2.862	0.037[1*]
	BD I	13.26±2.043			
	BD II	13.06±1.827			
	HC	13.97±2.401			
	MDD	13.03±1.923			
Beck anxiety inventory			HC< BD II. BD I< MDD	19.277	0.001[2**]
	BD I	9.03±5.505			
	BD II	8.60±6.796			
	HC	4.34±4.656			
	MDD	14.97±4.575			
Beck depression inventory			HC< BD I .BD II<MDD	58.004	0.001[1**]
	BD I	7.67±3.331			
	BD II	7.61±3.553			
	HC	4.40±3.076			
	MDD	9.61±2.989			
Age at first episode (years)			BD I<BD II<MDB	241.148	<0.001[2**]
	BD I	24.38±9.81			
	BD II	29.24±10.46			
	HC	N/A			
	MDB	34.21±9.31			
Total number of depressive episodes			HC<MDD. BD I. BD II	87.623	0.033[2*]
	BD I	4.34±2.48			
	BD II	4.94±2.67			
	HC	N/A			
	MDB	5.44±2.63			
Total number of hospitalizations			BD I > MDD. BD II	69.445	0.001[2*]
	BD I	2.77±1.98			
	BD II	0.49±0.79			
	HC	N/A			
	MDB	0.6±1.26			

*p<0,05, **p<0,01, Abbreviations: SD: standard deviation; 1ANOVA (F), 2 Kruskal Wallis Test (H), GAF: Global Assessment of Functionality, WHOQOL-BREF: World Health Organization Quality of Life Instrument, HC: Healthy Control, BD I: Bipolar disorder I, BD II: Bipolar disorder II, MDD: Major depressive disorder

Table 3. Evaluation of quality of life subscales with sociodemographic and clinical characteristics

	WHOQOL-BREF total					Physical Health					Psychological Health					Social Health					Enviromental Health				
	B	SE B	β	t	95% CI	B	SE B	β	t	95% CI	B	SE B	β	t	95% CI	B	SE B	β	t	95% CI	B	SE B	β	t	95% CI
Gender	-1.657	.874	-.089	-1.896	(-3.378 -.064)	.294	.275	.062	1.069	(-.248-.836)	-.261	.264	-.056	-.986	(-.781-.260)	-.185	.356	-.030	-.520	(-.885-.516)	.324	.239	.079	1.356	(-.147-.795)
Education	.827	.337	.119	2.452/*	(.163-1.491)	.155	.106	.088	1.463	(-.054-.365)	.191	.102	.109	1.874	(-.01-.392)	.400	.137	.172	2.915/*	(.130-.670)	.548	.092	.361	5.945/**	(.367-.730)
Working status	.419	.179	.110	2.332/*	(.065-.772)	.023	.057	.024	.406	(-.088-.134)	.107	.054	.112	1.973	(.00-.214)	.091	.073	.071	1.243	(-.053-.235)	.059	.049	.071	1.205	(-.038-.156)
Age at onset	.027	.031	.048	.889	(-.033-.087)	.026	.010	.177	2.662/*	(.007-.045)	.000	.009	-.003	-.044	(-.019-.018)	-.023	.012	-.121	-1.857	(-.048-.201)	.019	.008	.154	2.304/*	(.003-.036)
Number of depressive episodes	-.344	.174	-.121	-1.981/*	(-.686-.002)	-.171	.055	-.237	-3.135/*	(-.279-.064)	-.090	.052	-.126	-1.720	(-.194-.013)	-.076	.071	-.079	-1.070	(-.215-.064)	-.036	.047	-.057	.751	(-.129-.058)
Number of hypomanic episodes	.324	.257	.068	1.263	(-.181-.829)	.275	.081	.227	3.401	(.116-.434)	.132	.078	.110	1.70	(-.021-.285)	-.071	.104	.045	.682	(-.134-.277)	.082	.070	.078	1.163	(-.057-.220)
Number of manic episodes	.577	.397	.094	1.453	(-.205-1.35)	.212	.125	.136	1.695	(-.034-.458)	.057	.120	.037	.475	(-.179-.294)	-.097	.162	-.047	-.603	(-.415-.221)	.100	.109	.075	.925	(-.113-.314)
BAI	-.023	.072	-.017	-.322	(-.165-.119)	-.043	.023	-.122	-1.872	(-.087-.002)	-.027	.022	-.078	-1.228	(-.070-.016)	-.029	.029	-.063	-.982	(-.087-.029)	-.003	.020	-.010	-.154	(-.042-.036)
BDI	-1.646	.129	-.658	-12.719/**	(-1.90--1.39)	-.258	.041	-.406	-6.330/**	(-.338--.178)	-.300	.039	-.478	-7.659/**	(-.377--.223)	-.305	.053	-.364	-5.784/**	(-.408--.201)	-.166	.035	-.304	-4.692/**	(-.236–-.096)
Attempted suicide	-1.098	1.292	-.036	-.850	(-3.64-1.44)	.669	.407	.087	1.645	(-.132-1.471)	-.590	.391	-.077	-1.510	(-1.360-.179)	.205	.526	.020	.390	(-.830-1.241)	-.704	.353	-.106	-1.992/*	(-1.40--.008)
Group	-1.476	.579	-.182	-2.550/*	(-2.61--.336)	-.276	.182	-.134	-1.512	(-.635-.083)	-.434	.175	-.214	-2.481/*	(-.779--.090)	-.785	.236	-.290	-3.333/*	(-1.249-.321)	-.089	.158	-.050	-.560	(-.401-.223)
Physical illness	-.173	.860	-.009	-.201	(-1.86-1.52)	-.481	.271	-.100	-1.777	(-1.014 -.052)	.557	.260	.117	2.143	(.045-1.069)	.157	.350	.025	.447	(-.533-.846)	-.014	.235	-.003	-.058	(-.477-.450)

Note. Results are from linear regression analysis. Group=BD I(bipolar disorder I); BD II(bipolar disorder II), MDD(major depressive disorder); WHOQOL-BREF=World Health Organization Quality of Life Instrument; BAI=Beck Anxiety Inventory; BDI=Beck Depression Inventory; *P < 0.05; **P ≤ 0.001.

Table 4. Evaluation of quality of life subscales in patient groups with sociodemographic and clinical feature

		Physical Health					Psychological Health					Social Health					Enviromental Health				
		B	SE B	β	t	95% CI	B	SE B	β	t	95% CI	B	SE B	B	t	95% CI	B	SE B	β	t	95% CI
BD I	Gender	.858	.621	.208	1.382	(-.389-2.104)	-.126	.619	-.029	-.203	(-1.36-1.11)	-1.154	.824	-.206	-1.401	(-2.809-.500)	-.171	.579	-.043	-.296	(-1.334-.991)
	Education	-.005	.258	-.003	-.020	(-.523-.513)	.226	.257	.129	.881	(-.290-.742)	.296	.342	.129	.864	(-.392-.983)	.641	.240	.396	2.666/*	(.158-1.123)
	Working status	.024	.120	.030	.202	(-.217-.266)	-.022	.120	-.026	-.182	(-.263-.219)	.076	.160	.069	.477	(-.245-.397)	.082	.112	.106	.733	(-.143-.307)
	Age at onset	.013	.033	.056	.390	(-.054-.080)	.057	.033	.238	1.727	(-.009-.124)	-.012	.044	-.039	-.277	(-.101-.077)	.000	.031	-.001	-.010	(-.063-.062)
	Number of depressive episodes	-.106	.110	-.132	-.968	(-.326-.114)	-.119	.109	-.143	-1.091	(-.338-.100)	.110	.145	.101	.756	(-.182-.402)	-.022	.102	-.029	-.219	(-.227-.183)
	Number of hypomanic episodes	.186	.180	.135	1.031	(-.176-.548)	.062	.180	.044	.347	(-.298-.423)	.301	.239	.161	1.260	(-.179-.782)	.175	.168	.133	1.044	(-.162-.513)
	Number of manic episodes	.358	.172	.282	2.082/*	(.013-.703)	.339	.171	.258	1.979	(-.005-.683)	.027	.228	.016	.118	(-.431-.485)	.004	.160	.003	.026	(-.318-.326)
	Number of hospitalization	-.699	.921	-.099	-.759	(-2.54-1.151)	-.863	.918	-.118	-.940	(-2.707-.981)	-1.742	1.223	-.182	-1.424	(-4.198-.714)	-.148	.859	-.022	-.172	(-1.873-1.57)
	BAI	.046	.043	.166	1.069	(-.040-.132)	-.029	.043	-.101	-.675	(-.115-.057)	-.084	.057	-.224	-1.471	(-.198-.031)	-.038	.040	-.145	-.958	(-.119-.042)
	BDI	-.106	.110	-.132	-.968/*	(-.479– -.101)	-.240	.094	-.359	-2.554/*	(-.428– -.051)	-.280	.125	-.320	-2.243/*	(-.531- -.029)	-.119	.088	-.193	-1.355	(-.295- .057)
	Attempted suicide	.458	.828	.070	.554	(-1.205-2.12)	-.936	.825	-.137	-1.135	(-2.593-.721)	.300	1.099	.034	.273	(-1.90-2.50)	-.811	.772	-.129	-1.051	(-2.361-.739)

Note. Results are from linear regression analysis. BD I=Bipolar Disorder I; BAI=Beck Anxiety Inventory; BDI=Beck Depression Inventory; *P < 0.05; **P ≤ 0.001.

Table 5. Evaluation of quality of life subscales in patient groups with sociodemographic and clinical features

		Physical Health				Psychological Health				Social Health				Enviromental Health			
		B	SE B	β	t	95% CI	B	SE B	β	t	95% CI	B	SE B	B	t	95% CI	B	SE B	β	t	95% CI
BD II	Education	.212	.232	.133	.914	(-.253-.677)	-.149	.293	-.084	-.508	(-.735-.438)	.474	.379	.233	1.252	(-.284-1.23)	.646	.215	.489	3.007/*	(.216-1.075)
	Working status	-.089	.109	-.100	-.811	(-.308-.130)	.071	.138	.072	.515	(-.205-.347)	.085	.178	.075	.477	(-.272-.442)	-.114	.101	-.155	-1.125	(-.316-.089)
	Age at onset	.009	.026	.041	.337	(-.043-.060)	-.047	.033	-.199	-1.435	(-.112-.018)	.004	.042	.016	.102	(-.080-.089)	.011	.024	.061	.445	(-.037-.058)
	Number of hypomanic episodes	.149	.123	.148	1.214	(-.097-.395)	-.049	.155	.043	-.314	(-.359-.261)	-.005	.200	-.004	-.027	(-.406-.395)	.000	.113	.001	.004	(-.227-.228)
	Number of depressive episodes	-.155	.098	-.187	-1.583	(-.350-.041)	-.003	.123	-.003	-.024	(-.250-.244)	-.123	.159	-.117	-.773	(-.442-.169)	.009	.090	.013	.100	(-.172-.190)
	Number of hospitalization	.476	.472	.102	1.007	(-.470-1.421)	.176	.596	.034	.295	(-1.01-1.36)	-.520	.770	-.087	-.676	(-2.06-1.02)	-.772	.437	-.200	-1.769	(-1.646-.102)
	BDI	-.230	.071	-.369	-3.227/*	(-.372- -.087)	-.373	.090	-.540	-4.159/**	(-.553- -.193)	-.195	.116	-.246	-1.681	(-.427-.037)	-.137	.066	-.266	-2.081/*	(-.269- -.005)
	BAI	-.116	.041	-.358	-2.831/*	(-.199- -.034)	-.029	.043	-.101	-.675	(-.140-.067)	-.402	.067	-.101	-.626	(-.176-.092)	.040	.038	.150	1.064	(-.036-.117)
	Attempted suicide	-.115	.608	-.019	-.189	(-1.333-1.10)	-.895	.767	-.134	-1.166	(-2.43-.642)	.072	.992	.009	.072	(-1.91-2.05)	-.942	.562	-.189	-1.675	(-2.068-.184)
MDD	Education	-.159	.203	-.083	-.784	(-.567-.248)	.293	.168	.191	1.738	(-.045-.630)	.632	.238	.280	2.651/*	(.154-1.110)	.344	.176	.232	1.953	(-.009-.697)
	Working status	-.086	.143	-.077	-.605	(-.372-.200)	.178	.118	.198	1.503	(-.059-.414)	.189	.167	.143	1.132	(-.146-.525)	.023	.124	.026	.183	(-.225-.270)
	Age at onset	.019	.029	.077	.666	(-.039-.077)	.012	.024	.062	.515	(-.036-.060)	-.014	.034	-.046	-.403	(-.082-.054)	.040	.025	.209	1.610	(-.010-.091)
	Number of depressive episodes	-.288	.115	-.326	-2.514/*	(-.518- -.059)	-.028	.095	-.039	-.290	(-.218-.163)	.077	.134	.074	.576	(-.192-.347)	-.019	.099	-.027	-.190	(-.218-.180)
	BAI	-.070	.051	-.137	-1.377	(-.173-.032)	.013	.042	.033	.317	(-.071-.098)	.096	.060	.159	1.610	(-.024-.216)	.041	.044	.102	-.887	(-.048-.129)
	BDI	-.416	.089	-.526	-4.679/**	(-.518- -.059)	-.392	.073	-.619	-5.347/**	(-.539- -.245)	-.622	.104	-.666	-5.997/**	(-.830- -.414)	-.280	.077	-.457	-3.658/*	(-.434- -.127)
	Number of hospitalization	-.025	.529	-.005	-.048	(-1.085-1.03)	.020	.438	.005	.045	(-.858-.897)	-.933	.620	-.154	-1.504	(-2.176-.309)	.107	.458	.027	.234	(-.811-1.025)
	Attempted suicide	2.150	.791	.297	2.719/*	(.566-3.734)	-.954	.655	-.164	-1.457	(-2.26-.358)	-.539	.927	-.063	-.582	(-2.39-1.31)	-.625	.685	-.111	-.913	(-1.996-.747)

Note. Results are from linear regression analysis. BD II=Bipolar Disorder II; MDD=Major Depressive Disorder; BAI=Beck Anxiety Inventory; BDI=Beck Depression Inventory; *P < 0.05; **P ≤ 0.001.

DISCUSSION

The results showed that the QOL of patients with mood disorders such as BD I, BD II and MDD was impaired even during remission periods, and that the QOL in MDD was lower than in BD I and BD II. Education level, number of depressive episodes, number of hospitalizations, age at first attack, and BDI scores were correlated with QOL.

Life quality means the individual's perception of their physical, emotional, and social status, and it is primarily a subjective experience as it depends on how the individual perceives their satisfaction level in these different areas (18). The results of the this study, the MDD group had lower scores for QOL subdomain (physical, psychological and social) than the BD I and BD II group. A study comparing patients with BD and MDD in remission with HCs in terms of QOL, demonstrated that the QOL psychological domain score was lower in the MDD group. There was no difference between the MDD and BD groups regarding QOL total score and its subdomain scores (physical, environmental, social) (19). A possible reason for low QOL scores in MDD may be that functional recovery lags behind syndrome recovery, and QOL improvement lags behind clinical response (11,13). For this reason, some depression treatment experts recommend symptom improvement as the primary treatment aim. (20). In this research, patients with MDD were in remission, but the BDI and BAI scores of these patients remained higher than those of HCs, with negative effects in terms of QOL. This is consistent with previous studies that found that deterioration in QOL is associated with anxiety symptoms in patients with MDD (21). Global functionality assessment, the patient group with BD I and BD II had lower mean scores than the MDD group, while the highest score belonged to the HC. A follow-up study that compared BD patients with MDD patients in terms of psychosocial functionality reported that the MDD group had the highest functionality at work and the BD I group was unable to work for a more extended period than other groups (12). On the other hand, a cross-sectional by Van der Vort et al. reported no difference between MDD and BD in terms of functionality during a depressive attack (13).

Multiple linear regression model was established to measure the sociodemographic and clinical characteristics that affect the participants' QOL. According to the model, there was a negative relationship between the total QOL and, subdomains and the BDI scores. In a study evaluating the effect of depressive episodes on the QOL in bipolar patients, it was reported that the patients had lower scores in various areas of the QOL, and that QOL scores were

negatively correlated with the Hamilton Depression Rating scale scores (22). In another study, it was reported that sub-threshold depressive symptoms were predictive of lower QOL in bipolar patients (23). A similar situation is valid for patients with MDD, and it has been reported that MDD patients in remission have impairment in various domain of QOL (for example, mental, physical, social) (19). In this research, there was a positive relationship between the educational level and total QOL and, social, environmental domain, and a positive relationship was found between having a job and total QOL. In the literature, it is reported that generally, those with high education levels have better income and a better quality of work, better social capabilities, and thus, higher QOL (24). In a follow-up study evaluating the factors affecting depression, it was reported that low income, low education level and unemployment were associated with low quality of life, and higher education level is also associated with better QOL in bipolar patients (25,26). Additionally, studies in this field associated unemployment with poor QOL, and regularly working bipolar patients exhibited more social functionality (autonomy, professional functionality and interpersonal relations) compared to unemployed patients (27). There was a negative relationship between the total QOL and physical domain and the number of depressive episodes. That results suggest that previous depressive episodes, may have a greater impact on patients' perceived QOL, even if they are euthymic. In a follow-up study, in which bipolar patients were evaluated in terms of QOL, it was reported that one of the most effective factors on QOL was the number of depressive episodes (28). A study made in our country to evaluate the QOL of depressive patients demonstrated that patients who had a relapsing type depressive disorder had lower QOL in terms of physical functionality and general health perception than patients who had depression in a single period (29). This can be explained by the fact that patients with more depressive episodes experience more role and physical limitations due to emotional problems, with negative effects in terms of QOL (30). There was a positive relationship between the physical, enviromental domain and the age of first episode, but there was a negative correlation between the social domain and the number of hospitalizations. In a study evaluating QOL and functionality in patients with depression, it was reported that earlier age of onset was associated with functional impairment and worse QOL (31). The lower social domain scores of those with a higher number of hospitalizations may be due to the difficulty of maintaining their social relationships due to the intensity of illness. There was a negative relationship between the history of suicide attemps and the enviromental domain. In a prospective research conductec by Koivumaa-Honkanen et al. that shows a prospective correlation between life satisfaction (it is related to QOL) and future suicide completion. Although neither of theses researches was conducted with psychiatric patients, it is important QOL might be associated with suicidal behavior regardless of psychiatric disease and that low QOL could be a risk factor for suicide attempts (32). Another study showed that individuals with BD with a history of suicide attempt have a worse quality of life than individuals who have never attempted suicide (33).

An other multiple linear regression model was established to evaluate the sociodemographic and clinical characteristics that affect the patient's QOL. In the BD I, BD II and MDD group, there was a significant negative relationship between the total QOL and, subdomains and the BDI scores, but there was a positive relationship between the QOL subdomains (social, enviromental) and the educational level. Additionally, in the MDD group, there was negative relationship between the physical domain and, the number of depressive episodes and suicidal behavior. These results are in consistent with the literatüre (22,28,34). Although treatment goals are centered around the reduction of depressive symptoms in most clinical settings, remission does not denote normal QOL in depressed patients (11). In addition, bipolar disorder and MDD are chronic diseases, and subsyndromal symptoms may fluctuate during remission periods and, QOL scores may be affected differently (19).

The most important limitation is that cases were evaluated cross-sectional, not a longitudinal follow-up study. The lack of or the limited number of studies conducted with a similar population in our country and all cases being in the euthymic period reduce the generalizability of the outcomes. Moreover, the unknown time spent without treatment and medications can have a disturbing effect on functionality and QOL. Additionally, this study has its strengths. The fact that the study had a control group, evaluated bipolar subtypes, had more patients than similar studies, and acted elaborative in selecting the cases are the study's strengths.

CONCLUSION

We can conclude that most patients diagnosed with a mood disorder (BD I, BD II, MDD) experience lower QOL and loss of functionality even their clinical symptoms are suitable taken under control, suggesting

that keeping the pulse of improvements in QOL enhancement will likely be important for clinicians treating BD I, BD II and MDD. During remission period, worst QOL was observed in the patients diagnosed with MDD, which was correlated with depressive and anxiety symptoms, suggesting that QOL improvement lags behind clinical response. Furthermore, our study evaluated the impact of sociodemographic and clinical characteristics on QOL. Educational level, number of depressive episodes and hospitalizations, suicide attemps, age of first episode, and BDI scores correlated with QOL. Additionally, it was determined that the main factor affecting the QOL was residual depressive symptoms rather than the type of mood disorder. Therefore, future work should aim to develop new approaches to psychotherapy that focus on improving QOL and functionality. In addition, longitudinal studies with large samples and long follow-up periods are needed to better understand how the quality of life improves during mood disorders.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Tokat Gaziosmanpaşa University Clinical Researches Ethics Committee (Date: 06.03.2019, Decision No: 83116987-178).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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