Original Article

The Effectiveness of Individual Psychoeducation on Functioning and Quality of Life with Bipolar Disorder in Turkey: A Randomized Controlled Study

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Abstract

Background: With psycho-education programs, patients diagnosed with bipolar disorder can increase the functionality and quality of their lives.
Objective: To determine the effectiveness of the four-session individual psycho-education program designed to improve functionality and quality of life.
Method: This research was conducted as a randomized, controlled, experimental study. Eighty-two patients diagnosed with bipolar disorder participated and were assigned to intervention and control groups.
Results: Socio-demographic and the main clinical features such as mean number of total episodes (*T = 2.139; P = 0.036*) were equal across the intervention and control groups. Comparing patients' functionality level scores, a statistically significant difference (*T = 2.311; P = 0.024*) was found between groups in the *"emotional functionality"* subscale 6 months after psycho-education (*T = 2.311; P = 0.024*). Another significant difference was determined in the *"participation in social activities"* subscale after 6 months, (*T = 2.011; P = 0.048*), and again at the 12th month (*T = 2.674; P = 0.009*). Another significant difference was found in the *"taking initiative"* subscale before psycho-education (*T =2.093; P = 0.040*).
Examining quality of life, a statistically significant difference was found only in the *"environmental quality of life"* subscale before psycho-education (*T = 3.762; P =0.000*).
Conclusions: Four-session individual psycho-education increases the rate of participation in social activities; however, individual psycho-education seems to be ineffective for improving other functioning and overall quality of life.

Key Words: Bipolar disorder, euthymic, functioning, quality of life, individual psycho-education, nursing.

Background

In tandem with high rates of relapse and hospital admission, bipolar disorder (BD) is frequently associated with decreased quality of life (QOL), and impaired work and social functioning (Ball *et al.*, 2003; Bellivier *et al.*, 2011). QOL is a broad concept, but essentially it refers to an individual's well-being across a spectrum of areas of life, such as occupational, emotional, social and physical functioning (Michalak *et al.*, 2005). QOL in psychiatric patients generally refers to the level of functionality perceived by patients (Jasovic-Gasis *et al.*, 2010).

It is well established that 40 to 60 per cent of patients with BD experience functional impairment not only during acute mood episodes but also during euthymic periods (Martíno *et al*., 2004). In fact, it is estimated that only one-third of patients achieve full social and occupational

recovery and return to their premorbid functional levels (Fagiolini *et al.*, 2005).

Increased recognition of the various difficulties caused by BD has triggered an important change in treatment paradigms, which have started to focus not only on symptomatic but also on functional recovery by means of integrative approaches, including the use of several tested and efficacious psychological interventions (Michalak *et al.*, 2005; Colom, 2012).

In these psychological interventions psycho-education is a relatively straightforward, cost-effective technique (Scott *et al.*, 2009) with a broad range of potential beneficiaries (Roso *et al.*, 2005). With structured psycho-education programs, patients can increase the functionality and quality of their lives (Worley, 1997; Van Gent, 2000). Psycho-education can be applied by professionals from different occupational backgrounds working in the field of mental health and psychiatry, either as group psycho-education (Colom & Vieta, 2006) or individual psycho-education (Perry *et al.*, 1999).

Better clinical outcomes and greater social functionality have been found to result from individual psycho-education (Perry *et al.*, 1999). In Perry and colleagues' (1999) study on the assessment of social function, improvement was detected in eight areas of social activity (household management, employment, management of money, child care, intimate relationships with spouse or partner, non-intimate relationships with other adults, social presentation to other people and coping with emergencies, especially in employment). Perry and colleagues' study is the only one published which examined the relationship of individual psycho-education to functionality and QOL before the current study (Perry *et al.*, 1999).

Today there is a developing interest in psycho-educational interventions worldwide. However, it is not clear which are the most effective type of interventions and what the number of sessions should be (Kurdal *et al.* 2014). Group psycho-education is practiced in a varying number of sessions, ranging from 6 (Cakir *et al.* 2009) to 21 (Colom *et al.* 2005, Colom *et al.* 2010), whereas individual psycho-education is generally delivered across 7 to 12 sessions (Perry *et al.* 1999). However, Cakir and colleagues (2009) found that only 54% of patients participated fully in a psycho-education program of 6 sessions (Cakir *et al*. 2009). Moreover, studies have reported a 25% dropout rate for one course of 21 sessions (Colom & Vieta, 2006) and a 26.6% dropout rate for a different course of 21 sessions (Colom et al., *2009*). Having a large number of sessions and carrying out group psycho-education may thus be causally related to high dropout rates. In order to minimize dropout rates, the psycho-education program used here was therefore designed to be delivered to individuals alone and in four sessions only (Gumus *et al.*, 2015).

In Turkey, too, there has recently been a growing interest in psycho-educational interventions. However, it is clear that programs are not sufficiently incorporated into routine practice at psychiatric outpatient clinics, and that psychiatric nurses do not play a sufficient role in these practices. In fact, psychiatric nurses should have a pre-eminent role in the process of providing systematic support to patients (Gumus, 2006).

Aims and objectives of the study

The present study aims to examine the effectiveness of individual psycho-education on the functionality and QOL of individuals with BD. The specific hypothesis tested by the study was that patients participating in the psycho-education program would have increased levels of functionality and QOL, compared to patients comprising the control group.

Materials and Methods

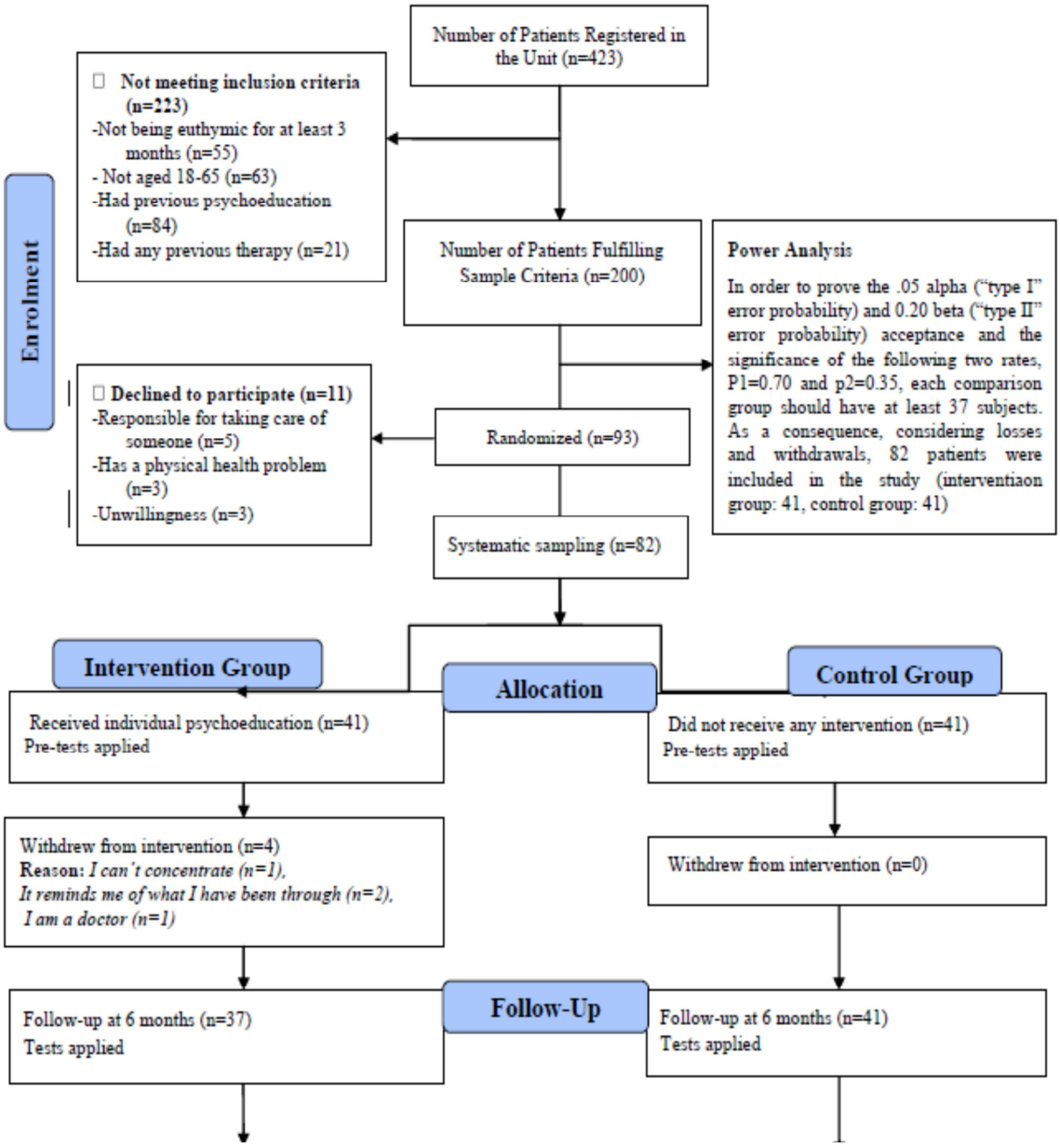
Study Design

This study was conducted using pretest–posttest control group design. A randomized controlled trial was performed for the research and repeated measures were taken.

Participants

The study was conducted between June 2011 and April 2013 with the participation of outpatients in the Mental Health Outpatient Clinic of a Mood Disorders Unit at Istanbul University, Istanbul Faculty of Medicine Hospital.

Figure 1. Consort Diagram of Study Participants



The inclusion criteria for the research were as follows: being diagnosed with Bipolar I Disorder (BD I) or Bipolar II Disorder (BD II) based on DSM-IV criteria, undergoing standard medical treatment (taking antidepressants, neuroleptics or mood stabilizers), being clinically monitored, having the mental capacity to follow the instructions (not having visual and/or hearing impairments, perceptual disorders or cognitive distortions), not receiving psycho-education, having been in an euthymic state (Young Mania Rating Scale [YMRS] score <6, Hamilton Rating Scale for Depression [HRSD-17] score <8) for at least three months and being aged from 18 to 65.

The exclusion criteria were as follows: having a psychiatric disorder excluding BD, having communication problems, receiving in-patient care and being in an episode (depressive, manic, hypomanic or mixed) at that time.

Sample size

The sample size was calculated through power analysis at 95% confidence interval with 5% margin of error, and determined to be 37 patients in the intervention group (IG) and 37 patients in the control group (CG). Counting the individuals excluded, the study consisted of 82 patients who were allocated equally into two groups. Of the IG group, four patients ceased participating in the psycho-education sessions. However, the CG group continued in the study with full participation. Therefore, the study was conducted with 78 patients in total (See *Figure 1*).

Data collection

For Pretest

Data was collected from the intervention group during the first session just before starting psycho-education and from the control group during the initial interview by the corresponding author.

For Posttest (months 6 and 12)

The patients in the intervention and control group were invited to an interview and the data was collected by the authors who were not blinded.

Interventions

The program was prepared by modifying several group psycho-education programs already existing for BD (Colom & Vieta, 2006; Miklowitz & Goldstein, 1997). It was conducted through face-to-face interviews with the patients by the first author. To enable the program to be delivered properly, and allow the therapist and psychiatrist to detect any potential problems with the design of the program, a preliminary study was conducted on four patients. The program utilized pedagogical methods, such as homework, problem-solving practices, the question-and-answer technique and the role-playing technique.

The Content of the Psycho-education Sessions

This structured psycho-education program consisted of four sessions. All sessions were intended to obtain more information about the disorder, compliance to treatment, early diagnosis of prodromes and relapse, and communication and problem-solving skills. The content of the sessions was as follow: 1. Psycho-education program input and introduction to the disorder; 2. Giving information about prodromes, preventing relapse and developing emergency plans; 3. Giving information about drug effectiveness and potential adverse effects; 4. Giving information about communication and problem-solving skills and closing the sessions (Gumus *et al*., 2015; Gumus *et al*., 2016).

Implementation of Psycho-education

After selecting a random sample of the study population, the patients were telephoned and asked to take part in the study. Of the patients, 11 refused to participate in the research, for the following reasons: "*responsible for taking care of someone" (n=5),* "*has a physical health problem*" *(n=3),* "*unwillingness*" *(n=3).* The participants were provided with information about the purpose and the content of the study, their consent was obtained and the pre-tests were performed. Then, the first session of the psycho-education was administered to patients in the IG. The patients in the CG were not included in any of the psycho-education sessions *(Figure 1).*

Intervention Group: The patients in this group took part in the psycho-education program as well as in the standard clinical follow-up. The program was administered once a week and completed within four weeks. Each session lasted 60 minutes. The psycho-education was provided using visual materials including ready-prepared slides. These slides were presented at the beginning and end of the sessions. The structure of each psycho-education session was as follows: 1. Review and evaluation of the previous session; 2. Discussion of the main topic of the current session; 3. Answering the patients' questions; 4. Asking the patients to summarize or review the subject matter; 5. Giving homework to the patients for the next session; 6. Scheduling the next session; 7. Closing the session (Gumus *et al.*, 2015).

Control Group

The patients in this group were only administered with the standard clinical follow-up by the physicians and they were not provided with psycho-education. No participants in this group dropped out of the research. The patients were asked to come back for follow-up 6 and 12 months after the study.

Measurements

Patient Information Form

The data was collected using a semi-structured form developed by the researchers. This form comprised clinical data about the socio-demographic characteristics of the patients and their BD. It also included patient histories, medical records, outpatient clinic files and additional data on the patients and their families. The researcher prepared it by making use of information in the literature (Colom *et al.,* 2003a; Colom *et al.,* 2003b; Colom *et al.,* 2009; Çakır et al., 2009).

The patient information form consisted of 29 questions including "*introductory information about individual characteristics*" such as age, sex, marital status, number of children, educational status, job/profession, employment status, income status of the patient, who the patient lives with and which number of child the patient had been in her/his family. The form also included "*information regarding the disorder*", such as disorder type, age of onset of the disorder, diagnosis period, health insurance, individuals in the family who have other mental disorders, the status of other diseases/disorders accompanying the bipolar disorder, first episode type, first psychotic episode, total number of episodes, total number of psychiatric hospitalizations, chronological sequence, time elapsed since last hospitalization, number of suicide attempts, social support status and chronic treatment reception status, for how many years chronic treatment had been received, and response to chronic treatment.

Bipolar Disorder Functioning Questionnaire (BDFQ)

The scale was developed by Aydemir and colleagues (2007) and was designed to measure the subjective experience of patients with BD in terms of their functionality. The items are rated on a 3-point Likert-type scale. High scores in the BDFQ indicate higher functionality. The scale consists of the subscales of emotional functioning, mental functioning, sexual functioning, feelings of stigmatization, introversion, domestic relationships, relationships with friends, participation in social activities, daily activities and hobbies, taking initiative and using one's potential, and employment. BDFQ is a self-administered scale and measures the subjective experience of the patients. The Cronbach's alpha value of the scale was found to be 0.91 and it was reported that the Cronbach's alpha reliability coefficient of the subscales ranged from 0.50 to 0.88 (Aydemir *et al.,* 2007). In this study the Cronbach's alpha reliability coefficient was detected as 0.86 for the scale and as 0.42 - 0.83 for the subscales.

World Health Organization QOL–Brief Scale (WHOQOL BREF)

The WHOQOL-BREF is an abbreviated 26-item and four dimensions (physical, psychological, social and environmental) version of the WHOQOL-100, containing items that were extracted from the WHOQOL-100 field trial data (WHOQOL Group 1998). It is based on a Likert-type scale and is scored from 1 to 5, with higher scores indicating a better QOL.

The Turkish version has the highly satisfactory psychometric qualities of internal consistency, reliability, and construct validity. WHOQOL BREF is self-administered scale and measures the subjective experience of the patients. Cronbach's alpha reliability coefficient was reported to be 0.83 in the Turkish validity and reliability study (Eser *et al.,* 1999). In this study the Cronbach's alpha reliability coefficient was detected as 0.90.

Randomization

In order to ensure homogeneity between the IG and CG in terms of characteristics, randomization methods were used in the study. Systematic sampling is an often used and cost-effective sampling strategy. For this reason, it was used for randomization.

First, the number of patients who met the criteria for participation in the research were saved in a computer and the population (N=200) was divided by the sample size (n=82). The sampling interval (K) was calculated (K=N/n) as K=2.44 (Buyukozturk et. al., 2010). Then, it was determined which patient file will be the first to start and to which group the first document will be delivered. The sampling distribution was thereby equalized.

Ethical considerations

The approval of the Research Ethics Committee was given by the Scientific Research Project Ethics Committee, Istanbul Medical Faculty, Istanbul University (02.06.2011/1039), and written consent was obtained from the participating patients.

Statistical analysis

The study sample was calculated in the S-PLUS Statistical Package Program with the help of power analysis. The analyses of the data were carried out with SPSS (Statistical Package for Social Sciences) 21.0 package software.

Descriptive statistics such as mean scores, standard deviations, percentages, the chi-square test (in the case that $n < 5$, Fisher's precise chi-square test, and in the case that $n > 5$, Pearson's chi-square test) and the independent-samples t-test were used in evaluating the similarities between the demographic and clinical features of the IG and CG. The paired t-test and independent-samples t-test and Mann Whitney U test were used in comparing findings regarding the groups' level of functionality and life quality following the psycho-education.

Results

Socio-demographic Characteristics

Of the IG patients, 89.2% had BD I, and their mean age was 38.70±11.68. Of the CG patients, 87.8% had BD I, and their mean age was 40.05±12.17. Socio-demographic and clinical variables of the groups was not significantly different, excluding the median number of total episodes (*T = 2.139; P =0.036*) (Table 2).

Functionality Rates

Comparing the functionality level scores of patients, a statistically significant difference was determined between the groups in the subscale of emotional functioning at 6 months after the psycho-education (*T = 2.311; P = 0.024*), between the groups in the subscale of participation in social activities at 6 months following the psycho-education (T = *2.011; P = 0.48) at the 12 months following the psychoeducation.* (T = *2.674; P = 0.009)*

Table 1: Sessions of the psychoeducation program

1. Introduction to the psyschoeducation program and information about reasons and symptoms of bipolar disorder the disease
2. Prodromal symptoms and emergency plan development for the prevention of the relapse of the disease
3. Evaluation of the effects and adverse effects of drugs
4. Communication and problem solving skills

A statistically significant difference was also found between the groups in the subscale of taking initiative and using one's potential before the psycho-education (*T = 2.093; P = 0.040*), which was not found afterwards (P < 0.05) (Table 3). When the scores of the functionality levels of the patients in the experimental group and in the control group were compared before psycho-education, 6 months after psycho-education and 12 months after psycho-education, it was determined that there was a statistically significant difference (*T = 2.311; P = 0.024*) between the experimental group and the control group 6 months after psycho-education in the "*emotional functionality*" subscale. Statistically significant difference was found between the experimental group and the control group 6 months after psycho-education (*T = 2.011; P = 0.048*), and 12 months after psycho-education (*T = 2.674; P = 0.009*) in the "*attendance to social activities*" subscale. Statistically significant difference (*T = 2.093; P = 0.040*) was determined between the experimental group and the control group before psycho-education in the "*initiative taking*" subscale. No statistically significant difference was found between the experimental group and the control group in other subscales and sum of scales.

Quality of Life Rates

Comparing the QOL scores of patients, a statistically significant difference was determined between the groups only in the lower dimension of "*environmental QOL"* (*T = 3.762; P = 0.000*), which was not found afterwards (*P < 0.05*) (*Table 4*). When the quality of life scores of the patients were compared before and after psycho-education according to experimental and control groups, it was found out that there was a statistically significant difference (t=3,762; p=0,000) between the groups in the "*environmental quality of life*" sub-dimension. Similar to the comparisons done in other sub-dimensions and in the body of scale, statistically

significant difference was not determined between the quality of life scores of the experimental and the control groups before and after psycho-education (p<0,05).

Table 2: Sociodemographic and clinical characteristics of intervention and control groups

	Intervention group (n = 37)	Control group (n = 41)	Statistical analyses (P, t, χ^{2**})
Gender n (%)			
Female	15 (40.5)	23 (56.1)	$\chi^2 = 1.884$
Male	22 (59.5)	18 (43.9)	p = 0.170
MaritalStatus, n (%)			
Single/divorced/widoved	25 (67.6)	19 (46.3)	$\chi^2 = 3.564$
Married	12 (32.4)	22 (53.7)	p = 0.059
Education level, n (%)			
12 years and below	17 (45.9)	27 (65.9)	$\chi^2 = 3.135$
13 years and above	20 (54.1)	14 (34.1)	p = 0.077
Diagnosis, n (%)			Fisher's Exact
Bipolar I disorder	33 (89.2)	36 (87.8)	$\chi^2 = 0.37$
Bipolar II disorder	4 (10.8)	5 (12.2)	p = 0.848
Type first episodes n (%)			
Mania	22(59.5)	17 (41.5)	Fisher's Exact
Depression	11 (29.7)	13 (31.7)	χ^2= 3.879
Mixed	4 (10.8)**	11 (26.8)	p=0.144
Psychotic symptoms n (%)			
Have	21 (56.8)	31 (75.6)	χ^2= 3.111
Have not	16 (43.2)	10 (24.4)	p=0.078
Type first episodes n (%)			
Psychotic	19 (51.4)	21 (51.2)	χ^2= 0.001
Non-psychotic	18 (48.6)	20 (48.8)	p=0.991
Mean age (SD)	38.70 (11.68)	40.05 (12.17)	t = 0.497 p = 0.620
Age of onset for bipolar disorder, years (SD)	23.00 (7.16)	25.07 (10.08)	t = 1.037 p = 0.303
Mean duration of illness, years (SD)	15.76 (10.19)	14.95 (8.44)	t = 0.382 p = 0.704
Mean number of total episodes (SD)	8.03 (8.43)	5.02 (2.97)	t = 2.139 p = 0.036*
Mean number of total hospitalization (SD)	2.11 (1.78)	2.51 (2.34)	t = 0.853 p = 0.396

*p<0.05, **Chi-square (χ^2): n>5 Pearson's Chi-squared test, n<5 Fisher's Exact Test.

Table 3: Comparison of functionality in the intervention and control groups before and after psychoeducation

	Intevention group (n = 37) Mean *(SD)*	Control group (n = 41) Mean *(SD)*	Statistical analyses *(t, p, U)*	
Emotional Functioning				
Before psychoeducation	7.16 (1.44)	7.66 (1.30)	t = 1.600	p = 0.114
6.Month	6.87 (1.57)	7.63 (1.37)	t = 2.311	p = 0.024*
12.Month	7.32 (1.40)	7.59 (1.36)	t = 0.836	p = 0.406
Mental Functioning				
Before psychoeducation	9.35 (2.02)	10.05 (2.04)	t = 1.517	p = 0.133
6.Month	9.22 (2.14)	10.07 (2.34)	t = 1.679	p = 0.097
12.Month	10.03 (1.99)	10.05 (1.33)	t = 0.440	p = 0.965
Sexual Functioning				
Before psychoeducation	8.60 (2.37)	8.17 (2.56)	t = 0.756	p = 0.452
6.Month	8.27 (2.34)	8.71 (2.74)	t = 0.753	p = 0.454
12.Month	9.14 (2.49)	8.71 (2.74)	t = 0.719	p = 0.474
Feelings of stigmatization				
Before psychoeducation	8.81 (2.43)	8.81 (2.50)	t = 0.011	p = 0.992
6.Month	8.70 (2.64)	8.54 (2.29)	t = 0.297	p = 0.767
12.Month	9.16 (2.49)	8.54 (2.29)	t = 1.156	p = 0.251
İntroversion				
Before psychoeducation	6.38 (1.71)	6.46 (1.73)	t = 0.218	p = 0.828
6.Month	5.95 (1.29)	6.12 (1.66)	t = 0.519	p = 0.606
12.Month	6.38 (1.57)	6.15 (1.68)	t = 0.628	p = 0.532
Domestic Relationships				
Before psychoeducation	14.00 (2.83)	13.54 (3.45)	t = 0.644	p = 0.521
6.Month	13.30 (2.93)	13.02 (3.53)	t = 0.369	p = 0.713
12.Month	13.89 (2.86)	12.95 (3.47)	t = 0.395	p = 0.198
Relationships with Friends				
Before psychoeducation	11.11 (2.68)	11.24 (2.72)	t = 0.222	p = 0.825
6.Month	10.70 (2.57)	10.54 (2.82)	t = 0.271	p = 0.787
12.Month	10.92 (2.53)	10.56 (2.83)	t = 0.586	p = 0.559
Participation in Social Activites				
Before psychoeducation	12.97 (3.80)	12.10 (3.90)	t = 1.003	p = 0.319
6.Month	13.14 (3.85)	11.61 (2.81)	t = 2.011	p =0.048*
12.Month	14.22 (5.41)	11.63 (2.85)	t = 2.674	p =0.009*
Daily Activities and hobbies				
Before psychoeducation	12.84 (3.11)	13.22 (3.62)	t = 0.497	p = 0.620
6.Month	12.87 (3.31)	13.15 (3.59)	t = 0.359	p = 0.721
12.Month	12.87 (3.30)	13.24 (3.58)	t = 0.484	p = 0.630
Taking Initiative and using one's potential				
Before psychoeducation	6.14 (1.95)	5.24 (1.81)	t = 2.093	p= 0.040*
6.Month	5.81 (1.53)	5.12 (1.66)	t = 1.901	p = 0.061
12.Month	5.49 (1.45)	5.24 (1.69)	t = 0.679	p = 0.499
Work Status*** (n ≤ 30)				
Before psychoeducation	9.83 (2.44)	9.82 (2.68)	U = 374.5**	p = 0.775
6.Month	9.60 (2.27)	9.77 (1.98)	U = 445.5**	p = 0.946
12.Month	9.58 (2.35)	9.84 (1.99)	U = 391.5**	p = 0.851
Total Scale				
Before psychoeducation	105.05 (15.29)	102.95 (18.60)	t = 0.541	p = 0.590
6.Month	102.60 (16.55)	101.66 (17.74)	t = 2.400	p = 0.811
12.Month	106.14 (15.74)	102.10 (18.14)	t = 1.045	p = 0.300

*p<0.05, ** Mann-Whitney U test n ≤ 30,
***Only working patients were assessed. Since data related to the Work Status did not display normal distribution in the research, nonparametric tests (Mann-Whitney U test) were used in the comparison of the groups.

Table 4: Comparison of Quality of Life in the intervention and control groups before and after psychoeducation

	Intervention gorup (n = 37) Mean *(SD)*	Control group (n = 41) Mean *(SD)*	Statistical analyses *(t, p)*	
Physical health				
Before psychoeducation	26.30 (4.24)	25.73 (4.74)	t = 0.553	p = 0.582
6.Month	24.73 (4.62)	25.15 (4.28)	t = 0.413	p = 0.681
12.Month	25.30 (3.99)	25.10 (4.25)	t = 0.214	p = 0.831
Psychological				
Before psychoeducation	21.49 (3.86)	20.83 (3.14)	t = 0.829	p = 0.410
6.Month	20.65 (3.43)	20.51 (2.76)	t = 0.194	p = 0.846
12.Month	20.85 (2.99)	20.32 (2.57)	t = 0.869	p = 0.388
Social relationships				
Before psychoeducation	9.76 (2.40)	9.17 (2.42)	t = 1.073	p = 0.287
6.Month	9.00 (2.40)	9.24 (2.29)	t = 0.459	p = 0.648
12.Month	9.08 (2.18)	8.98 (2.34)	t = 0.205	p = 0.838
Environment				
Before psychoeducation	31.43 (4.00)	27.88 (4.31)	t = 3.762	p = 0.000*
6.Month	28.49 (4.03)	27.12 (3.57)	t = 1.585	p = 0.117
12.Month	28.68 (3.81)	27.07 (3.95)	t = 1.819	p = 0.073
Total Scale				
Before psychoeducation	88.97 (11.70)	83.61 (12.63)	t = 1.939	p = 0.056
6.Month	82.87 (12.49)	82.02 (10.68)	t = 3.200	p = 0.750
12.Month	83.92 (11.20)	81.46 (10.75)	t = 0.988	p = 0.326

*p<0.05

Discussion

Interpretation of Patients' Characteristics

As far as the BD patients that were included in the IG and CG in the study were affected by dependent variables such as "gender, marital status, educational background, age, diagnosis, type of first episodes, first episodes with psychotic symptom or not, have any psychotic symptom, age of onset for BD, mean duration of illness, mean number of total episodes", they were observed to be similar and homogeneous in terms of socio-demographic and clinical features (*P > 0.05*) (Perry *et al.*, 1999; D'Souza *et al.*, 2010). The groups had a difference only in terms of the mean number of total episodes, which was among clinical features (*P < 0.05*) (See Table 2).

Functionality Rates

There is only one published study examining the relationship of individual psycho-education to functionality. This study stated that following individual psycho-education given to 69 patients in 7 to 12 sessions, with an average of 9 sessions and monitoring after 18 months, there was a better clinical outcome and better social functionality (Perry *et al.*, 1999).

Until recent years, patients with BD had been thought to recover from their illnesses during euthymic periods, yet it is now widely known that even in euthymic periods, there is residual inter-episodic functional impairment (Lam *et al.*, 2005; Reinares *et al.*, 2010; Wingo *et al.*, 2010). A more advanced stage of disease has been correlated with a higher number of previous mood episodes among patients (Colom *et al.*, 2010). These patients do not generally have a good response to psychological treatments (Scott *et al.*, 2006). The persistent neurotoxicity of repeated episodes may contribute to sustained impairment in multiple fields of psycho-social functioning (Rosa *et al.*, 2012). Our IG had many more episodes that may affect the results for "no

significant improvement". Another point is that psycho-education may, however, not affect functioning in the short term (Torrent *et al.*, 2013). A longer duration for this study may have improved the effectiveness of psycho-education.

Quality of Life Rates

The present study found that four-sessions individual psycho-education did not increase QOL, in fact, there was even a decrease in the general QOL. As a result of our study, it was determined that the IG had significantly higher scores in the lower dimension of "environmental QOL" before psycho-education but that these scores then decreased, and the statistically significant difference between the groups was the gap was closed. Javadpour and colleagues (2013) provided an 8-session individual psychoe-ducation program for the intervention group and followed them up at 18 months in terms of life quality. At the end of the follow-up, they observed a statistically significant increase in the intervention group in terms of all dimensions of the QOL scale compared to the control group (Javadpour *et al.*, 2013). As the only other study examining the relationship of individual psycho-education on QOL, this study differs from our study in terms of its results. However, it was reported that quality of life was improved in some studies conducted with group psycho-education (Dogan & Sabanciogullari, 2003; Bauer *et al*., 2006). However, we think comparing the results of group and individual psycho-education may cause errors.

Another notable point in our study is that emotional functioning, taking initiative, using one's potential and environmental QOL have decreased by the 6th month following psycho-education. Psycho-education appears to be useful for providing greater insight into the disorder (Pellegrinelli *et al.*, 2013). In some cases, however, the increased insight of some patients may not only cause them to think that there is something wrong with their lives but also make them more aware that they are receiving medical treatment for an illness that can lead to psychological breakdown (Hamilton & Roper, 2006).

Limitations

The first limitation is that the study was carried out in a single centre and consisted of a small number of patients. It is thought that although the sample number was calculated by a power analysis and the minimum values were exceeded, performing these studies in multiple centers with a larger sample number would contribute further to the literature.

The second limitation is that our psycho-educational program is shorter than the other individual and group psycho-education programs. The results cannot be compared one-to-one as studies having the same number of sessions as our psycho-educational program cannot be found. We believe that comparing group and individual psycho-education is not valid. However, different results were obtained related to the functionality and the quality of life when psycho-education studies conducted for bipolar disorder with 8 to 21 sessions were examined. While in some studies scores for the functionality and the quality of life increased in some subscales or in all of the scale (Bauer *et al.*, 2006; Lobban *et al.*, 2010; Kurdal *et al.*, 2014), in some scales they did not increase in some subscales or in the entire scale, supporting our findings (Pellegrinelli *et al.*, 2013; De Cardoso *et al.*, 2014).

The third limitation is that it can be seen in the literature that in some studies of psycho-education the data was not collected systematically and that the measurement tools used in the studies were different (Miziou *et al*., 2015). The scale with which we evaluated functionality was developed in Turkey and has not been used in other studies in the literature, except for the study related to functionality carried out by Çam and Çuhadar (Çam & Çuhadar, 2011). In this study the reason for not using the scales used in the other studies was that the validity and reliability studies for the scales had not been carried out in Turkey in the period during which the study was planned. WHOQOL-BREF is a general scale which is non-specific for bipolar disorder, although it was not used in the other studies. It is thought that results could be affected by not using standard scales. Therefore, it is suggested that using standard scales in the studies is important to obtain clearer results.

The fourth limitation was that it was difficult to equalize the variables as bipolar disorder is affected by multiple variables. Nevertheless, it can be said that in this study the other variables which are thought to affect the results were similar except for the variable "episode number and environmental QOL" (Table 2). Colom and colleagues (2010) reported in their studies that as

the patients' number of episodes increased, their positive responses to psycho-education decreased (Colom *et al*., 2010). This study was planned during the period in which the studies of Colom and colleagues (2010) were not yet published in order to obtain the necessary permissions and their study results could not be used (Colom *et al*., 2010). The differences that are initially present in the variables are an important consideration which should be taken into account. It is suggested that these variables should be kept as similar as possible between the groups in the studies for the functionality and the quality of life.

This study gave the advantage of individual psycho-education to patients who were unwilling to discuss their personal problems in group psycho-education (Gumus *et al.*, 2015). Moreover, the patients enrolled in the study group are still being monitored. In the upcoming period a revision of the program is planned, if required, according to the results of this monitoring.

Conclusion

Four-session individual psycho-education increases the rate of participation in social activities. However, individual psycho-education seems to be ineffective for improving other functioning and overall quality of life. We believe that the individual psycho-educational program used in this study was effective in informing the patients about bipolar disorder and its treatment although it did not increase the functionality and life quality to the desired level. There is a need for studies with a large sample, carried out with a systematic data collection methods and standardized scales, in order to further research the effect of psycho-education on functionality and the quality of life.

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