



# The Effectiveness of Family-Based Intervention on Symptom Severity, Expressed Emotion and Coping Styles of Bipolar Patients

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## Abstract

**Background:** There is a growing body of literature on the effectiveness of family-based interventions in bipolar disorder (BD).

**Objectives:** The present study aimed to determine the effectiveness of a family-based intervention on expressed emotion, coping styles of family and symptoms severity of bipolar patients.

**Methods:** An experimental design using pretest, posttest, and a three-month follow-up was used. The population comprised family members of patients with one type of bipolar disorder spectrum who were hospitalized in a referral Psychiatric Hospital in Tehran, Iran, during the second half of 2017. Sixty-two patients were selected randomly and assigned randomly into two groups of experimental and control. Then, the main caregiver of their family was invited for participation in the research. They had no diagnosis in axis I and they were eager to participate in the study. 12 sessions of family-focused therapy (FFT) based on the Micklowitz protocol with some adaptation for Iranian families were used for the experimental group. The control group was on the waiting list and received no intervention. The following measurement tools were used: the Young Mania Rating Scale (YMRS), Coping Inventory for Stressful Situations (CISS), and Emotional Expressiveness Questionnaire (EEQ). Data were analyzed via repeated measures analysis of variance test.

**Results:** The results showed that there was a significant difference between the two groups in coping styles and expressed emotion ( $P = 0.023$ ). The symptoms severity was  $46.4 \pm 5.9$  in patients and  $54.5 \pm 6.9$  in controls ( $P = 0.038$ ). The results remained at follow-up ( $P = 0.041$ ). The effect size of 0.8 indicated a high promotion after treatment.

**Conclusions:** The family-focused therapy was effective in decreasing emotion expression in families and improving coping styles of family members. It led to an improvement in symptoms severity in patients. Therefore, it is recommended as supplementary to pharmacotherapy in patients with bipolar disorder and their families.

**Keywords:** Bipolar Disorder, Coping Styles, Expressed Emotion, Family-Based Intervention, Symptom Severity

## 1. Background

Bipolar disorder (BD) is the most commonly diagnosed psychiatric disorder among adults aged 20 to 30 (1) with a 1-6.5% lifetime prevalence and 1-3.7% prevalence among the general population (2). Studies indicate that family plays a predisposing and perpetuating role in signs and symptoms of this disorder. Family-based interventions are suggested for optimal management of bipolar disorder (3).

Family-focused treatment (FFT), developed by Miklowitz and colleagues in early 2000, consisted of 21 psychoeducation sessions encompassing special training in order to improve problem-solving strategies and communication skills. This approach focuses specifically on emotion regulation strategies and improving communication

skills. There are also other relevant approaches developed, each of which focuses on specific goals (4, 5).

Perlick, Rosenberg, and Miklowitz (6) conducted a study on 500 caregivers of bipolar patients and reported that 89% of the sample expressed concerns about the patient's behavior, 52% about the patient's loss of social status, and 61% about interruptions in the routine life of patient's family. In addition, caregivers who reported high burden also reported more physical problems, depression symptoms, high-risk behaviors, and frequent referral to health care centers and less social support, as well.

Reinares et al. (7) showed that family-based interventions can be effective in changing attitudes and interpersonal relations improvement and they can reduce the severity of symptoms. The bipolar disorder affects

the function and health of other family members. Family distress is predominantly characterized by high levels of expressed emotion (EE) (8). Increased EE points out to the high levels of criticism, hostility, or excessive engagement with emotions among caregivers or relatives (mainly spouse or parents) during or right after an acute episode of the disorder (9). Miklowitz and Chung (8) in a research over 30 years on FFT and family processing in BD showed that FFT could improve the symptoms among families with high EE. A developmental pathological framework was developed to understand parents' reactive-causal emotion roles in mood disorders (10). In this model, early defects reflected the role of gene vulnerability. The child was mostly accompanied by parents who responded to their child with hostility and frustration (too much criticism) or with guilt and anxiety (shown by overprotective behaviors).

Encountering frequent criticism, anxiety, or enmeshment during the period in which the child's identity is developing leads to self-doubt and self-criticism in him/her and creates fundamental beliefs regarding interpersonal relations. These schemas interfere with child's self-emotion regulation skills and become manifest on depression, anxiety, aggression, and negative emotion intolerance. In turn, opposite and negative responses trigger negative emotion-based behaviors and attitudes, which are important in the recurrence of cognitive-emotional vulnerability among children (11).

Family pressure sources are mainly evolved with mania symptoms, poor social function, acute episode of disorder appeared during the past two years, rapid mood swings, and lack of pharmacotherapy compliance in patients (12). Research indicated that coping styles could possibly support family against guilt and denial (13).

Reinares et al. (14) assessed 45 bipolar outpatients and conducted 12 psychoeducation sessions. A significant increase in knowledge regarding bipolar disorder and a decrease in subjective burden were seen. In addition, the caregiver's beliefs regarding the connection between objective burden and its effects were reported. Madigan et al. (15) also reported a significant improvement after a five session family group therapy and showed getting knowledge about bipolar disorder could reduce anxiety and burden significantly. A one or two-year follow-up also indicated stable therapeutic results. A meta-analysis study of research also showed the same findings (14, 16).

Considering the prevalence, severity, and numerous problems and deficiencies associated with bipolar disorder, and the importance of family in managing it, this study was conducted to evaluate a family intervention model and gradually develop a comprehensive applicable model suitable for the Iranian population, in order to pro-

vide more effective services to bipolar patients and their families. Although applying FFT is widespread, it has been applied seldom in Iran, especially among families with BD patients. Most of the studies evaluated the efficacy of such protocols on patients. There are two approaches for the individual treatment of BD including pharmacological and psychological treatment. These treatments follow two separate aims. The first goal is giving psychoeducation and helping patients to adjust to having a chronic illness. The second goal is prophylaxis of recurrences, avoidance of drug use, treatment of anxiety and insomnia and finally, coping with functional impairment and prevention of suicide (17). It is an unanswered question whether interventions on a family member alone can benefit the patients, as well?

We developed Iranian 12 brief sessions of manualized psychoeducational intervention for family members of patients with bipolar disorder that aimed to provide the caregiver with enhanced skills for coping and controlling emotions. This protocol targets both patient symptoms and caregiver behaviors. We hypothesized that caregivers treated with FFT would demonstrate decreased EE and improved Coping strategies. We also hypothesized that the patients with bipolar disorder associated with caregivers would report reduced symptoms.

## 2. Objectives

The purpose of the present study was to assess the efficacy of a family-based intervention on the symptom severity of patients, expressed emotion and coping styles of their family members.

## 3. Methods

### 3.1. Participants

Caregiver participants were recruited from the Razi Psychiatric Hospital, Tehran, in 2017. Razi Psychiatric Hospital is a referral hospital with severe mental disorder patients.

The samples comprised the family members of patients with a type of bipolar disorder who were hospitalized in the Razi Psychiatric hospital. All patients received a confirmed diagnosis of one type of bipolar disorder spectrum and received treatment as usual including medication. Interested caregivers who consented were screened for eligibility. The inclusion criteria for caregivers consisted of family members including father, mother, spouse, or child of patients who were the main caregivers and lived

with the patient before and after hospitalization. According to the initial interview, they did not have any clinically important diagnosis on axis I. To be eligible, the caregivers were required to be aged 25 to 60, with at least eight class education, and have a psychological mind. Patients should be diagnosed with bipolar axis I or II or with Cyclothymic disorder based on the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID) (18) and the diagnosis of an expert psychiatrist.

### 3.2. Sampling and Procedures

The sample size was calculated as 60 people, based on the study of Perlick et al. (6), with  $z = 1.96$ , error (d) = 0.84, and power = 90%. Considering the rate of dropout, the sample size increased to 67.

In the first step, the records of all patients diagnosed with any type of bipolar disorder at the educational section of the Razi Psychiatric Hospital were reviewed. The next step was to conduct a SCID interview, and in case that the patients met bipolar disorder diagnosis based on SCID, other inclusion criteria were checked and then their family members as the main caregivers were invited over the phone to join the study if desired. Of 132 caregivers referring, 78 (60%) agreed to participate. Of these, 11 (8%) were determined to be ineligible. Seven caregivers met the criteria for a mental disorder. Four caregivers refused to participate. A total of 67 caregivers met the inclusion criteria, gave consent, and were randomized to receive 12 sessions of family-based intervention or form the control group. In the end, 60 ones completed the process of treatment. A random numbers table was used where all even numbers were assigned to the experimental group and odd numbers to the control group. As the study was based on the comparison of the treatment groups that included all patients as originally allocated after randomization, we used an intention to treat (ITT) method for analysis. The randomization was performed by a research assistant not connected to the present study. 34 caregivers were assigned to the FFT group and 33 to the control group. The randomization was performed by a research assistant not connected to the present study.

The group family therapy was held in 12 weekly sessions. The participants were assessed three times, including pre-test, post-test, and a three-month follow-up.

Prior to the intervention sessions, all study tools were conducted on participants, and the Young Mania Rating Scale (YMRS) data were also collected from the patients. Study subjects attended 12 sessions of 90 minutes of group family therapy. Three groups with 12, 11, and 11 subjects were formed. They were asked to fill out the questionnaires after the completion of intervention sessions once more. YMRS was also completed for patients, and the data were gained

once more at the three-month follow-up. Therapists were three trained clinical psychologists who conducted the interventions according to the Minkowitz FFT package instructions. Assessments were done by nurses from the educational sections of Razi Hospital. 33 caregivers in the control group filled out the questionnaires at week one and after 12 weeks while two of them did not have a tendency to fill out at the three-month follow-up.

### 3.3. Intervention

This study utilized Family-Focused treatment (FFT) extracted from the available treatment plan of Minkowitz package on families of bipolar patients. The effectiveness of this treatment plan has been proven repeatedly (19, 20). FFT assists the patient and relatives in 6 objectives such as integrating the experiences associated with mood episodes in bipolar disorder, accepting the notion of a vulnerability to future episodes, accepting a dependency on mood-stabilizing medication for symptom control, distinguishing between the patient's personality and his/her bipolar disorder, recognizing and learning to cope with stressful life events that trigger the recurrences of bipolar disorder, and reestablishing functional relationships after a mood episode. The general framework of the sessions included acquaintance with the disorder, psychosocial causes, mood stabilizing drugs, overview of medicine consumption, mood swings, instruction to use mood charts, connecting mood swings with antecedents, interpersonal relations as triggers and antecedents, communication management, conflict resolution, broadening the patients and caregivers support network, crisis management, and problem-solving strategies, family stress relief exercises, increase of caregiver's self-efficacy, and relapse prevention. For adaptation with Iranian culture and environment, we packed the sessions to 12 sessions instead of 21 sessions based on the Minkowitz package. We used Iranian support networks like family and relatives more than others, communication training for Iranians, and sources of crisis management that are available in Iran.

### 3.4. Assessment Instruments

Young Mania Rating Scale (YMRS): This scale was developed by Young in 1978 as an objective measure to quantify the mania severity. The questions of this scale are based on a description of the main symptoms of mania and are in accordance with patient's report of his/her clinical condition within past 48 hours. It contains 11 questions, and the score ranges from 0 to 60. The larger the score is, the higher the severity of mania will be (21). The Persian version of this scale was prepared in 2003 and its reliability and validity

were assessed by Ebrahimi et al. (22), giving a discriminative validity coefficient of 0.84 while the concurrent validity with the International comprehensive diagnostic questionnaire was calculated as 0.87. According to the same research, its sensitivity was 98.4% and specificity was 98.4%, approving it to be applicable in both clinical settings and research purposes.

**Coping Inventory for Stressful Situations (CISS):** This questionnaire was developed by Endler and Parker in 1990 (23) and translated into Persian by Akbarzadeh in 1997. It consists of 48 items with responses on a Likert scale from never (1) to always (5). CISS contains three main areas of coping behaviors: Task-oriented coping behavior, Emotion-oriented coping behavior, and Avoidance-oriented scale. The range of variations in three types of coping styles is 16 to 80. The highest score indicates the dominant copying style. The reliability coefficient of the questionnaire using Cronbach's alpha was 0.81 (23).

**Emotional Expressiveness Questionnaire (EEQ):** King et al. in 1990 (24) developed this questionnaire with the aim of evaluating the role of "expressed emotion" in health. EEQ includes three subscales and 16 items. Items 1 to 7 refer to the subscale of "expressed positive emotions," items 8 to 12 refers to the subscale of "expressed intimacy," and items 13 to 16 refer to the subscale of "expressed negative emotions." The validity of this inventory was evaluated by Rafieinia in 2002 by applying internal consistency and Cronbach's alpha methods and the values for expressed positive emotions, expressed intimacy, and expressed negative emotions were 0.68, 0.59, and 0.68, respectively.

### 3.5. Statistical Analysis

Data were analyzed using IBM SPSS Statistics Software Windows, version 20.0 (IBM Corp., Armonk, N.Y., USA). Descriptive statistics (i.e., frequency, percentage, mean, and standard deviation) were calculated for demographic variables. Chi-square and Mann-Whitney U tests were used to compare the groups. The normal distribution assumption was tested by the Kolmogorov-Smirnov test. The repeated measures analysis of variance was used to assess changes in each dependent variable. In addition, statistical significance was set at  $P < 0.05$ .

### 3.6. Ethical Issues

This study was approved by the research ethics committee of the University of Social Welfare and Rehabilitation Sciences, Tehran, Iran (IR.USWR.REC.1395.166). To follow the ethics, consent forms were obtained from all participants and only individuals who were desired were enrolled in the study. It was explained to all participants that the intervention is due to a clinical research project

and it is necessary to follow the therapeutic interventions throughout all intervention sessions. Based on whether this type of treatment was effective in the families of patients with bipolar disorder at a hospital, the program would be applied to others after the experimental period. This study was registered in the Iranian registry of clinical trials (registration code, 2017061434533N1).

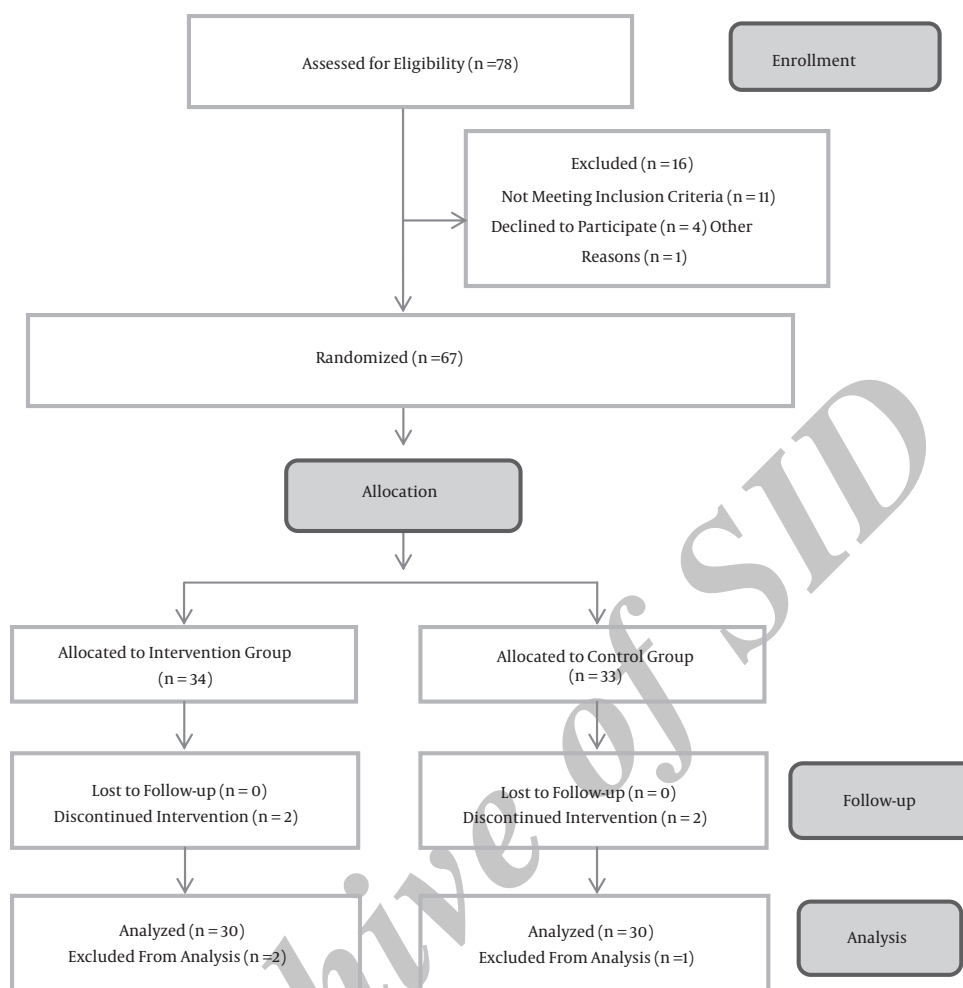
## 4. Results

There were two withdrawals in the control and intervention groups at the follow-up. Table 1 shows the demographic data of patients and their caregivers. The mean age of the caregivers in the patient group was 46.81 with a standard deviation of 3.44. The mean age and standard deviation of the age of the caregivers in the control group were 48.01 and 3.63 respectively. In both groups, the number of male caregivers was more than the number of females. In both groups, most of the caregivers were educated to the primary school level. The mean age of onset in the intervention group was 22.43 and in control group was 21.76, and the severity of the disorder in both the groups was moderate to severe. Kolmogorov-Smirnov test showed that the data were normally distributed. Moreover, the independent *t*-test and revealed that there was no significant difference in terms of demographic data between the two groups of caregivers. In addition, patient-related characteristics including the number of hospitalizations and duration of hospitalization are provided in Table 1. There were no significant differences between the two groups in the above-mentioned variables. According to the request of caregivers, other demographic characteristics were not mentioned.

Table 2 shows the mean and standard deviation of the severity of symptoms, coping styles, expressed emotions, and its subscales. The scores are mentioned separately for the pre-test, post-test, and follow-up phases.

Multivariate Repeated Measure was applied to analyze the data. Before conducting the analysis, heterogeneity, and variances equality pre-assumptions were investigated. Levin's test results showed no significant difference in variances between all variables. Therefore, the variances could be pre-assumed as equal ( $P$  value = 0.89,  $F$  = 0.001). Box Test also was applied to assess the matrix of covariant and results showed equality in both groups ( $P$  value = 0.86,  $F$  = 0.001). The Muchley test was used for homogeneity of dependent covariant matrix and results showed no significant data and confirmed homogeneity of the dependent variable matrix. As a result, multivariate repeated measure test was applicable.

There was a significant difference in the severity of symptoms, expressed emotion types and coping styles be-



**Figure 1.** The consort flow diagram of recruitment and retention of participants in the study

tween pre-test and post-test, which indicated the efficacy of treatment over time. In addition, there were significant differences between the experimental and control groups in expressed emotion types and coping styles in post-test and follow-up. This difference reflected the effectiveness of the psychoeducational intervention on the experimental group since the effect size was 0.80 ( $P$  value = 0.023) or more in all variables.

## 5. Discussion

The present study showed that the family-based intervention was effective in improving the symptoms of patients. The severity of symptoms was significantly different in post-test and follow-up between the two groups. The findings suggested that family-based interventions could

significantly improve the symptoms up to 0.80 percent. The results of the current study are congruent with earlier research investigating various aspects of family care of patients with bipolar disorder such as Miklowitz (8), Reinares (7), Fiorillo (1), and Fristad (25). Educating family about the disorder, communication and dealing with the patients, symptoms, medicine management, and coping with patients' behaviors leads to the diminished rate of relapses and prevention and decreased the severity of symptoms (26).

Reinares et al. (27) and Miklowitz (19) reported that family-based interventions could be effective in improving interpersonal relationships and their attitudes. Therefore, such patients were most likely to experience non-recurrent episodes (52%) and also reported less severe mania and depression symptoms.



**Table 1.** Demographic Characteristics of the Sample

Characteristics	Patients <sup>a</sup>	Controls <sup>a</sup>	$\chi^2$	P Value
<b>Caregivers</b>				
<b>Gender</b>			0.016	0.90
Male	35 ± 58.33	32 ± 53.33		
Female	25 ± 41.66	28 ± 46.66		
<b>Education</b>			0.61	0.55
Primary school	12	11		
Middle school	8	10		
Diploma degree	5	6		
Bachelor's degree	5	6		
<b>Marital status</b>			1.32	0.22
Married	48 ± 80	46 ± 76.66		
Unmarried or divorced	12 ± 20	14 ± 23.33		
<b>Work Status</b>			1.35	0.24
Employed	39 ± 65	36 ± 60		
Unemployed	21 ± 35	24 ± 40		
<b>Patients</b>				
<b>Age</b>	22.43 ± 10.39	21.76 ± 9.47	0.74	0.45
<b>Age of onset</b>	23 ± 3.5	22 ± 3.9	0.57	0.52
<b>Length of hospitalization</b>	1.3 ± 3.6	1.4 ± 3.3	0.86	0.36
<b>Number of hospitalizations</b>	4.1 ± 2.8	4 ± 2.7	0.75	0.86

<sup>a</sup>Values are presented as No. (%) or mean ± SD.

**Table 2.** The Mean and Standard Deviation of Variables in the Two Groups at Pretest, Posttest, and Follow-Up

Variables	Pre-Test		Post-Test		Follow-Up	
	Experimental	Control	Experimental	Control	Experimental	Control
<b>Symptom severity</b>	54.5 ± 6.7	55.7 ± 6.8	46.4 ± 5.9	54.5 ± 6.9	45.8 ± 5.8	55.9 ± 1.5
<b>Task-oriented</b>	35.4 ± 3.3	36.6 ± 3.2	48.7 ± 3.7	35.9 ± 3.1	49.1 ± 3.6	35.3 ± 3.2
<b>Emotion-oriented</b>	67.6 ± 6.6	66.5 ± 6.9	51.2 ± 5.3	65.4 ± 6.8	52.5 ± 5.2	65.3 ± 6.9
<b>Avoidant</b>	42.4 ± 4.8	40.6 ± 4.7	31.2 ± 4.2	41.7 ± 4.7	32.1 ± 4.9	41.8 ± 5.1
<b>positive emotions</b>	10.2 ± 2.4	9.1 ± 2.5	24.8 ± 2.8	9.8 ± 2.5	25.3 ± 2.7	9.7 ± 2.6
<b>Intimacy</b>	12.3 ± 2.8	12.7 ± 2.7	16.4 ± 1.5	12.6 ± 2.6	16.5 ± 2.5	12.5 ± 2.2
<b>Expressed negative emotions</b>	18.4 ± 3.1	18.9 ± 3.2	10.5 ± 2.6	18.7 ± 3.4	10.6 ± 2.5	18.7 ± 3.4

Family and main caregivers of patients are often under chronic constant pressure. Caring for patients decreases the energy of the family members and leads to helplessness, despair, exhaustion, and unpleasant feelings. Studies showed that the mental health of such families was associated with many challenges and high rates of families go through mental issues (20).

This study evaluated the expressed emotion types and copying styles of patient's family members. The exper-

imental group showed a difference in the scores of expressed emotion types in post-test and follow-up compared to pre-test. The highest difference was observed in expressed negative emotions with the effect size of 0.87. Expressed positive emotions and expressed intimacy in the experimental group significantly increased, while such a rise was not seen in the control group. This finding is congruent with the findings of Perlik et al. (28) and Chung and Miklowitz (8). Nevertheless, in the study of Dashtbozorgi

et al. (29), expressed emotions scores did not change in the post-test, but did show a significant difference in a one-year follow-up.

Copying styles were significantly different in the experimental group in the post-test and follow-up phases compared to pre-test, which indicated the effectiveness of the intervention in copying styles over time. The 'task-oriented' type of problem-solving style in caregivers significantly increased after the intervention and emotion-oriented problem-solving style and avoidant coping style significantly decreased ( $P < 0.01$ ). This was while no difference was seen between pre-test, post-test, and follow-up. This means that positive results were gained from family-based intervention in the experimental group. Family-based therapy (FFT) contains special training for improving problem-solving strategies and communication skills. This approach specifically focuses on strategies for managing emotions and improving communication skills (8).

Studies reflect crisis, functional impairment, and need to re-adjustment and coping capability among families of patients with bipolar disorder. The current study showed that the family-based intervention improves coping styles. In addition, earlier interventions showed progress in family skills in responding to conflicts with patients after follow-up (26, 30).

An important aspect of caring is to adjust interventions with Iranian social patterns to achieve positive therapeutic results, such as improved quality of life and coping styles and caregiver's health. This is because various cultural, ethnic, and social values of a society are essential in the design and evaluation of these interventions. Designing domestic tools and interventions could be among the most effective ways to improve caregiver's health and quality of care.

The study had some weak points. First, we did not have a protocol based on our culture. In addition, some of the patients could not understand what we mean clearly due to their educational and socioeconomic level, and it took much more time to explain the items in FFT. It possibly would be better to simplify the package before using it for caregivers of patients in our psychiatric hospital. This study also had some strong points. First, it was the first time that we hold a structured group family-focused treatment in our hospital and the caregivers were pleased with the sessions at the termination. They expressed that they got lots of information about BD and their patients and they were willing to participate in such sessions in the future. Family treatment based on FFT is performing as routine in our hospital after the study termination.

Difficulties in persuading families to cooperate, the need for tracking family members to participate in sessions, implementation in only one hospital, and short-

term follow-up periods are the limitations of this study. Investigating the reasons for the lack of collaboration among family members is suggested for future research. It is also suggested conducting further investigations with respect to the purpose of this study, but rather with more extended follow-up periods and by providing psycho-education for both caregivers and the patients. It was not possible to compare genders, marriage, and occupation status due to the study purpose and sample size in the current study. Therefore, it is hoped they are noted in the future research.

## Footnotes

**Authors' Contribution:** Fereshte Momeni designed the study and did a literature search and guide clinical and experimental studies. Neda Alibeigi prepared the manuscript and lead data acquisition and data analysis. Both of the authors did manuscript revise.

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