

## Efficacy of Group Cognitive-behavioral Therapy in Maintenance Treatment and Relapse Prevention for Bipolar Adolescents

### Abstract

**Background:** Despite conducting wide-ranging of pharmacotherapy for bipolar adolescents, many of them are showing a deficit in functioning with high relapse rate. The aim of the current study was to develop a manual and investigate the efficacy of group cognitive-behavioral therapy (G-CBT) for female bipolar adolescents. **Materials and Methods:** During the first qualitative phase of a mixed-methods study, a manual of G-CBT was developed. Then, 32 female bipolar adolescents aged 12–19 years old, receiving usual maintenance medications (UMM), were selected. Participants were randomized to the control (UMM) and intervention group (5, 2 h weekly sessions based on G-CBT manual with UMM). The parents in intervention group participated in three parallel sessions. All participants filled the following questionnaires before 1, 3, and 6 months after the initiation of the study: Young Mania Rating Scale, Children Depression Inventory and Global Assessment of Functioning. The results were analyzed using SPSS 21 software. The concurrent qualitative phase was analyzed through thematic analysis. **Results:** The results showed no significant differences in all questionnaires' scores through intervention and follow-up sessions ( $P > 0.05$ ). However, using cutoff point of CDI, G-CBT was effective for intervention group (relapse rate: 25% vs. 44.4%). Two themes were extracted from the second qualitative phase: emotion recognition and emotion regulation, especially in anger control. **Conclusions:** The results showed that the addition of G-CBT to UMM leads to decrease in the depressive scores but has no effect on manic symptoms and relapse rate.

**Keywords:** Adolescents, bipolar mood disorder, group cognitive-behavioral therapy, relapse

### Introduction

Early onset bipolar disorder, usually becomes chronic, does not have specified periods and reveals a high level of the mixed mania.<sup>[1]</sup> Early onset bipolar disorder can affect the development and function of the individual's psychosocial characteristics and increase the risk of suicide and substance abuse, as well as academic and social behavior problems. The average onset of symptoms to diagnosis and therapy lasts 10 years which arises the need for early diagnosis and prompt treatment of symptoms.<sup>[2]</sup> Bipolar disorder type one with early onset has a slow response to treatment, sustaining mood swings, high relapse rate, high suicide risk, and severe social and psychological destruction.<sup>[3]</sup>

Symptoms of mania include uncontrolled and risky behaviors in early onset bipolar disorder differ from adults' symptoms.<sup>[2]</sup>

When mania has been recognized based on the Diagnostic and Statistical Manual

of Mental Disorders (DSM), there must be decrease of executive function which has a separate definition in youth patients. The performance of children and adolescents is specified according to chronological age and intellectual ability mentioned in the definition of psychosocial development. Due to the lack of insight associated with the symptoms of mania in children and adolescents, much of information should be obtained through questionnaires from relatives or other people who live with children and adolescents. Similar to diabetes and heart disease, bipolar disorder is a disease with a long period in which the person should be closely monitored and controlled in their lifetime.<sup>[2]</sup>

In adolescents' manic and a hypomanic episode, high incidence of psychotic signs such as delusions and hallucinations can be seen which typically include grandiosity content about power, being valuable, or having important relationships. Persecutory delusions and lack of concentration are

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#### Access this article online

Website: [www.advbiores.net](http://www.advbiores.net)

DOI: 10.4103/abr.abr\_168\_16

#### Quick Response Code:



**How to cite this article:** Arman S, Golmohammadi F, Maracy MR, Molaeinezhad M. Efficacy of Group Cognitive-behavioral Therapy in Maintenance Treatment and Relapse Prevention for Bipolar Adolescents. *Adv Biomed Res* 2018;7:41.

Received: July, 2016. Accepted: September, 2016.

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also common. In addition, significant degradation in reality testing is common in adolescents' manic episode.<sup>[4]</sup> This disorder has comorbidity with other psychiatric disorders, and this can worsen the condition.<sup>[5]</sup> Therefore, an appropriate, timely, effective and low-risk treatment is really essential for bipolar disorder in children and adolescents.<sup>[6]</sup> The prevention of relapse is an important point in the treatment of bipolar disorder.<sup>[7]</sup> However, intolerance of the side effects of medications can cause some restrictions on the usage of these drugs.<sup>[8]</sup> In addition, these patients have many challenges in terms of developmental, academic and social activities each of which can serve as stressor for the patient.<sup>[9]</sup>

There is a high risk of psychiatric disease in parents of these patients, and the impact of families on patients is a deep and reciprocal one.<sup>[9]</sup> Psychosocial interventions in early onset bipolar disorder include family-focused interventions. These therapies included multiple sessions of psychoeducation with a focus on recent stressors and mood management program, as well as sessions focusing on improving the communication skills and problem-solving skills.<sup>[4]</sup>

The main purpose of psychoeducation is the prevention of relapse through increased drug compliance, improvement of social rhythms and reduced emotional expressivity in the family, and improvement in the consistency of the skills.<sup>[10]</sup> Cognitive-behavioral therapy (CBT) is an evidence-based conversational one which focuses on the thoughts, behaviors, and emotions of patients and how they link together. CBT is used in several psychiatric disorders, including mood disorders, anxiety disorders, eating disorders, substance use disorders, and psychotic disorders.<sup>[11]</sup> In this therapy, patients play an active role and work collaboratively with the therapist to achieve the therapeutic goals.<sup>[11]</sup> Bipolar disorder is often treated with medication only which partially controls the disorder. However, recently, the use of psychological therapies along with drugs has been expanded. These therapies include cognitive-behavioral, interpersonal, and psychoanalytic psychoeducation.<sup>[12]</sup> Compared to drug therapy, the combination of CBT and mood regulators decreases the duration and number of mood episodes and accordingly decreases the duration of hospitalizations.<sup>[10]</sup>

The aim of group psychoeducational program is to making the patients aware of the basis of the bipolar disorder, treatment principles, and warning signs as well as advice to families about how to treat the patients and eventually teaching them some social skills.<sup>[10]</sup>

The Interpersonal and Social Rhythm Therapy (IPSRT) specified for adolescents targets interpersonal stress, circadian rhythm irregularities, and nonadherence to medical treatment. Studies clearly show the important role of interpersonal skills in the development of mood disorders. A great deal of nonadherence to drug therapy in

adolescents with bipolar mood disorder is being observed which has a strong relationship with the relapse of the disorder.<sup>[13]</sup>

To date, several psychological interventions have been implemented for these patients, and the clearest evidence was related to individual cognitive-behavioral therapy. It has been observed that such therapy has positive effect on the symptoms, social functioning, and the risk of relapse.<sup>[12]</sup> The implementation of group cognitive-behavioral treatment (G-CBT) in patients with bipolar and major depressive disorder leads to improvement of the quality of life in these patients.<sup>[14]</sup>

Given the prevalence of bipolar disorder in children and adolescents as the most common cause of hospitalization in psychiatric wards for children and adolescents, the risk of relapse and the need for better social performance in maintenance phase, finding ways to better treatment and reduction of relapse rate are very useful, particularly because relapse imposes a significant psychological burden on the patient and his/her family and affects adolescent patients' performance. In the present situation, the focus is mainly on maintenance of drug treatment during the maintenance phase. Although relapse rate is also related to family-related, Although relapse rate is also related to familial, psychological and other factors in addition to drug treatment. This study has been designed and implemented to investigate the efficacy of group cognitive-behavioral therapy in the maintenance phase of female adolescents suffering from bipolar disorder and its effect on improving symptoms and preventing relapse.

## Materials and Methods

### Group cognitive-behavioral therapy manual development

This research was developed and improved during a mixed-method sequential exploratory design with two major phases: (1) a qualitative thematic study and (2) a quantitative study – randomized clinical trial. Group cognitive-behavioral therapy manual (G-CBT) was tried out through literature review and interview with experts on adolescents, psychotherapy, and psychology and two focus groups with parents and adolescents. Findings from thematic analysis of interviews and a literature review resulted in a pool of items. The clarity and relevance of content were assessed through two sequential focus groups with parents and adolescents and expert panels.

### Intervention

In a randomized controlled clinical trial, 32 female adolescents with bipolar mood disorder were chosen based on DSM-5-V after treatment of the acute phase of the disease among hospitalized adolescents in psychiatric ward of [removed for blind review].

The participants were recruited in the study using

semi-structured interview Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS), in terms of inclusion criteria: being under 20 years of age, suffering from bipolar mood disorder, lacking physical and other psychiatric problems, negative history of substance, and alcohol abuse.

All patients received standard medical treatment and were randomly divided into two groups after the acute phase and hospital release and at the time of entering the maintenance phase of the disease. Following the patients, written informed consent and assent from adolescents were obtained. Participants in the intervention group received G-CBT in addition to the maintenance phase of drug therapy. The control group only received standard drug treatments. Both groups were evaluated using questionnaires Young Mania Rating scale (YMRS), Children Depression Inventory (CDI), and Global Assessment of Functioning (GAF) in terms of the symptoms of mania, depression, and overall performance at the initiation of the study, respectively. The participants completed the questionnaires, immediately after the completion of psychological interventions, 3 and 6 months after the initiation of the study.

Sessions of G-CBT included five 2 h weekly sessions. Booster session was held in the 3<sup>rd</sup> month after the initiation of the study. Parents also participated in three parallel sessions.

The content of sessions included understanding emotions, regulating mood and emotions, problem-solving techniques, cognitive restructuring, coping skills, social rhythm therapy, self-development, goal-setting, self-validation, working on resilience building, stress management skills, assertiveness, and psychoeducation. Parents' sessions emphasized more on psychoeducation and its role on improving adolescents' beliefs and lifestyle; the emphasis in such sessions was also on how to communicate and deal effectively with adolescents in addition to make the parents aware of signs of relapse. The sessions were held using discussion, training, and role play. The current research was approved by the Isfahan University of Medical Sciences-Ethics Committee, and randomized controlled trial was recorded with the code (Ir.mui.rec. 1395.3.068).

#### Data collection tools

1. K-SADS is a semi-structured diagnostic interview to assess symptoms of psychiatric disorders in children and adolescents.<sup>[15]</sup> This interview has been extensively used in clinical research and medical studies.<sup>[16]</sup> The K-SADS interview is used extensively for the diagnosis of bipolar disorder, schizophrenia, and type of episode, and is performed prior to therapy initiation and considering the inclusion criteria to enter a diagnosis study of bipolar disorder. Validity and reliability of the Persian version of the assessment and diagnosis

of childhood psychiatric disorders has been reported acceptable<sup>[17]</sup>

2. YMRS has been used to assess mania rating (with the cutoff point of 20).<sup>[19]</sup> It is being filled by the physician after interviewing the patient and his/her parents. It includes 11 items which have been scored in 4 levels in each of which there is a definition for each item and is defined as a range between 0 and 60, respectively. The reliability of the test is in the range of 0.41–0.85, its concurrent validity has been reported to be 0.89 in comparison to the Paterson Mania Rating Scale, and overall mania rating test has been 0.88. This test can differentiate bipolar disorder from attention deficit hyperactivity disorder, and it is to some extent sensitive to treatment with the mood-stabilizing drugs<sup>[18]</sup>
3. CDI of Maria Kovacs: This inventory is similar to the Beck Depression Inventory and the items are rated as 0 (sometimes), 1 (mostly), and 2 (always). The total scores are ranging from 0 to 54. Cutoff point and diagnosis of depression is higher than 20.<sup>[19]</sup> This questionnaire has been used in most of the studies in children and adolescents' depression. Furthermore, it has been translated into different languages and is applicable in different cultures.<sup>[20]</sup> In an Iranian study, to assess the validity of the scale of Child Depression Inventory, the concurrent validity of teachers' evaluation was used with validity scale of 0.193 which was significant.<sup>[19]</sup> Test-retest reliabilities of internal consistency of the Persian version of CDI on Tehran's middle school boys and girls were reported as 0.82 and 0.83, respectively<sup>[15]</sup>
4. GAF was first used in 1990 in axis V based on DSM-IV. This tool has been used for observing changes in the outpatient or inpatient therapy and also in research studies.<sup>[21]</sup> GAF is a scoring system for disease severity in psychiatry. It is being used in many countries clinically or research based. The advantage of GAF is its simplicity.<sup>[22]</sup> When the effectiveness of treatment is studied, GAF should be used before and after treatment.<sup>[22]</sup> The reliability of this scale is appropriate (intraclass correlation >0.7).<sup>[23]</sup>

## Results

### Statistical analysis

After completion of the questionnaires, collected data were analyzed through descriptive statistics (mean, standard deviation [SD], frequency, and mid-range) and analytical ones (Shapiro-Wilk, Mann-Whitney test, and Friedman test). Test of normality was checked with regard to YMRS, CDI, and GAF variables in four stages (initiation, 1 month, 3 months, and 6 months after initiation) for both intervention and control groups separately by Shapiro-Wilk test. For the analysis of the data associated with the YMRS, CDI, and GAF, the nonparametric tests (Mann-Whitney

test and Friedman test) were used. Using Friedman test, scores trend was checked in each group. The obtained results were analyzed using SPSS 21 software (SPSS Inc. Chicago, IL, USA).

The study process is shown in Figure 1. Initially 37 patients were evaluated. Five patients were excluded from the study. One of these patients refused to participate in the study. One other patient revealed symptoms of psychosis (auditory hallucinations) in the absence of prominent mood symptoms for which she recognized to suffer from schizoaffective disorder and therefore excluded from the study [Table 1]. Two patients were hospitalized in a psychiatric ward again before the initiation of the study. One more patient was excluded from the study because of exposure on maintenance electroconvulsive therapy. Hence, the remaining 30 patients were enrolled and randomly assigned to two groups (of equal number,  $n = 15$ ) receiving either G-CBT (intervention group) or standard drug treatments (control group).

CONSORT flow diagram for the development and investigation of the efficacy of group cognitive-behavioral therapy in maintenance treatment and relapse prevention

among female adolescents with bipolar disorder is shown in Figure 1.

In statistical analysis, the mean and SD of age have been  $15.9 \pm 1.6$  years with the age range of 13–19 in the intervention group and  $15.5 \pm 2$  years with age range of 12–19 in control group which shows no significant difference ( $P = 0.483$ ). In terms of education, there are also no significant differences between the intervention and control groups ( $P = 0.428$ ). In other words, the distribution of the two groups regarding demographic characteristics has been suitable.

Age and education has had no confounding effect on the YMRS, CDI, and GAF in the intervention and control groups. Distribution of CDI scores in the intervention and control groups in all four stages (initiation, 1, 3 and 6 months after starting the study) has not been normal. Comparing the CDI scores in the intervention and control groups at 0, 1, 3, 6 months, after starting the study, there was no significant difference ( $P > 0.05$ ). The trend of CDI scores in the intervention and control groups at the initiation, 1 month, 3 months, and 6 months after initiation of the study using this test is not significantly

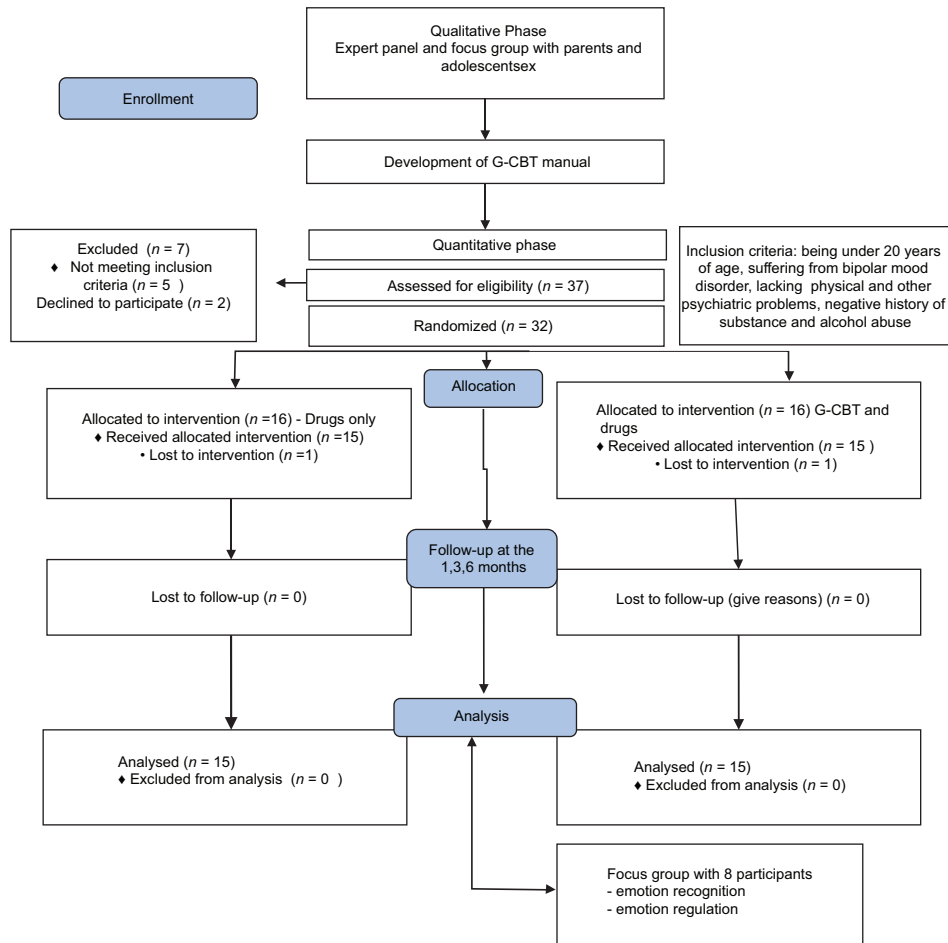


Figure 1: CONSORT flow diagram

different [Table 2]. Since the trend of CDI scores was not significant, pair-wise comparison was not necessary and there has been no need for Wilcoxon test.

Using a cutoff point to analyze the results, eight patients in the intervention group obtained scores below 20 (cutoff point) with 2 of them being above the cutoff point a month after the initiation of the study (relapse) (25% of the eight patients). Nine patients in the control group obtained scores below 20 (cutoff point) with 4 of them being above the cutoff point a month after the initiation of the study (relapse) (44.4% of the nine patients).

The YRMS distribution of scores in the intervention and control groups in all four stages (0, 1, 3, and 6 months after initiation of the study) has not been normal. In comparison of YMRS scores in all 4 stages, there was no significant difference ( $P > 0.05$ ). Regarding the trend of YMRS scores in the intervention and control groups at the

initiation of the study, 1 month, 3 months, and 6 months after initiation of the study, using this test, the difference was not significant [Table 3].

Using a cutoff point to analyze the results of the study, nine patients in the intervention group obtained the score below 20 (cutoff point) with two of them 1 month after the initiation of the study and 2 of them 6 months after the initiation of the study being above the cutoff point (relapse). In total, four cases were above the cutoff point (44.4% of nine patients).

In the control group, 11 patients obtained scores below 20 (cutoff point) that two patients, 1 month after the initiation of the study, one patient 3 months after the initiation of the study and three patients, 6 months after initiation the study, were above the cutoff point (relapse). In total, six patients were above the cutoff point (54.5% of 11 patients).

Distribution of GAF scores in the intervention and control groups in all four stages 0, 1, 3, and 6 months after initiation of the study) was not normal. Comparing GAF scores in the intervention and control groups in all four stages, there has been no significant difference ( $P > 0.05$ ). Functional improvement can be evaluated using a GAF score of 70 or higher. Using this definition, in the intervention group, nine patients at the initiation of the study had a score of 70 or higher. Only six patients scored below 70. Four patients among these six participants scored 70 or higher (one patient 1 month before and three of them, 3 months after the initiation of the study).

In the control group, eight patients at the initiation of the study had the score of 70 or higher. Seven other patients

**Table 1: Data on age and level of education in the intervention and the control groups**

Variable	Intervention (CBT + drug)	Control (drug only)	P
Age (year)			
Mean (SD)	15.9±1.6	15.5±2	0.483
Median	16	16	
Range (maximum-minimum)	13-19	12-19	
Education (year)			
Mean (SD)	9.2±1.5	8.7±1.7	0.428
Median	9	9	
Range (maximum-minimum)	6-12	5-12	

SD: Standard deviation, CBT: Cognitive-behavioral therapy

**Table 2: Comparison of Children Depression Inventory scores in the intervention and control groups using numbering system**

CDI	Intervention (CBT + drug)	Control (drug only)	P (Mann-Whitney test)
Initiation of the study			
Mean (SD)	20.4±10.5	17.9±12.2	0.468
Median	18	16.5	
Range (maximum-minimum)	5-38	2-40	
1 month after			
Mean (SD)	17.6±11.2	17.6±7.8	0.744
Median	14	17.5	
Range (maximum-minimum)	4-46	5-31	
3 months after			
Mean (SD)	16.6±11	15.5±8.1	0.740
Median	16	14	
Range (maximum-minimum)	2-36	3-31	
6 months after			
Mean (SD)	16.7±10.1	18.8±10	0.152
Median	11	18.5	
Range (maximum-minimum)	7-38	3-34	
Trend			
P (Friedman test)	0.188	0.767	-

SD: Standard deviation, CDI: Children Depression Inventory, CBT: Cognitive-behavioral therapy

scored below 70 with 4 of them obtaining a score above 70, 1 month after the initiation of the study. GAF scores in the intervention and control groups in all 4 stages of the study, using this test, were not significantly different [Table 4].

Rehospitalization rate was similar in both groups (two patients in the intervention group and one in control group).

The transcribed interviews from the concurrent qualitative phase-focus group with eight participants who were selected purposefully were analyzed through Braun

and Clarke (2006) thematic analysis. Two themes were extracted from the qualitative phase: emotion recognition and emotion regulation. Participants discussed how the skills which learned through the study help them for understanding their emotions, and regulating their mood and emotions specifically in anger control. They believed that G-CBT program led them to a reduction in the symptoms of their anger following the recognition of their emotion and helped them improve their perceived control on their anger.

**Table 3: Comparison of Young Mania Rating Scale scores in the intervention and control groups using numbering system**

YMRS	Intervention (CBT + drug)	Control (drug only)	P (Mann-Whitney test)
Initiation of the study			
Mean (SD)	15.6±6.7	10.9±8.9	0.094
Median	19	9	
Range (maximum-minimum)	2-23	0-27	
1 month after			
Mean (SD)	14±7.7	12±9.3	0.367
Median	13	10	
Range (maximum-minimum)	0-29	2-36	
3 months after			
Mean (SD)	12.3±8.1	10.2±5.5	0.819
Median	10	11	
Range (maximum-minimum)	2-32	2-19	
6 months after			
Mean (SD)	13.6±8	18.6±9.2	0.110
Median	13	19	
Range (maximum-minimum)	2-31	5-38	
Trend			
P (Friedman test)	0.534	0.051	-

YMRS: Young Mania Rating Scale, SD: Standard deviation, CBT: Cognitive-behavioral therapy

**Table 4: Comparison of Global Assessment of Functioning scores in the intervention and control groups using numbering system**

GAF	Intervention (CBT + drug)	Control (drug only)	P (Mann-Whitney test)
Initiation of the study			
Mean (SD)	7.53±1.3 (70-80)	6.91±1.9 (60-70)	0.669
Median	8	7	
Range (maximum-minimum)	4-9	3-9	
1 month after			
Mean (SD)	7.07±1.7 (60-70)	7.66±1.7 (70-80)	0.312
Median	7	8.5	
Range (maximum-minimum)	5-10	4-9	
3 months after			
Mean (SD)	7.76±1.2 (70-80)	6.83±2.2 (60-70)	0.122
Median	8	7	
Range (maximum-minimum)	5-9	1-9	
6 months after			
Mean (SD)	7.23±1.09 (60-70)	6.58±2.4 (60-70)	0.595
Median	7	7	
Range (maximum-minimum)	5-9	1-9	
Trend			
P (Friedman test)	0.766	0.206	-

GAF: Global Assessment of Functioning, SD: Standard deviation, CBT: Cognitive-behavioral therapy

## Discussion

In the current clinical trial, no significant differences in symptoms of depression, mania, and overall performance were observed in patients in the intervention and control groups.

Using numbering in the current study, no differences in the treatment and control groups were observed in terms of depression scores on CDI. However, using a cutoff point, a higher percentage of subjects in the control group were placed above the cutoff point (44.4% vs. 25%). Our findings were in accordance with a previous study by Weinstein *et al.* on the efficacy of Child and Family-focused CBT (CFF-CBT) among the children and adolescents with bipolar mood disorder. Sixty-nine patients ranging from 7 to 13 years old were enrolled in the study. The treatment was provided on a weekly basis for 12 weeks, and booster sessions were held 6 months later. In this study, it was shown that CFF-CBT has had a greater effect on depressive signs.<sup>[24]</sup>

In our study, no significant differences regarding CDI scores between the two groups were observed. Of course, using a cutoff point, the relapse rate was lower in the intervention group. In the above-mentioned study, the age range of the patients is lower than ours and most patients were young children. However, our study specifically focused on adolescents. It should also be taken into account that adolescents are exposed to more stressors which could be the reason why our intervention did not have any effect. In addition, the above-mentioned study was performed in a longer period, which could explain the positive results of the study.

In a study by West *et al.* on 34 bipolar mood patients ranging from 5 to 17 years old, CFF-CBT has been used, and the patients were analyzed over a period of 3 years. Patients' symptoms and overall performance were analyzed using the Children's Global Impression Scale-Bipolar and Children's Global Assessment Scale (C-GAS), respectively. This intervention showed to have positive effects on patient symptoms and functions. In this study, there has been no significant statistical difference after treatment, 1 year, 2 years, and 3 years later which reveals that clinical improvement is being continued.<sup>[25]</sup>

In addition to adolescents, this study also included young children. In addition, regarding the follow-up period, the study is longer than ours.

In another study implemented by Hlastala *et al.*, IPSRT-adolescents with special adaptation for adolescents with bipolar mood disorder were included. In this study, 12 adolescents with an average and an SD of  $16.5 \pm 1.3$  years with a diagnosis of bipolar disorder participated in 16–18 IPSRT sessions over 20 weeks. The patients were initially analyzed with K-SADS-Present and Lifetime (K-SADS-PL). Signs of mania, depression and

patients' performance on the basis were assessed monthly and also at the end of the intervention using questionnaires Brief Psychiatric Rating Scale for Children, C-GAS and the more specific scales MRS (Mania Rating Scale) and the Beck Depression Inventory assessment. In this study, patients with mania and depression have shown significant reduction in symptoms, and overall performance is also significantly increased.<sup>[13]</sup>

In this study, there was no control group, and this serves as a limitation in interpreting the results. The number of sessions of this study was higher compared to ours which could have been one of the reasons of the effectiveness of the study.

In a study done by Feeny *et al.*, 16 patients ranging from 10 to 17 years old with bipolar mood disorder participated. Cognitive-behavioral intervention for adolescents with bipolar mood disorder was designed, and then eight patients were randomly assigned to control group and eight patients into intervention group. All the patients received medical treatment at the initiation of the study, and then they were being evaluated using semi-structured interview of K-SADS-PL. Patients in intervention group received individual CBT during 12 weekly sessions. The intervention included psychoeducation, drug compliance, mood monitoring, identifying and correcting inefficient thoughts, identifying stressors, sleep habits, and family relationships.

At the beginning and end of the intervention, patients in the control and intervention groups were assessed using the YMRS and Inventory for Depressive Symptoms. Two months later, their symptoms were checked. At the end of the intervention and after 2 months later, symptoms of depression and mania in the intervention group were not more than those in the control group. In this study, the General Behavior Inventory (GBI) was used only in the intervention group. Regarding the scores obtained from this questionnaire, the adolescents in the intervention group have not been reported to show any decrease in symptoms of mania and depression at the end of the intervention and 2 months after that. However, regarding the use of the GBI, the parents in the intervention group reported a reduction in symptoms of mania and depression after the intervention and a reduction in symptoms of depression in 2-month follow-up, but the decline did not continue in symptoms of mania.<sup>[26]</sup>

The results of that study are to a great extent similar to ours. However, in that study, CBT was offered individually. While in our study, CBT sessions were held in group form. The number of sessions has also been higher than our study. Only in GBI, parents reported a reduction in symptoms of mania and depression that after 2 months, this decline only continued about depression. GBI was only used in the intervention group and this issue limits the interpretation of the study. In our study, using numbering,

no significant differences were observed in depressive symptoms between both groups, but using a cutoff point, relapse of the symptoms of depression in the control group was higher. With regard to these results, the overall CBT treatment can be to some extent effective for depression.

In Miklowitz *et al.*'s study, 145 adolescents with bipolar mood disorder with a mean age of 15.6 years were randomly divided into two groups. Intervention group received family-focused treatment as well as medical therapy. The family-focused treatment included psychoeducation, communication enhancement training, and problem-solving skills training which were presented in 21 sessions over 19 months. The control group only received medication and three weekly sessions of psychoeducation to families. In this study, patients were assessed in terms of mood symptoms using the Psychiatric Status Rating Scale at initiation of the study, every 3 months during the 1<sup>st</sup> year and every 6 months of the 2<sup>nd</sup> year. It was shown that the use of extensive psychotherapy in combination with medication has no effect on time to recovery or delaying the relapse of mood disorders in adolescents with bipolar mood disorder.<sup>[27]</sup>

Although the number of sessions in the above-mentioned study was considerable and there has been substantial and long follow-up period, the use of psychotherapy did not have any effect. From this respect, the results of this study are in line with ours. In this study, patients, their parents and where applicable, their siblings participated in the sessions. In our study, individual and parallel sessions were held for parents.

It should be noted that in our study, participants in the intervention group (patients and parents) who participated in the program of cognitive-behavioral group, expressed their satisfaction. One of the limitations of our study was a relatively low number of subjects. By increasing the number of subjects, the number of sessions of group cognitive-behavioral therapy (G-CBT), specifically number of Booster sessions and the time of the study, different results might be obtained. In addition, we just focused on adolescent girls; therefore, implementing another study focusing on boys is a suggestion for further research, especially with regard to the fact that the two genders have different problems which leads to a difference in the pressure and stress they face.

The results showed that the addition of G-CBT to the usual medications in maintenance phase of the bipolar mood disorder in adolescent girls leads to a decrease in the depressive scores but has no effect on manic symptoms and relapse rate.

## Conclusions

The results showed that the addition of G-CBT to UMM leads to decrease in the depressive scores but has no effect on manic symptoms and relapse rate.

## Financial support and sponsorship

This article is a part of Child & adolescent Psychiatry subspecialty thesis and has been approved by Behavioral Sciences Research Centre, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran (Code: 395068). The financial support provided by the university is highly appreciated.

## Conflicts of interest

There are no conflicts of interest.

## References

1. Geller B, Craneg JL, Bolhofner K, Nickelsburg MJ, Williams M. Phenomenology and longitudinal course of children with a prepubertal and early adolescent bipolar disorder phenotype. *Bipolar Disorder in Childhood and Early Adolescence*. New York, NY, US: Guilford Press; 2003. p. 25-50.
2. Birmaher B, Axelson D, Pavuluri M. *Bipolar Disorder: Lewis's child and adolescent psychiatry*. Lippincott Williams & Wilkins; 2007. p. 513-25.
3. Gabrielle A, Carlson Stephanie E, Meyer C. Early onset bipolar disorder. *Test book of psychiatry, kaplan and sadock*. Lippincott Williams & Wilkins; 2009. p. 3663-70.
4. Sadock BJ, Sadock VA, Ruiz P. *Child psychiatry* (31.12 b: Early-Onset Bipolar Disorder); Kaplan and Sadock's *Synopsis of Psychiatry: Behavioral Sciences/Clinical Psychiatry* (11<sup>th</sup> edition). Philadelphia, PA: Lippincott Williams & Wilkins. 2015. p. 1236-42.
5. Suppes T, Leverich GS, Keck PE, Nolen WA, Denicoff KD, Altshuler LL, *et al.* The Stanley Foundation Bipolar Treatment Outcome Network. II. Demographics and illness characteristics of the first 261 patients. *J Affect Disord* 2001;67:45-59.
6. Delbello MP, Findling RL, Kushner S, Wang D, Olson WH, Capece JA, *et al.* A pilot controlled trial of topiramate for mania in children and adolescents with bipolar disorder. *J Am Acad Child Adolesc Psychiatry* 2005;44:539-47.
7. Manji HK, Zarate CA. Molecular and cellular mechanisms underlying mood stabilization in bipolar disorder: Implications for the development of improved therapeutics. *Mol Psychiatry* 2002;7 Suppl 1:S1-7.
8. Fallah E, Arman S, Najafi M, Shayegh B. Effect of tamoxifen and lithium on treatment of acute mania symptoms in children and adolescents. *Iran J Child Neurol* 2016;10:16-25.
9. Carlson GA, Pataki C, Meyer SE. *Bipolar Disorder: Dulcan's Textbook of Child and Adolescent Psychiatry*; (2<sup>nd</sup> Edition), Arlington, VA, US. American Psychaitric association publishing; 2016. p. 277-304.
10. Prako J, latalova K, Grambel A, Jelenova D, Kamaradova D, Mainerova B, *et al.* Psychoeducation for patients with bipolar affective disorder. *European Psychiatry*; 22<sup>nd</sup> European Congress of Psychiatry. 2013;28.supp1. p. 1-1819.
11. Hardy KV. Cognitive behavioral therapy (CBT). *Encyclopedia of the Neurological Sciences*. 2<sup>nd</sup> ed. Elsevier Inc. 2014. p. 822-3.
12. Jones S. Psychotherapy of bipolar disorder: A review. *J Affect Disord* 2004;80:101-14.
13. Hlastala SA, Kotler JS, McClellan JM, McCauley EA. Interpersonal and social rhythm therapy for adolescents with bipolar disorder: Treatment development and results from an open trial. *Depress Anxiety* 2010;27:457-64.
14. Moore L, Gibson J, Carr A. Group cognitive behavior therapy for depression-does it help bipolar patients too?. *European*



- Psychiatry. 24; 17<sup>th</sup> EPA congress-Lisbon, Portugal 2009. p. 589.
15. Molavi P, Shahrivar Z, Mahmoodi Gharaee J, Basharpour S, Sharghi A, Nikparvar F. Short-time outcome predictors of bipolar disorder type I in children and adolescents. *Iran J Psychiatry Clin Psychol* 2012;18:128-37.
  16. Carlson GA, Meyer SE. *Diagnostic Interviews: Dulcan's Textbook of Child and Adolescent Psychiatry*; Arlington, VA, US.American Psychaitric association publishing 2010. p. 79-88.
  17. Ghanizadeh A, Mohammadi MR, Yazdanshenas A. Psychometric properties of the Farsi translation of the Kiddie Schedule for Affective Disorders and Schizophrenia-Present and Lifetime Version. *BMC Psychiatry* 2006;6:10.
  18. Youngstrom EA, Gracious BL, Danielson CK, Findling RL, Calabrese J. Toward an integration of parent and clinician report on the Young Mania Rating Scale. *J Affect Disord* 2003;77:179-90.
  19. Karimi S. Standardization, Validation and Reliability Testing of Persian Version of "Child Depression Inventory of Kovacs" in Guidance School Students, MSc Dissertation in Clinical Psychology. Post Graduate Education School Islamic Azad University (Khorasgan Branch); 2009.
  20. Carlson GA, Meyer SE. *Rating Scales: Dulcan's Textbook of Child and Adolescent Psychiatry*; Arlington, VA, US.American Psychaitric association publishing 2010. p. 89-110.
  21. Sadock BJ, Sadock VA, Ruiz P. *Diagnosis and psychiatry: Examination of the psychiatric patient*. Kaplan & Sadock's Comprehensive Textbook of Psychiatry. 9<sup>th</sup> ed., Ch. 7. Philadelphia, PA: Lippincott Williams & Wilkins 2009. p. 886-1070.
  22. Aas IH. Guidelines for rating Global Assessment of Functioning (GAF). *Ann Gen Psychiatry* 2011;10:2.
  23. Alaghbandrad J, Amini H, Sharifi V, Dashti B. A 2 Year Followup Study on Patients with First Episode Psychosis Admitted to Ruzbeh Hospital: Demographic and Clinical Characteristic and Comparison of a Specialized Program. Final Report. Tehran: Tehran University of Medical Sciences; 2010.
  24. Weinstein SM, Henry DB, Katz AC, Peters AT, West AE. Treatment moderators of child- and family-focused cognitive-behavioral therapy for pediatric bipolar disorder. *J Am Acad Child Adolesc Psychiatry* 2015;54:116-25.
  25. West AE, Henry DB, Pavuluri MN. Maintenance model of integrated psychological treatment in pediatric bipolar disorder: A pilot feasibility study. *J Am Acad Child Adolesc Psychiatry* 46:205-12.
  26. Feeny NC, Danielson CK, Schwartz L, Youngstrom EA, Findling RL. Cognitive-behavioral therapy for bipolar disorders in adolescents: A pilot study. *Bipolar Disord* 2006;8 (5 Pt 1):508-15.
  27. Miklowitz DJ, Schneck CD, George EL, Taylor DO, Sugar CA, Birmaher B, *et al.* Pharmacotherapy and family-focused treatment for adolescents with bipolar I and II disorders: A 2-year randomized trial. *Am J Psychiatry* 2014;171:658-67.