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The Efficacy of Group-Cognitive Behavior Therapy for Patients with Bipolar Disorder Based on Psychological Behaviorism

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Abstract

The study's aim was to conduct group Cognitive Behavior Therapy (CBT) for patients with bipolar I disorder (n=11) and test its efficacy. All subjects didn't have manic or depressive episode fully met DSM-5 criteria and they are all under proper medication as a maintenance treatment. The intervention was administered to ameliorate eight psychosocial factors, as measured by the Bipolar Disorder Etiology Scale, which was administered with the Korean versions of the Young Mania Rating Scale and Beck Depression Inventory before and after the intervention. The same measuring procedures were followed with a waiting-list control group (n=14). Subjects were not assigned with fully randomized method, however there is no significant differences in baseline measurement. Manic emotional response, lack of social skills, pursuit of short-term pleasure, and lack of problem solving-skills decreased significantly, but lack of support, sleep problems, antidepressant side effects, and positive arousal to threats did not change significantly in the intervention group. Significant reductions in residual depressive and manic symptoms were found during their maintenance medication periods. Even in the absence of florid manic symptoms, interventions to ameliorate the manic emotional response should be used.

Keywords: Bipolar disorder; Residual symptoms; Bipolar disorder etiology scale; CBT

Introduction

Manic-depressive illness, also known as bipolar disorder (BD) is a mood disorder that develops in early adulthood and is characterized by displays of affect that alternates between dysphoria and euphoria. During manic episodes, patients with this disorder exhibit an elated mood, talkativeness, and agitation and start many projects that they often fail to complete. BD is a serious mental illness characterized by grandiose delusions, and impaired reality testing and daily functioning [1]. BD results in a lower quality of life related to the patient's health [2] and recurrent episodes that occur more frequently with shorter periods between episodes. Forty percent of patients with BD experience a chronic course of illness, and have approximately 10 episodes during their lifetime [3]. In addition, BD burdens the family members of patients and the healthcare system, economically, and it has been classified as one of the most severe illnesses causing many disabilities in the patients [4]. BD impairs the functioning of the patients, especially their occupational functioning. According to the research, the majority of patients with BD deal with chronic unemployment and absenteeism from their workplace for a long periods because of their illness, or they maintain their careers while showing deterioration in their occupational functioning [5]. About fifty percent of BD patients attempt suicide and 6-20% of them die by suicide [6]. With respect to suicide, BD is a serious mental illness that has heavy impacts on the individual and society. However, intervention programs based on BD's etiology and psychological factors are rare. Recently, many psychosocial factors in the etiology of BD have been identified through controlled studies, based on psychological behaviorism [7]. According to this research, one specific factor and 12 common factors affect both MDD and BD. Thus, a study of a group-Cognitive Behavior Therapy (CBT) intervention, based on psychological behaviorism, was conducted. Its effects on BD symptoms and characteristics were tested.

Methods

Group-CBT intervention for patients with BD

A group-CBT intervention for BD was conducted based on previous studies. Psychosocial factors related to parenting were not target variables in this study because they are past events and the items on the related scales are composed of past-tense sentences. Thus, their subscales are not suitable for pretest and posttest assessments of current variables or factors. Significant variables among the current psychosocial ones and basic behavior repertoires were used as target variables. The factors included as target variables of the group-CBT intervention are presented in Table 1. Korea Counseling Graduate University Institutional Review Board approved this study.

Taking the overall structure and flow of the program into consideration, the group-CBT sessions were as follows. The first to fourth sessions (the first half of the program), were composed of the Introduction to CBT, its rationale, handling of depressive feelings and low self-esteem, and the manic emotional response. The fifth to eighth sessions (the second half of the program), were composed of mainly social skills and problem- solving skills. A summary of the intervention program is presented in Table 2.

Participants

Experimental group: Eleven participants diagnosed with bipolar I disorder using structured interviews that were based on the DSM-5, submitted written consent to participate in the experimental group of the intervention program. Participants were recruited from local psychiatry hospitals in Seoul, Korea by the referral of a psychiatrist. They completed pretest and posttest measures. Seven of the eleven partici-

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Category	Factors	Type	CBT interventions
Current Psychosocial Factor	Lack of Social Support	C	Cognitive restructuring, Planning and homework assignment related to enhancing Social Support.
Current Organic Factors	Sleep Problem	C	Monitoring the relapse sign and sleep patterns.
	Antidepressant Problem	C	Cognitive restructuring.
Emotion-motivation BBRS	Manic Emotional Response	S	Cognitive restructuring including modifying the core beliefs.
	Positive Arousal to Threats	C	Cognitive restructuring including modifying the core beliefs.
Sensory-motor BBRS	Lack of Social Skills	C	Psycho-education of the communication skills.
Language-cognitive BBRS	Short-term Pleasure Seeking	C	Cognitive restructuring including modifying the core beliefs.
	Lack of Coping Skills	C	Psycho-education of the task analysis skills.
Note: BBRS = Basic Behavior Repertoires, C = Common Factor, S = Specific Factor			

Table 1: Psychosocial factors in the etiology of BD and cognitive behavioral therapy interventions.

Session	Content	Target Variables
1	Greetings.	Anti-depressant problems and Short-term pleasure seeking
	Sharing the expectations.	
	Explaining the group rules and CBT rationale.	
	Cognitive restructuring related to depressive feeling and the short-term pleasure seeking.	
2	Cognitive restructuring related to the short-term pleasure seeking.	Short-term pleasure seeking (Impulsivity).
	Psycho-education of the difference between pleasure and satisfaction.	
3	Cognitive restructuring related to the manic emotional response.	Manic emotional response.
	Identifying the automatic thought and applying the three-column technique.	
4	Identifying the core beliefs related to the manic emotional response and positive arousal to threats.	Manic emotional response and Positive arousal to threats
5	Dealing with dysfunctional thoughts related to social support system.	Lack of social support
	Planning and homework assignment that could enhance social support.	
6	Evaluating the homework	Lack of social support
	Psycho-education: "I-messages, empathic listening, and related role-playing exercises	
7	Psycho-education: task analysis	Problem-solving skills
	Planning the long-term occupational rehabilitation	
8	Psycho-education: relapse signs and the importance of sleep hygiene	Sleep disturbances
	Sharing experiences with the group	
	Termination	

Table 2: Eight sessions of the group-CBT program and its target symptoms.

pants were males and the others were females. Their mean age was 32.1 and all of them were on maintenance medication. Random assignment procedures were not employed to decide on the participants' treatment conditions, because there are participants who wanted to be allocated in treatment condition first. Except for these 2 subjects, all other subjects were assigned randomly. However, this assignment method cannot be considered fully random. Thus, the homogeneity of the two groups was tested using ANOVA. The enrollment period began August 1, 2012 and ended on May 10, 2013. There were no significant issues with non-compliance.

Control group: Fourteen patients with bipolar I disorder participated in the study as control group members. They also submitted written consent forms and were on maintenance medication. They completed pretest and posttest measures at the same interval. As there was no placebo intervention, the use of a blinding procedure was not possible. Four of the participants were males and the others were females. Their mean age was 27.9.

Measures

Bipolar Disorder Etiology Scale (BDES): The following subscales of the BDES were used as pretest and posttest measures to test the effects of the intervention: lack of social support, sleep disturbance, antidepressant problems, manic emotional response, positive arousal to threat, lack of social skills, short-term pleasure seeking, and lack of problem-solving skills.

Korean version of the Young Mania Rating Scale (K-YMRS): To detect changes in residual manic symptoms during the inter-episode period, the K-YMRS developed by Young, et al. [8] and validated with a Korean population by Jung et al. [9]. Jung et al. was used as a pretest and posttest measure. The scale is composed of 11 items and a trained psychiatrist, psychologist, counselor, or nurse and rates the severity of the manic symptom by responding to each item. Each item's score ranges from 0 to 8, and the Cronbach's alpha of the scale in this study was 0.70.

Korean version of the Beck Depression Inventory (K-BDI): To detect the amelioration of the residual depressive symptoms during the inter-episode period, the K-BDI developed by Beck and cross validated by Lee and Song [10] was used as pretest and posttest measures. The Cronbach's alpha for the scale in this study was .79.

Data analysis

Because there was no random assignment of participants to ensure the homogeneity of the control and intervention groups, a series of ANOVAs were done. Based on the group × time, repeated measures mixed-design ANOVA and post-hoc analyses were performed and the interaction effects were analyzed to verify the efficacy of the group CBT intervention on factors related to onset of BD and residual symptoms. Effect sizes (eta squared) were calculated. All statistical analyses were performed using SPSS 18.0. When this study was initiated, registering this type of clinical study was not required by the institutional review

board. However, after the study was completed, this study was registered with the Clinical Research Information Service of Korea. The authors confirm that all ongoing and related trials for this intervention are registered.

Results

Homogeneity of the two groups

According to the ANOVA results, ten of the pretest scores for the intervention group and waiting-list control groups confirmed their homogeneity. No significant mean differences were detected. The mean scores for the pretest-posttests measures of the two groups are presented in Table 3.

Effect of the Group-CBT intervention based on Psychological Behaviorism

In the case of lack of social support $F(1, 23)=0.28$, $p=0.60$, sleep problems $F(1, 23)=3.09$, $p=0.09$ antidepressant problems $F(1, 23)=3.41$, $p=0.08$, and positive arousal to threat $F(1, 23)=0.42$, $p=0.52$, the group × time interaction effect was not significant. That is to say, there were no significant improvements on these measures.

However, as for manic emotional response $F(1, 23)=5.34$, $p=0.03$, lack of social skills $F(1, 23)=9.31$, $p=0.00$, short-term pleasure seeking $F(1, 23)=13.26$, $p=0.00$, problem-solving skills $F(1, 23)=5.55$, $p=0.03$, residual depressive symptoms $F(1, 23)=18.18$, $p=0.00$) and residual manic symptoms $F(1, 23)=16.39$, $p=0.00$), the group × time interaction effect was significant. Significant improvements in these characteristics and the amelioration of symptoms were found.

As for manic emotional response, there was no significant change in the control group $t(12)=-1.27$, $p=.12$. However, the intervention group's mean score for manic emotional response was reduced significantly from 18.7 to 12.6 $t(10)=-1.88$, $p<0.05$. In the case of lack of social support, the control group showed no significant change $t(13)=1.17$, $p=0.13$. However, the intervention group's mean score for lack of social skills significantly decreased from 20.2 to 10.6 $t(10)=3.09$, $p<0.01$. The control group's mean score for positive arousal to threat did not change significantly, $t(13)=-1.50$, $p=0.08$, but that of the intervention group was significantly reduced from 13.1 to 8.7 $t(10)=3.23$, $p<0.01$. In the case of problem solving skills, there was no significant change in the control group $t(13)=1.25$, $p=0.12$, but the intervention group showed a significant improvement, with an increase from 19.0 to 21.2 $t(10)=1.25$, $p<0.05$. As for residual depressive and manic symptoms, the control group showed no significant change, but the intervention group showed a significant amelioration of depressive $t(10)=4.33$, $p<0.01$, and manic symptoms $t(13)=3.17$, $p<0.01$.

The mean scores of the pretest-posttest measures are presented in Table 3 and the mixed-design ANOVA results are presented in Table 4. The change patterns of residual depressive and manic symptoms are illustrated in Figures 1 and 2, respectively.

In addition, a slight adverse event was observed during the intervention session. Two participants described thoughts that were somewhat grandiose as rational beliefs replacing their irrational depressive belief. Examples of these include "I am the most beautiful woman in the world" and "I am the most famous scientist in the world." These thoughts were amenable to transformation into more rational ones with the aid of the therapist, and the participants did not display grandiose delusions.

Measures	Control M (SD)	Intervention M (SD)	*F*	*p*
Lack of social support Pre	15.93 (5.90)	16.82 (7.36)	0.11	0.74
Lack of social support Post	13.64 (5.58)	13.55 (7.09)		
Sleep problems Pre	18.50 (6.91)	20.09 (7.24)	0.31	0.58
Sleep problems Post	16.86 (7.11)	14.64 (7.99)		
Antidepressant problems Pre	12.93 (7.37)	14.27 (6.27)	0.23	0.63
Antidepressant problems Post	14.14 (7.62)	11.18 (6.74)		
Manic emotional response Pre	14.64 (4.21)	18.73 (6.58)	3.55	0.07
Manic emotional response Post	16.00 (5.61)	12.64 (7.13)		
Positive arousal to threat Pre	10.86 (2.82)	9.91 (2.73)	0.71	0.40
Positive arousal to threat Post	9.86 (2.35)	9.64 (2.65)		
Lack of social skills Pre	18.93 (5.58)	20.18 (8.60)	0.19	0.66
Lack of social skills Post	18.07 (5.18)	10.64 (5.22)		
Short-term pleasure seeking Pre	13.29 (4.07)	13.09 (4.08)	0.01	0.91
Short-term pleasure seeking Post	14.64 (5.65)	8.73 (3.98)		
Lack of problem-solving skills Pre	20.21 (6.05)	19.00 (7.50)	0.20	0.66
Lack of problem-solving skills Post	18.93 (5.27)	21.27 (7.10)		
BDI Pre	16.43 (9.21)	23.73 (12.68)	2.78	0.11
BDI Post	17.57 (11.01)	12.18 (15.33)		
YMRS Pre	7.86 (6.53)	9.55 (7.49)	0.36	0.55
YMRS Post	9.86 (6.91)	3.82 (5.36)		

Table 3: Mean scores on measures in the experimental and control groups.

Source Group × Time interaction	Type III SS	df	MS	F	p	Effect size
1. Lack of social support	3.00	1	3.00	0.28	0.60	0.012
2. Sleep problems	44.75	1	44.75	3.09	0.91	0.001
3. Antidepressant problems	57.09	1	57.09	3.41	0.08	0.004
4. Manic emotional response	156.37	1	156.37	5.34**	0.03	0.195
5. Positive arousal to threat	1.63	1	1.63	0.31	0.52	0.018
6. Lack of social skills	232.50	1	232.50	9.31**	0.00	0.288
7. Short-term pleasure seeking	100.80	1	100.80	13.26**	0.00	0.366
8. Lack of problem-solving skills	39.00	1	39.00	5.55*	0.03	0.194
9. Residual depressive symptom	495.86	1	495.86	18.18**	0.00	0.442
10. Residual manic symptom	183.91	1	183.91	16.39**	0.00	0.416
Note: *p<0.05, **p<0.01						

Table 4: Effects of the group-CBT program on BD (Interaction effects: Time × group).

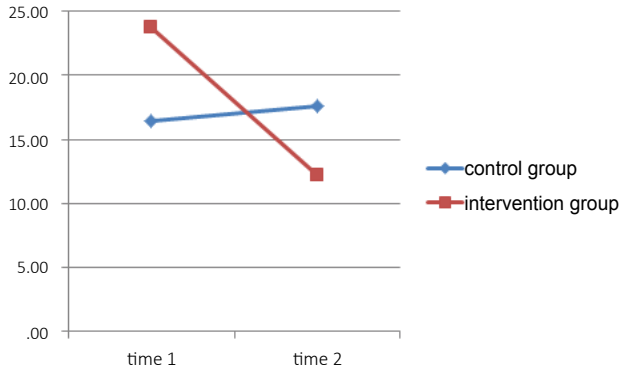

Figure 1: Group × Time interaction effect on depressive symptoms as measured by the BDI.

Discussion and Conclusion

Before those in the field of psychiatry knew that lithium could be used as a medication for BD, the first choice of intervention for BD was psychotherapy [11]. However, after the advent of the use of lithium and other mood stabilizers and the rapid accumulation of research evidence in the fields of biology and neuropsychology on BD [12]. psycho-

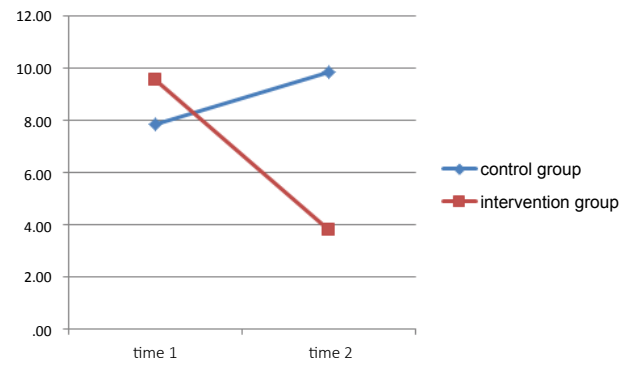

Figure 2: Group × Time interaction effect on manic symptoms as measured by the YMRS.

therapy for BD became a subsidiary method for BD intervention, and its primary focus was to increase the medication compliance of patients with BD [13]. It seems that the stress-diathesis theory [14] resulted in strengthening the preferred trend of medicating patients because of its premise that biological diathesis is crucial for the development of certain types of mental illness and that psychosocial stress is a rather trivial and non-specific precipitator.

Given these trends, evidence of the psychosocial factors in the etiology of BD (rather than non-specific precipitating factors) is needed to emphasize the importance of psychotherapy, although medication must be considered first, for the treatment of psychotic features mental illnesses, such as BD.

Previous studies examined psychosocial factors in the etiology of BD and in this study, group-CBT for BD was conducted and its effects were tested. The main purpose of this intervention was not to ameliorate depressive symptoms; thus, dealing with automatic thoughts related to depression did not occupy a large portion of the program's time. However, in the first session, to explain the working mechanism of CBT, examples of modifying the depressed person's cognitions were used and homework to make a three-column sheet was assigned for each session. To verify the indirect effects of the intervention based on the etiological factors associated with depressive symptoms, it was meaningful to use pretest and posttest measures of depression without directly intervening in the depressive symptoms. However, such a design seemed to result in ethical issues although the effect of the group-CBT intervention for depressive symptoms was well developed and supported by research studies.

One of the meaningful implications of this study was the development of an intervention program for BD based on the factors related to the onset of BD and it is effective on residual symptoms of BD patients. Second, the notion that psycho-education for general populations such as I-messages, task analysis techniques, and empathic listening could be helpful for BD was confirmed. Third, the finding that the intervention could ameliorate residual symptoms was sustained.

One of the limitations of this study was that random assignment procedures were not used. Second, the sample size was relatively small. Third, there were factors that did not change significantly after the intervention. In the case of the third issue, it is possible that the relatively short study period (8 sessions) resulted in a limited ability to achieve outcomes. In the case of the lack of social support variable, it is expected that it will take a considerable amount of time to get real social support and perceive this change again, even though the resources for getting more social support through group psychotherapy have obtained. In the case of sleep problems, it was an intervention focused on preventing relapse. Among the subjects in this study, residual symptoms during maintenance treatment did not appear to have a high level of sleep problems, which seemed to have affected the insignificant change of this variable. The most problematic variable is positive arousal toward threat. This variable is a key variable related to mania but it is not improved through treatment. This problem seems to have been influenced by the fact that the total number of sessions was shorter than the target variable to change. Therefore, it seems that there is a need to plan more intensive and longer sessions to change all 10 variables, and more sessions should be allocated to change the positive arousal variable. Excluding symptoms of depression and mania, eight sessions covered eight sub-factors, which changed. Although there were effective tools, such as homework assignments, to magnify the effects of the group-CBT program, one session for one target variable is not sufficient to change all of the variables. To solve this problem, more sessions might be needed. Thus, the program could be modified to have more sessions to achieve better outcomes. Last, the participants were all under proper medications and they didn't display severe psychotic symptoms. Thus, although residual manic symptoms were successfully ameliorated through this program, these results could not be generalized over the BD patients with severe psychotic symptoms or with no medications.

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