Original Article

The effect of group cognitive-behavioral interventions on depression in patients with multiple sclerosis

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ABSTRACT

Background and Objectives: Multiple Schlorosis (MS) is one of the most common chronic neurological disorders, in which women are developed three times greater than men. Approximately, 60% of patients with MS suffer from depression. This study was aimed to determine the effect of group cognitive-behavioral interventions on depression in patients with MS referred to MS Association of West Azerbaijan. Materials and Methods: This was a quasi-experimental study conducted on 80 patients with MS. Samples were selected through convenience sampling and randomly divided into experimental (n=40) and control (n=40) groups. The data collection instruments were a demographic and Beck questionnaires which were completed before and after the intervention. Group cognitive-behavioral intervention for the participants in the intervention group was hold for nine one-hour sessions. The data were analyzed by SPSS version 21, and both descriptive and inferential statistics were used. Results: The results of the present study showed that depression scores after intervention were significant for both groups ($p<0.001$). So that, after intervention, the mean score of depression in the experimental group decreased significantly ($P<0.001$). Conclusions: Group cognitive-behavioral intervention is effective for reducing depression in patients with MS. Therefore, it can be used as a treatment procedure for reducing depression.

Keywords: Multiple Sclerosis, Depression, Cognitive-behavioral therapy

Introduction

Multiple Schlorosis is one of the chronic diseases resulting from myelin destruction of central nervous system. The main cause of this diseas is not completely known yet, but different factors are involved in the development of MS including previous history of infectious diseases, immunodeficiency and stress as well as environmental factors [1]. MS is one of the most common chronic neurological disorders in which women are developed three times greater than men and primarily affect young people between 20 and 40 years of age [2, 3]. MS is not found with the same frequency across different geograghical regions of the world. Moreover, the prevalence of MS has been reported 2.5 million people worldwide (140 per 100000 people in North America, 108 per 100000 people in Europe, 2.1 per 100000 people in South Africa, and 2.2 per 100000 people in East Asia] [4]. Beside the medical and biological symptoms, MS is accompanied by some unfavorable psychological consequences. The symptoms of MS may include lower performance, boredom, muscular weakness , ataxia, cognitive disorder and depression [5]. Depression, one of the most common clinical symptoms in patients with MS, involves 60% of the patients with MS [6], in which is two times more common in patients with chronic disease [7]. In patients with MS, depression is mostly manifested by anger, irritability, worry, lack of courage and lack of interest [1]. Considering the destructive consequences on life quality, higher probablity of suicide, disruptions in personal performance, failure to follow treatment process, higher epidemy of depression, high economical burdon on family and social systems, it seems necessary to manage depression [8-11]. The symptoms diminish through medical and psychotherapeutic methods or combination of the two methods. Cognitive-behavioral therapy is considered as one of the psychotherapeutic methods [12].

Cognitive-behavioral therapy is an integration of behavioral and cognitive therapy which are based on Pavlov's rule, basic cognition and knowledge [13]. This type of treatment is composed of three stages. The first stage almost focuses on

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behavioral changes. The second stage deals with unwanted negative thoughts. The third stage emphasizes on the evaluation and changing the nuclear beliefs and schema [14]. In this method, the patients are taught to put values for any increase in the level of their daily activities and reinforce them with positive thoughts [15]. Cognitive-behavioral therapy has some important features such as short-term coopeartive nature. Moreover, it possesses an experimental and educational orientation with a focus on cognition [16]. The main purpose of cognitive-behavioral intervention is replacing the distorted thoughts with logical and realistic ones. This type of therapy generally follows five principles including identification of automatic negative thoughts, examination of the relationship between cognition and behavior, emphasis on the validity of automatic thoughts and beliefs, replacement of realistic thoughts with distorted ones, and identification and modification of incompatible thinking patterns [17].

The results of various studies have reported the effectiveness of cognitive-behavioral intervention, in which is economically durable and appropriate choice as well as lowers the risk of intense reactions after stopping the use of Benzodiazepines [18-22]. Cognitive-behavioral intervention is conducted on an individual or a group [18]. Group education creates a safe and healthy environment for growth and individual changes. Group interventions indicate that their problem is not unique, and there are other people with similar problems [1]. Some severe consequences of MS such as depression and high therapeutic costs motivated the reseasrchers to conduct the present study to determine the effect of group cognitive-behavioral intervention on depression in patients with MS in MS association of West Azerbaijan, Iran.

Materials and Method

This quasi-experimental study was conducted on 80 patients with MS in in Urmia between december 2017 and March 2017. The population of the study included all patients with MS in Urmia, Iran who had registered in MS association of West Azerbaijan. The patients were colleced using purposive and convenience sampling. Beck's depression scale (BDI-II) was completed by the patients.. Moreover, during the cultural and recreational programs organized by the MS association, some meetings were arranged between the patients and initial information about the study were presented to the patients. If the patients were willing to participate in the study, written informed consent was obtained. The pretest included Beck's 21-item depression questionnaire and demographic questionnaire, in which were completed by all the patients who met the inclusion criteria. Totally, 80 patients completed the questionnaires.

Inclusion criteria were included: gaining a minimum score of 14 and maximum score of 29 in depression questionnaire (mild depression), being a member of MS association of Urmia, diagnosed by neurologist, age between 20-40 years, having literacy to read, not receiving psychotherapeutic treatment in the last six months, willing to participate in the study, and having no previous history of drug abuse. Each patient randomly took a card with numbers from 1 to 40 and then the patients with even numbers were allocated in the experimental group and patients with odd numbers were allocated in the control group. Therefore, the patients were randomly divided into the experimental and control groups. The patients in the experimental group were divided into four groups of 10 people and received group cognitive-behavioral intervention for nine one-hour sessions (two sessions in a week).

The contents of sessions

Each session included four phases; in the first phase, the personal homeworks and the contents of the previous sessions were reviewd for 15 minutes. In the second phase, muscular relaxation was done for 10 minutes. The third phase covered the skills related to cognitive-behavioral intervention in the patients' daily lives for 30 minutes. Moreover, the patients were encouraged to explain their problems clearly and help each other to use their skills to solve them. The last five minutes in every session was allocated to present homeworks for the next session. Details of sessions are presented in table 1.

The instruments for data collection included demographic questionnaire and Beck's Depression Questionnaire (BDI, II). BDI is Beck, Stern, and Brown's (2000) revised questionnaire and is one of the most suitable instruments for measuring depression. It has 21 items and measures the physical, behavioral, and cognitive symptoms of depression. Each item has four options (each item is scored from 0 to 3) indicating different levels of depression ranging from weak depression to intense depression. Finally, the score for each subject can range from 0 to 63, and the obtained scores are interpreted in the following way: a score of 0-13 shows no or the least amount of depression; a score of 14 to 19 indicates mild depression; a score of 20 to 28 shows high depression; a score of 29 to 63 shows intense depression. This questionnaire was validated by Tanjani et al. (2015) on the elderly people over 60 years in Qom indicating that the questionnaire had Cronbach's alpha of 0.93. The construct validity of the questionnaire was assessed through factor analysis, and its correlational measure was calculated using GHQ-28, so the correlation of depression construct of GHQ-28 was obtained 0.71 [21].

The subjects in the control group received no intervention, and routine care was provided to them by MS association of Urmia. After cognitive-behavioral intervention sessions, the post-test was given to the patients in the both groups two times: immediately after the intervention and one month after the intervention. Then, the educational pamphlets and cognitive-behavioral intervention manual were given to the both groups. In the realm of practice, it helps us to enjoy a firm rational base for enduring the hardships of life, especially hard diseases, through hopeful and positive thoughts.

Table 1. Details of sessions using group cognitive-behavioral intervention

Session	Educational content
1	Familiarity and communication, initial communication with each other, treatment termination condition, treatment process described in brief, simple and understandable way for patients.
2	Introducing MS (definition, etiology, risk factors, consequences, and treatment), informing about the effectiveness of cognitive-behavioral intervention, explaining the symptoms of depression, progresive relaxation, and homework
3	Reviewing the homeworks of the previous session, progressive relaxation exercises for 10 minutes. The participants were asked to identify their automatic negative thoughts and try to replace them with logical and positive thoughts gradually. Moreover, they were asked to write their positive and negative thoughts in the table as their homeworks.
4	Reviewing the contents of the previous session, progressive relaxation exercises for 10 minutes, reading each of the negative thoughts written by each of the patients, replacing logical thoughts with negative thoughts and recording them, teaching and introducing the cognitive errors that cause negative thoughts
5	Reviewing the contents of the previous session and checking the homeworks, progressive relaxation exercise, teaching healthy life style, sleep hygene and introducing strategies for improving sleep pattern.
6	Review of the previous session, doing physical relaxation, deep breathing, checking the patients' homeworks, examining the unpleasant excitement, their situations and pleasant thoughts, and measuring the degree of mastery of the learned methods by completing a worksheet about stopping the negative thoughts.
7	Reviewing the previous session, doing muscular and breathing relaxation, checking the homeworks, teaching problem solving skills, expressing feelings by each other and giving a problem solving worksheet as homework
8	Reviewing the previous session, doing relaxation, teaching problem solving skills, training the identification of negative thoughts, providing the worksheet on awareness of negative thoughts in order to examine their degree of belief in automatic negative thoughts and logical responses
9	A short review of the previous session and checking the homeworks of the previous session, summing up the whole presented materials and giving feedback to patients

Statistical analysis

The data were analyzed using both descriptive and inferential statistics (Chi-square and Fisher tests) by SPSS software version 21. Moreover, to compare the depression of the subjects in the two groups before intervention, immediately after intervention, and one month after it, ANOVA repeated measures was used.

Results

The Chi Square analysis and Fisher test results in Table 2 shows that no significant difference was observed between demographic charectristics in the experimental and control groups. In other words, these two groups were homogeneous regarding the variables of interest ($p>0.05$). In the experimental group, 72.5% (n=29) of the participants were female and 27.5% (n=11) were male. Moreover, 52.5 % were single, while 47.5% were married. Totally, 12.5% had middle education, 22% had diploma, and 13% had bachelor education. Regarding occupation, 55% were housewives, 30% were unemployed and 15% had governmental occupation. Furthermore, 20%, 22.5%, and 57.5% of patients had MS history of 1-2, 2-4, 4 or more years, respectively as well as 85% of patients lived with their family, and regarding economic status, 65% of patients were in the income more than or equal to expense group.

Table 2. Comparison of the demographic charectristics in the experimental and control groups

Variable		Experimental		Control		Statistics
		N	%	N	%	
Age (year)	20-25	6	15	5	12.5	X^2=5.69 df=3 p=.12
	25-30	8	20	15	37.5	
	30-35	8	20	11	27.5	
	35-40	18	45	9	22.5	
Gender	Female	29	72.5	23	57.5	X^2=1.97 df=1 p=0.16
	Male	11	27.5	177	42.5	
Education	Elementary/ Middle	5	12.5	8	20	X^2=1.08 df =2 p=0.58
	Diploma	22	55	22	55	
	Bachelor	13	32.5	10	25	
Marital Status	Married	19	47.5	22	55	X^2=0.45 df =1 p=0.05
	Single	21	52.5	18	45	
Occupation	Housekeeper	22	55	15	37.5	X^2=4.17 df=2 p=0.12
	Unemployed	12	30	21	52.5	
	Employed	6	15	4	10	
Duration of Disease (year)	1-2	8	20	11	27.5	X^2=2.45 df=2 p=0.29
	2-4	9	22.5	13	32.5	
	≥ 4	23	57.5	16	40	
Living style	With family	34	85	37	92.5	P_{Fisher}=.48
	Separate from family	6	15	3	7.5	
Economic Status	Income more than or equal to expense	14	35	10	25	X^2=0.95 df=1 p=0.32
	Income less than expense	26	65	30	75	

As indicated in table 3, the results of this study showed that the mean score of depression before, immediately after, and one month after intervention in the intervention group were 23.92 ± 2.16, 9.10 ±3.38 and 11.02±3.16, respectively and in the control group were 22.87 ±3.83, 21.47 ±3.90 and 21.10 ±5.72, respectively. Repeated measures analysis showed that intervention has a significant effect. ($p<0.001$).

As indicated in figure 1, the results of ANOVA repeated measure analysis showed that there was a significant difference between depression scores in the experimental and control groups imediately after the treatment and one month after the treatment, while there was no significant difference between

the means of depression scores in experimental and control groups before intervention. After the intervention, in the experimental group, depression scores decreased gradually indicating the effectiveness of intervention.

Table 3. Comparison of mean depression scores among the MS patients in experimental and control groups before in three times

Time	Experimental group	Control group	F	P value
	Mean (SD)	Mean (SD)		
Before intervention	2.16 ± 23.92	3.83 ± 22.87		
Immediately after intervention	3.38 ±9.10	3.90 ± 21.47	123.37	<0.001
One month after intervention	3.16 ±11.02	5.72 ±21.10		

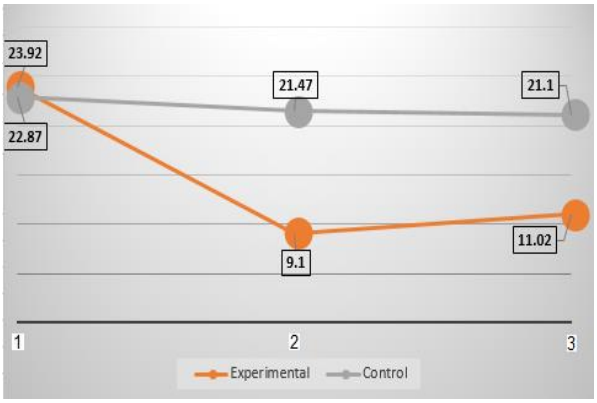

Figure 1. The trend of mean depression scores in three time: before intervention (1), immediately after intervention (2), one month after intervention (3)

Discussion

This study was conducted to determine the effect of groupb cognitive-behavioral intervention on depression in patients with MS. The results of this study showed that patients with MS have high levels of depression. These results are consitent with the results obtained by Wallin et al., and Janardhan and Bakshi [6, 7]. MS wa observed in 28% of females and 8% of males. MS symptoms are associated with lower life quality and higher suicide risk, and it affects both physical and psychotherapeutical aspects of the patients with MS [7].

The results of the present study showed that the depression before intervention had no significant difference between the two groups, while cognitive-behavioral intervention led to a significant difference regarding depression in patients with MS in the two groups, and the depression in the experimental group decreased significantly indicating that the existence of significant difference in the dependent variable of the experimental group after treatment resulted from the positive effect of accurate execution of cognitive-behavioral intervention.

The results of this study are consitent with the results of the study by Graziano et al. entitled "Determining the effectiveness of group cognitive-behavioral intervention on depression, life quality, self-efficiency, mental health, and sense of harmony in patients with MS" [22]. The present study also confirms the results of the study by Clancy et al. entitled "The effectiveness of cognitive-behavioral intervention on sleeplessness, depression, and fatigue in patients with MS, which showed that cognitive-behavioral intervention affected sleeplessness, fatigue, and depression in patients with MS [18]. Matsunga et al. conducted a study to determine the effect of cognitive-behavioral intervention on mental performance of chronically depressed patients and found that cognitive-behavioral intervention improves mental performance and decreases the symptoms of depression and inefficient attitudes [23].

Many studies have indicated the effectiveness of cognitive-behavioral intervention to reduce the depression in patients with MS.

Valizadeh et al. conducted a study to determine the effect of training on stress management on depression among the patients suffering from MS in MS association of Tehran and showed that cognitive-behavioral intervention had a sigbnificant effect on the reduction of depression among female patients with MS [5]. In a study entitled "The effect of cognitive-behavioral intervention on anxiety and depression among the elderly people", Wutrich and Rapee found that cognitive-behavioral intervention reduces anxiety and depression in the experimental group [24]. Dobkin et al. conducted a study which indicated that cognitive-behavioral intervention lowers depression rate in patients suffering from Parkinson [25].

Conclusion

The findings of the present study showed that group cognitive-behavioral intervention in patients with MS lowers their depression considerably. Therefore, using this psychotherapeutic procedure in MS associations of the cities and Mental health services is strongly recommended. This would be feasible by an informed therapist with cognitive-behavioral therapy in the mentioned centers.

Limitations of the study

The presnt study had some limitations. This study was conducted in the patients with MS in Urmia, West Azerbaijan; so the results cannot be generalized to other city of the country because of the cultural and social variations across different city of the country. Moreover, due to time limitations, the treatment period for the present study was one month. Therefore, it is suggested to expand intervention time to longer time periods in other studies.

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