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Comparison of the Effect of Lazarus Multimodal Approach and Cognitive-Behavioral Therapy on Psychological Distress, Working Memory, and Anxiety in Patients with Multiple Sclerosis

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Abstract

Background: Multiple sclerosis is considered a chronic disease in which the patients suffer from physical and mental disorders.
Objectives: This study aimed to compare the effectiveness of the Lazarus Multimodal Approach and Cognitive-Behavioral Therapy in psychological distress, working memory, and anxiety among patients with multiple sclerosis.
Methods: This quasi-experimental study was conducted based on a pretest-posttest design with a follow-up and control group. The statistical population of the study consisted of the patients who were members of the "Multiple Sclerosis Patient Support Society" in Tehran, Iran, and referred to this center during January and March 2017. The sample included 48 individuals that were selected using the convenience sampling method from the members of the Multiple Sclerosis Society. The data were collected through the Kessler Psychological Distress Scale (k-10), Wechsler's Working Memory Index, and Beck's Anxiety Inventory. Following that, the obtained data were analyzed in SPSS software (version 22) through the repeated measures analysis of variance.
Results: According to the results, Lazarus Multimodal Approach and Cognitive-Behavioral Therapy had a significant effect on decreasing anxiety ($P<0.001$) and psychological distress ($P<0.001$), as well as increasing working memory ($P<0.001$). Moreover, the Lazarus Multimodal Approach was more effective than Cognitive-Behavioral Therapy in decreasing anxiety and psychological distress, as well as increasing working memory ($P<0.001$).
Conclusion: It can be concluded that Lazarus' Multimodal Approach and Cognitive-Behavioral Therapy had beneficial effects on anxiety, psychological distress, and working memory. Moreover, they can be utilized to reduce psychological problems in patients with multiple sclerosis.

Keywords: Anxiety disorders, Memory, Multiple sclerosis, Psychological distress

1. Introduction

Multiple sclerosis is one of the most common neurological diseases that occurs often within the age range of 20-40 years; moreover, females are infected as twice as males (1). The sporadical destruction of myelin is a pathological characteristic of the disease that affected more than 2.5 million people worldwide. Local weakness, gazing and stiffness, reduction or blurred vision of one eye, and imbalance are the primary symptoms of this disease, which are usually transient and will be lost within a few days to weeks (2). Multiple sclerosis affects different parts of the patients' life, and in addition to the impaired sensory and motor functions, it causes psychopathological symptoms. This unpredictable disease is regarded as one of the life-changing diseases since it normally damages the best period of a person's life and gradually moves him/her towards disability with no definitive treatment (3). In total, 80% of those affected have some degree of disability (4). It has an unknown cause and a pre-existing nature with periods of relapse and recovery so that sufferers experience various physical and mental disorders caused by the disease throughout their lives. These disorders severely affect daily functioning, family and social life, functional independence, and planning for the future (5).

Psychological distress is considered an important determinant of the psychological and physical reactions to multiple sclerosis. It is the unpleasant mental states of depression, anxiety, and stress, which all have emotional and physiological symptoms. Anxiety is considered the most common psychological disorder in patients with multiple sclerosis. Moreover, it is considered one of the most common causes of late-stage psychiatric counseling, which is associated with poor quality of life, increased insomnia, and decreased trust in physicians, thereby leading to poor therapeutic unity (5). According to recently conducted studies, people with high psychological distress

complain more about the disease's symptoms (6). Among the clinical symptoms, which affect patients with multiple sclerosis, cognitive impairment is the most common symptom. Research has shown that 30%-50% and 20%-30% of patients with multiple sclerosis suffer from mild and severe cognitive impairments, respectively. Memory, attention, processing speed, and executive function are often impaired by cognitive capacity although other cognitive components, such as selective attention, short-term memory, and implicit memory may be impaired (7). Working memory is a concept that is very prone to damage and highly dependent on environmental factors and a person's level of anxiety. Therefore, this type of memory is sensitive in people with multiple sclerosis that can reduce the quality of life and performance (individual, social) in daily life (8) leading to their inability to work, drive, treatment commitment, or social connection maintenance. The most common cognitive complaint among patients with multiple sclerosis is memory impairment, which occurs in 40%-60% of the cases (9).

Psychological consequences of multiple sclerosis and its treatment have been the subject of many research activities. In this regard, Cognitive-Behavioral Therapy is one of the approaches in psychology that has attracted the attention of researchers and psychologists in recent decades. This approach can help patients to reduce the negative psychological effects of their disease to the lowest (10). Strong empirical support about the application of Cognitive-Behavioral Therapy for common mental problems in physical diseases is in perfect harmony with the provision of new health care and emphasis on experimentally supported treatments. Cognitive-behavioral models and therapeutic practices have been developed so far for a large number of mental disorders and chronic medical diseases (i.e., multiple sclerosis), many of them have been recognized as effective in clinical research (11).

Accordingly, the individuals should be examined considering all aspects and dimensions in the concept of health. Given the problems that such patients have in various dimensions and the interaction between the symptoms of neuropsychological disorders in these patients, it is necessary to pay attention to these patients with a multimodal approach (12). Lazarus Multimodal Approach is considered one of the psychotherapy methods that considers the dimensions of the definition of health. It has been used successfully in a wide range of disorders and problems. Lazarus believes that human personality can be fully described by seven dimensions (i.e., behavior, emotion, sensory perception, imagery, cognition, interpersonal relationships, and cognitive pharmacology) (13). Although these dimensions are described separately, they interact with each other, and each experience can be explained according to one dimension, which is related to other dimensions. If a change occurs in one dimension, it can affect other dimensions as well (14).

In a study entitled "the Effectiveness of the Lazarus Multimodal Approach on the Status of Widespread Disability in Patients with Multiple Sclerosis", Bahramkhani et al. (15) found that the Lazarus Multimodal Approach affected the status of widespread disability in patients with multiple sclerosis. Moreover, in a study entitled "A Multimodal Approach on Anxiety and Type of Performance Appraisal", Sotardi et al. (16) revealed that the Multimodal Approach had a significant effect on anxiety and performance appraisal. Therefore, this study aimed to compare the effectiveness of the Lazarus Multimodal Approach and Cognitive-Behavioral Therapy in psychological distress, working memory, and anxiety among patients with multiple sclerosis.

2. Method

This quasi-experimental study was conducted based on a pretest-post-test design with a follow-up and a control group. The statistical population included the patients who were members of the "Iranian Multiple Sclerosis Society" in Tehran, Iran, who referred to this center during January and March 2018. The study sample was selected from members of the "Iranian Multiple Sclerosis Society" (n=48) using the statistics office and the convenience sampling method. The inclusion criteria were: 1) willingness to participate in the study, 2) mild anxiety according to Beck's Anxiety Questionnaire, 3) age range within 20-50 years, and 4) the minimum education level of diploma. On the other hand, those who delivered incomplete information and were absent in more than two sessions were excluded from the study. Regarding the ethical considerations, the research objective and procedure were explained in written form, and the cases were informed about voluntary participation in this study. Moreover, they were assured of the confidentiality and anonymity of the information that was only used for research purposes to protect their privacy.

Kessler Psychological Distress Scale:

This scale was developed by Kessler et al. consisting of 10 (k-10) and 6 items (k-6), in which the maximum scores in k-10 and k-6 were equal to 40 and 24, respectively (17). According to Weldozan et al., the sensitivity of this test was appropriate for most disorders, compared to a comprehensive international diagnostic interview for high-grade disorders and individuals suffering from a disorder. The validity of the total scale using Cronbach's alpha coefficient was obtained at 0.71 (17). In the study conducted by Dadfar et al., the Cronbach's alpha coefficient was used to evaluate the general questionnaire's reliability, and the total Cronbach's reliability of the questionnaire was estimated at 0.85 (18).

Wechsler's Working Memory Index:

Wechsler's Working Memory Index, which is considered one of the most common methods of assessing working memory, measures the memory width of figures and space. The digit span subscale consists of two parts, namely forward and inverse digit spans. Each subscale includes eight items, each of which incorporates two attempts. Each correct and incorrect attempt obtain a score of one or zero, respectively. Therefore, the score range in each subscale is between 0 and 14 (total score range: 0-28). The spatial spacing subscale includes two subscales of straight (forward) and inverse spatial spacing. Each of these subscales consists of eight items, each of which includes two attempts. To execute this subscale, a page is used on which 10 cubes are installed. Numbers 1-10

are engraved on the next of the cubes facing the examiner (the subject does not see the numbers). The method of working in direct spatial spacing is that the examiner first touches the cubes, and the participant should repeat the same action (touch the cubes in the same order as the examiner touches); however, the subject should do the opposite of the examiner's action in the inverse spatial space indicating that s/he touches the cubes from the end to the beginning. The subject receives scores of one or zero for each correct or incorrect attempt, respectively. Therefore, the subject's score in each subscale is between 0 and 16 (total score range: 0-32). The internal reliability coefficient of Wechsler's working memory is very high and has a validity coefficient higher than 90 (19). In a study conducted by Nikravesh et al., Cronbach's alpha was obtained at 0.74 (20).

Beck's Anxiety Questionnaire:

This 21-item self-report questionnaire was designed to measure the severity of anxiety in adolescents and adults. The subjects are requested to select one of the four options that indicate anxiety in each item (21). According to the results, this scale obtained the validity, reliability, internal consistency of 0.072, 0.83, and 0.92 using Cronbach's alpha. A one-week retest in a study conducted by Tousi et al. estimated the reliability of Beck's Anxiety Inventory at 0.75. The content validity simultaneously examined the diagnostic and factor structure for this questionnaire and confirmed the high efficiency of this tool in measuring the severity of anxiety (22). In a study performed by Ghasemian et al., Cronbach's alpha coefficient was used to evaluate the general questionnaire's reliability. The total reliability of the questionnaire was obtained at 0.85. In this study, the validity and reliability of the questionnaire were examined, and regarding the concurrent validity, the correlation coefficient between the mean of the first 20 questions and question 21 was estimated at 0.79. In examining the content validity, the validity coefficient of all Beck's Anxiety Questionnaire items was determined at 0.88 (23).

The Lazarus Multimodal Approach group was asked to participate in 10 sessions each lasted 90-min twice a week to get familiar with Lazarus Multimodal Approach (24).

The data were analyzed in SPSS software (version 22) using descriptive (mean±SD) and inferential statistics (repeated measures analysis of variance).

3. Results

The age range of the participants was obtained at 29-54 years, and the majority (56.44%) of the cases were female The mean±SD ages of the Lazarus Multimodal Approach, Cognitive-Behavior Therapy, and the control groups were obtained at 42.43±8.02, 41.79±7.73, and 40.86±8.71, respectively (P>0.05). Table 1 tabulates the mean±SD of variables in the experimental and control groups.

The mean±SD scores of psychological distress, working memory, and anxiety in the experimental and control groups are presented in Table 3. Since the M-box test results were not significant for any of the research variables, the homogeneity of variance-covariance matrices was correctly observed in this study. Finally, the non-significance of any variables based on Levene's test results indicated the equality of intergroup. Furthermore,

Table 1. Lazarus Multimodal Approach Sessions

Sessions	Contents
First	Introducing the consultation, consultation process, and the method used; Familiarizing the authorities with their duties and assignments.
Second	Responding to the list of multidimensional life events and discussing them.
Third	Preparing the pattern profile for each reference based on the information provided by the authorities in a multidimensional life history questionnaire.
Fourth	Explaining logical and irrational thoughts, as well as cognitions and their impact on one's feelings, behaviors, and emotions.
Fifth	Focusing on emotions and training; Implementing muscle relaxation.
Sixth	Working on the behaviors of the references; Showing self-expression; Strengthening good behaviors; Using the empty seat technique.
Seventh	Encouraging references to create a positive image in themselves, events, and life changes that may occur.
Eighth	Educating and assisting references to properly and timely express their anger; Expressing their emotions; Reducing disturbing emotions.
Ninth	Educating and assisting authorities to establish better and constructive social relationships, disagreement, and self-confidence maintenance; Reviewing the guidelines for interactions with family members.
Tenth	Training and planning for daily exercise, proper nutrition, and adequate sleep; Visiting a doctor.

Table 2. Cognitive-Behavior Therapy Sessions

Sessions	Contents
First	Communicating and establishing a good relationship and familiarity with cognitive-behavioral principles and objectives, expressing goals, method of work, and interaction; Determining the desired goal and changes among the members of the group, behavioral analysis, and skill training (A-B-C).
Second	Reviewing home assignments; Examining and recognizing members' objectives from attending meetings; Introducing cognitive distortions; Correcting cognitive distortions, cognitive methods of self-control; Practicing and applying home assignments in everyday situations; Reporting the feedback in the next session.
Third	Reviewing home assignment; Identifying unrealistic beliefs and expectations of individuals through providing cognitive skills and cognitive restructuring by replacing logical thoughts instead of irrational thoughts; Focusing on group discussion.
Fourth	Reviewing home assignments; Correcting cognitive errors; Eliminating misunderstandings caused by misinterpretations or differences among the participants; Replacing realistic beliefs and expectations with cognitive skills; Discovering positive education and characteristics.
Fifth	Reviewing home assignments; Problem-solving skill training and its role in reducing disease-related factors. This program includes four stages of problem definition, alternative solution provision, decision making, as well as using and implementing solutions; Focusing on group discussion.
Sixth	Reviewing home assignments; Communication skills training (verbal and nonverbal communication, empathetic comprehension, and active listening); Focusing on group discussion, supplementary activities, recognition of reinforcement and punishment of each individual; Increasing positive reinforcements; Increasing positive behavioral exchanges (behavioral skills).
Seventh	Identifying problems related to people's performance and their role in anxiety; Reviewing home assignments; Practicing skills learned outside the session; Presenting reports.
Eighth	Promoting assertiveness in social skills; Reviewing home assignment; Creating and finding a situation outside the group meeting to observe the factors related to assertiveness, presenting reports); Reviewing the techniques learned in the meetings; Getting feedback from members; Implementing a posttest.

the amount of variance of the dependent variable was equal in all groups. Finally, the results of Mauchly's sphericity test showed that this test was significant for all variables, and therefore, the assumption of the equality of variances within the subjects (Sphericity assumption) was not observed in this study (Mauchly's W=0.45, P<0.001). Accordingly, the Greenhouse Geiser test was used to evaluate the univariate test results for intragroup effects and interactions.

As can be observed in Table 4, the analysis of variance is significant for the within-subject factor (Time) and between-subject factor (Group) regarding psychological distress, working memory, and anxiety. The findings also showed that Lazarus Multimodal Approach had a significant effect on decreasing anxiety (P<0.001) and psychological distress (P<0.001), as well as increasing working memory (P<0.001). Moreover, the Lazarus Multimodal Approach was more effective than Cognitive-Behavioral Therapy in decreasing anxiety and psychological distress, as well as

Table 3. Mean±SD of research variables in the experimental and control groups

Variables	Groups	Pretest		Posttest		Follow-up	
		M	SD	M	SD	M	SD
Psychological distress	Lazarus Multimodal Approach	23.31	1.19	19.00	1.46	18.75	1.48
	Cognitive-Behavior Therapy	23.68	1.25	20.68	1.19	20.43	1.15
	Control	22.75	1.23	22.56	1.09	22.37	1.31
Working memory	Lazarus Multimodal Approach	14.87	2.68	18.62	2.57	19.12	2.75
	Cognitive-Behavior Therapy	16.50	3.30	19.31	3.19	19.62	3.22
	Control	14.87	3.11	15.25	2.86	15.56	2.82
Anxiety	Lazarus Multimodal Approach	33.31	1.19	28.68	0.94	28.31	1.01
	Cognitive-Behavior Therapy	33.43	1.54	30.37	1.45	30.00	1.59
	Control	32.75	1.23	32.62	1.25	32.31	1.30

Table 4. Analysis of variance with repeated measures to compare variables in the experimental and control groups

Variables	Source of effect	SS	Df	MS	F	P-value	Eta square
Psychological distress	Time	119.52	1.29	92.11	250.16	0.0001	0.89
	Time*group	92.14	1.29	71.01	192.86	0.0001	0.86
	Group	117.04	1	117.04	25.29	0.0001	0.45
Working memory	Time	112.14	2	56.07	379.08	0.0001	0.92
	Time*group	64.31	2	32.15	217.39	0.0001	0.87
	Group	128.34	1	128.34	5.49	0.026	0.15
Anxiety	Time	140.27	1.41	99.08	344.69	0.0001	0.92
	Time*group	109.52	1.41	77.36	269.13	0.0001	0.90
	Group	145.04	1	145.04	39.46	0.0001	0.56

increasing working memory (P<0.001).

4. Discussion

This study aimed to compare the effectiveness of Lazarus Multimodal Therapy and Cognitive-Behavioral Therapy in psychological distress, working memory, and anxiety among patients with multiple sclerosis. The Lazarus Multimodal Approach was more effective

than Cognitive-Behavioral Therapy in decreasing anxiety and psychological distress, as well as increasing working memory. The findings also showed that Lazarus Multimodal Approach had a significant effect on anxiety, psychological distress, and working memory. The results of the present study were consistent with those of a study performed by Bahramkhani et al. (15), who demonstrated the effectiveness of the Lazarus Multimodal Approach in the status of widespread disability in patients with multiple sclerosis.

Regarding the positive effect of the Lazarus Multimodal Approach on the working memory of patients with multiple sclerosis, one can refer to the comprehensive and holistic nature of this approach that is considered in the treatment process of all aspects of human personality. Therefore, in the treatment of patients with multiple sclerosis, it is illogical to simply consider the physiological aspect of the disease and use pure medication therapy. Therefore, this treatment procedure should be considered, which was offered in the form of eclectic therapy (26). As mentioned, various symptoms are created in patients with multiple sclerosis due to the degeneration of the central nervous system, depending on the injury's location. The symptoms associated with multiple sclerosis are divided into eight general areas according to the systems of action (pyramidal, cerebellar, brainstem, sensory, autonomic, visual, psychological, and miscellaneous). In each system, the degree of disability of the system is determined based on the clinical evaluation, one of which is damaging the working memory (27). Since the disease symptoms occur due to the destruction of the nervous system's structure, it cannot be expected that psychological interventions cure or reduce such symptoms. However, it was found that psychological interventions effectively reduce minimal coping with the physical problems of physically-ill patients (28).

In explaining the effectiveness of Cognitive-Behavioral Therapy, it can be said that patients with multiple sclerosis show great vulnerability to worry and anxiety; moreover, they are very prepared to misinterpret the physiological symptoms of anxiety. This view was given to patients that they have catastrophic and incorrect thought about the health status and course of treatment of the disease, which causes a negative and selection of their health and recovery.

Another highly effective technique that helps explain the effectiveness of anxiety treatment was the use of daily relaxation in patients. Patients were trained to use relaxation techniques with the first physiological symptoms of anxiety. In fact, this technique improves the patients' health by reducing the symptoms of anxiety and stress. The effectiveness of Cognitive-Behavioral Therapy in improving anxiety can be explained considering both cognitive and behavioral aspects (29). Cognitive-behavioral training emphasizes the importance of acquiring skills and using these skills. During the training, in addition to working on negative thinking, people learn fruitful behavioral methods, which make them face valuable resources in life. Those affected by this training will have the ability to provide automatic thinking, associated emotions, as well as documents for their approval and disconfirming to get some kind of self-awareness (30).

This study was only conducted on patients with multiple sclerosis in Tehran, Iran, and caution should be exercised in generalizing the results to other regions and cities. It is suggested that further studies be performed on another sample group, and the results are evaluated and compared with those of this study. Moreover, a comparison can be made between the therapies introduced in the present study and other psychological interventions. Finally, the researchers in future studies should consider the present study results as new research hypotheses. If this study is supposed to be conducted in other cities, followed by the evaluation of the results, it should be followed up after group training in the form of individual counseling.

5. Conclusion

It can be concluded that the Lazarus Multimodal Approach and Cognitive-Behavioral Therapy were effective in anxiety, psychological distress, and working memory. Accordingly, they can be used to reduce psychological problems in patients with multiple sclerosis.

Ethical Considerations

Compliance with ethical guidelines

Regarding the ethical considerations, all participants were informed about the research objective and procedure. Moreover, informed consent was obtained from the patients, and they were assured of the confidentiality of their information. Furthermore, the subjects were free to withdraw from the study if desired. They were also informed that they would be provided with the results of the study.

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Authors' contributions

Conceptualization [Soha Shahlapour]; Methodology [Mastooreh Sedaghat]; Investigation [Sara Pashang]; Writing-Original Draft [Soha Shahlapour]; Writing-Review and Editing, Author names [all authors]; Funding Acquisition, [all authors]; Resources, [all authors]; Supervision, [Mastooreh Sedaghat].

Conflict of interest

The authors declare that they have no conflict of interests.

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