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The Effectiveness of Acceptance and Commitment Therapy on Reducing the Depression and Improving the Quality of Life in Patients with Multiple Sclerosis

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Abstract

***Background & Aims*:** This study aimed to investigate the effectiveness of Acceptance and Commitment Therapy (ACT) on reducing depression and improving the quality of life in patients with multiple sclerosis (MS).

Materials & Methods: This was a quasi-experimental study with the pre-test post-test control group design. The study population consisted of all people with MS who were registered in the MS Society of Sanandaj in 2017 (N = 40). Twenty patients who had higher depression scores and lower quality of life scores were selected by purposive sampling. The participants were randomly assigned to either experimental group or control group (n=10 per group). Patients allocated to the experimental group were treated individually for 10 sessions once a week for three months. Patients in the control group did not receive any intervention. The data were collected using the Beck depression inventory-II and the World Health Organization quality of life questionnaire. The data were analyzed using SPSS and multivariate analysis of covariance.

Results: ACT had a significant effect on reducing depression and improving the quality of life in patients with MS ($p < 0.05$).

Conclusion: It could be concluded that ACT was effective in reducing depression and improving the quality of life in patients with MS.

***Keywords*:** Acceptance and commitment therapy (ACT); Depression, Quality of Life, Multiple Sclerosis

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Introduction

Multiple sclerosis (MS) is the most common neurological disorder that usually appears before the age of 55 and most people start to get MS symptoms between 20 and 40 years old. MS is twice more likely to affect women than men (1; 2). MS is characterized by a triad of inflammation, demyelination, and gliosis (scarring). MS lesions typically affect different areas of the central nervous system at different times. The clinical course of MS is quite variable, ranging from a benign disease to a rapidly evolving and debilitating illness that requires the lifestyle adaptation (3).

Common MS symptoms include weakness, fatigue, tremor, pain, paralysis, bladder and bowel problems,

muscle spasms, visual loss, and loss of libido. In addition, sleep disturbance, decreased activities of daily living, urinary tract infections, urinary and fecal incontinence, skin damage, muscle contractions, environmental neurological diseases along with depression, job loss, divorce, and loss of ability to perform the economic, social, and occupational activities are other common symptoms of MS (4). For example, fatigue, as one of the most common symptoms of MS, has a significant impact on quality of life (QOL), interfering with activities of daily living and exercise, which can result in the dissatisfaction with QOL and depression in these patients (5).

Given that MS is an incurable disease, the main goal of therapy is to stop the progressive disability caused by acute attacks (6). MS as a stressful event, despite causing physical changes, may lead to psychological changes. MS can affect one's mental health (7). About half of people with MS experience depression, which may be an endogenous event or a part of the disease, or it may be MS-related fatigue. Also, the suicide rate among these patients was 7.5 times higher than that for the age-matched control group (Schapiro RT, 2007). Therefore, the experimental studies have reported high rates of depression and anxiety, reduced QOL, poorer mental health, and more social-role handicap in MS patients (Etemadifar & Ashtari, 2002).

According to the World Health Organization (WHO), the QOL is defined as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns", so it is so personal and subjective that cannot be observed by another person and b and is based on people's understanding of various aspects of their lives (8). Therefore, the patients with the same clinical condition usually have a different QOL (Shahni Yilagh et al, 2004).

Depression is sometimes described as the 'common cold' of psychiatry (9), and is a thinking pattern or general attitude developed by an individual who views the current and future experience from a negative critical perspective. (10). Other studies have shown that depression is one of the most common complaints among the outpatients (11). Similarly, depression is considered the most common disorder associated with MS (12).Because MS patients must cope with both the stresses of daily life and those of the unpredictable, fluctuating nature of symptoms, the progression of the disease may interfere with their work, family life, communicating with others, and social activities. Accordingly, the goal of psychological interventions is to help these patients meet the above challenges. Therefore, studies need to pay special attention to the psychological factors affecting the health of these patients in addition to physical injuries and disabilities caused by MS (13).

In this regard, one of the psychological therapies known as third-wave therapies is acceptance and commitment therapy (ACT) developed by Steven C. Hayes, Wilson, and Strosahl in the late 1980s (14). ACT is "a unique empirically based psychological intervention that uses acceptance and mindfulness strategies, together with commitment and behavior change strategies, to increase psychological flexibility" (15).

The core message of the ACT is that "accept what is out of your personal control, and commit to taking action that enriches your life." The objective of ACT is to create a rich and meaningful life, while accepting the pain that inevitably goes with it (Izadi and Abedi, 2013). ACT attempts to increase the psychological connection of the person with his/her thoughts and feelings rather than changing cognitions (16).

Based on the relational frame theory (RFT), the ACT describes ways in which language engages the clients in the futile efforts to control internal states. Using the metaphor, contradiction, and empirical practice, the clients learn how to embrace the thoughts, emotions, memories, sensations. The clients acquire the skills to develop these private events, change their context, determine their personal values, and commit to the behavioral changes (Efert & Forsyth, 2009). In addition, ACT helps the individual get in contact with a transcendent sense of self known as self-as-context — the you who is always there observing and experiencing

and yet distinct from one's thoughts, feelings, sensations, and memories (Efert & Forsyth, 2005).

Recent studies conducted on ACT effectiveness have provided satisfactory results and logical reasons for its use in clinical practice (17) given the physical and psychological effects of MS on people; therefore, this study aimed to investigate the effectiveness of ACT on reducing depression and improving the quality of life in patients.

Materials & Methods

This was a quasi-experimental study with the pre-test post-test control group design. The study population consisted of all people with MS who were registered in the MS Society of Sanandaj in 2017 (N = 40). Twenty patients who had higher depression scores and lower quality of life (QoL) scores were selected by purposive sampling. The participants were randomly assigned to either experimental group or control group (n= 10 per group). Patients allocated to the experimental group were treated individually for 10 sessions once a month for three months. Patients in the control group did not receive any intervention. The data were collected using the Beck depression inventory -II (BDI-II) and the World Health Organization quality of life questionnaire (WHOQOL).

Instruments:

1. Beck depression inventory-II (BDI-II)

The BDI-II is the revised edition of the Beck depression inventory and which was designed to measure the severity of depressive symptoms and is consistent with DSM-5 diagnostic criteria. The BDI-II is a 21-question multiple-choice self-report inventory; each answer being scored on a scale value of 0 to 3. The subject should select an option that is more consistent with his/her current situation. The range of possible scores is 0 to 63. Higher total scores indicate more severe depressive symptoms. BDI-II scores are classified as minimal (0-13), mild (14-19), moderate (20-28), and severe (29-63). The 21-item multiple-choice inventory is also used to measure physical, emotional, and cognitive symptoms. Beck et al. (2000) reported internal consistency for the BDI, ranging from 0.73 to 0.92, with a mean of 0.8, and alpha coefficients of 0.86 and 0.81 for psychiatric and non-psychiatric patients, respectively. Dobson & Mohammadkhani (2007) obtained the coefficient alpha of 0.92 for outpatients and 0.93 for students and also gained the test-retest reliability coefficient of 0.73 within two weeks.

Ghassemzadeh et al. also obtained the alpha coefficient of 0.087 and the test-retest reliability coefficient of 0.74 and reported that the correlation between BDI-II and the BDI-I was 0.93 (Ghassemzadeh et al, 2005).

2. The World Health Organization Quality of Life (WHOQOL)

The WHOQOL consists of 21 items and it was first developed in 1991. The aim of this project is to create a cross-cultural instrument of QOL assessment. This instrument assesses the individual's perceptions in the context of their culture and value systems, and their personal goals, standards, and concerns. The WHOQOL-BREF contains 26 items which is the short version of the WHOQOL-100 scale. The WHOQOL BREF is used to assess four broad QOL domains: physical health, psychological health, social relationships, and environment. In addition, the questionnaire can assess general health. The items are rated on a five-point Likert-type scale. Studies on the psychometric properties of the WHOQOL-BREF showed that differential validity, content validity, internal reliability (Cronbach's alpha for physical health = 0.80, psychological health = 0.76, social relation. = 0.66, and environment= 0.80) and test-retest reliability were desirable (WHOQOL Group, 1994).

The ACT-based treatment protocol is obtained from the book titled "A Clinician's Guide to Using Acceptance and Commitment Therapy in Treating Depression" (Zettel, 2007) (Table 1).

Table 1: The ACT-based treatment protocol

Sessions	Objectives of ACT-based sessions using a protocol adapted from Zettel
Session 1	The content is mainly dedicated for this session and after developing a good relationship and evaluating the severity of the client's disease problems, while presenting material related to chronic pain and problems such as depression and quality of life affected by these diseases, the main framework for ACT of the therapist and the clients is discussed. At the end of the first session, the first mindfulness exercise entitled "concentration exercise" is performed and two forms of assessment to continue the treatment at home and keep in touch with the sessions are given to the clients to complete them between sessions, making it possible to evaluate them outside of session. The mindfulness exercise is also assigned to the clients daily.
Session 2	The purpose of this session is to provide creative hopelessness exercise to the clients compared to the past solutions to problems caused by illness and depression. By using metaphors and asking the clients about the effectiveness of past solutions, we develop creative hopelessness in them. Creative hopelessness exercise paves the way for a new attitude to accepting and observing rather than controlling depression. At the end of the second session, a more comprehensive mindfulness-based exercise is presented to the clients and they are asked to perform it for at least 20 minutes a day. Forms are also given to the clients as between-session assignments.
Session 3	In this session, exercises and metaphors are given to the clients in order to introduce control efforts as a problem but not a solution, and develop value-based behavior instead of controlling depression. At the end of the third session, the new exercises are assigned for this purpose.
Session 4	In this session, exercises and metaphors are given to the clients indicating that the acceptance is not a smart way to control depression because if the clients want to use mindfulness-based exercises to control depression, they use them in a futile attempt to control their emotional states, and their QoL level is becoming worse day by day. After performing this step, the values of the clients are explored for 15 min and by presenting and completing a part of the form of "valuable Paths", the clients are asked to set a goal in relation to one of the values of their life and commit to their goal.
Session 5	In this session, the clients are engaged in three different metaphors (detailed information is not mentioned here), and the concept of "self-as-context" is introduced to the clients as an alternative to the concept of "self-as-content ". In short, it means that we are not the content of our experience — we are not our thoughts, our feelings, our experienced sensations, the things we see, or the images that pass through our heads. We cannot own them, and if we like them, we cannot keep them. In the second part of the session, by reviewing the form of valuable paths and performing its complementary exercises, the value-based life is emphasized as an alternative to struggle with unchangeable inner emotional states.
Session 6	In this session, the internal and external barriers of a values-based life are assessed, and in order to increase the tolerance of the clients' negative emotions, and facilitate the movement towards values, exercises are presented to the clients, and then mindfulness-based exercises are given to them to tolerate and accept these emotions.
Sessions 7-10	The main purpose of the seventh to twelfth sessions is to continue to develop more flexible and broader patterns in relation to stimuli, events, and depressive conditions in the clients. This goal is achieved by continuing the exercises mentioned in the previous session and reporting the daily activities of the presented is to the clients. Exercises based on exposure, observation and mindfulness are given to the presented is to the clients. The consultant's task is to help the presented is to the clients to design and implement meaningful activities to achieve their goals. A weekly program outlining step-by-step actions is presented to the clients to achieve their goals. The therapist helps the clients to set realistic goals, monitors their progress, and uses brainstorming to remove obstacles. All this is done based on the context of life and the tendency of the clients.

Results

The demographic characteristics of the study population are presented in Table 2.

Table 2: The demographic characteristics of the participants

The study groups	Sex	20–25 age range	25–30 age range	30-35 age range	35-40 age range	40-45 age range	the average duration of the condition (year)
Experimental group	Female	2	1	2	2	1	3
	Male	-	2	-	-	-	5
Control group	Female	2	2	2	-	1	5
	Male	1	1	1	1	-	3

As shown in Table 2, most of the subjects in the experimental group (n = 8) and the control group (n = 7) were females. Also, the subjects were in the 20–45-year age group and had MS for 3 - 5 years. Descriptive indices of study variables in control and experimental groups are given in Table 3.

Table 3: Descriptive indices of study variables in control and experimental groups

The study Variables	The study groups	Pre-test (N = 10)		Post-test (N = 10)	
		Mean	SD	Mean	SD
Depression	Experimental group	47.50	8.28	27.60	4.90
	Control group	45.20	6.90	45.20	4.85
QOL	Experimental group	41.00	10.05	92.40	13.66
	Control group	47.20	11.43	48.10	7.91

As shown in Table 3, the mean depression levels of the experimental group decreased in the post-test compared to the pre-test, but no obvious change was observed in the control group. Also, the mean score of QOL of the experimental group increased in the post-test compared to the pre-test, but no obvious change was observed in the controls.

Multivariate analysis of covariance (MANCOVA) was employed to evaluate the effect of ACT on reducing the depression and improving the quality of life in MS patients. Box's M test results (Box's M = 2.56, F = 0.75, df1 = 3, df2 = 83.45, p = 0.52) showed the assumption of homogeneity of variance-covariance matrices. Levin's test results for depression (F = 7.51, df1 = 1, df2= 81, p = 0.08) and QOL (F = 0.02, df1 = 1, df2 = 18, p = 0.86) also showed the assumption of homogeneity of variances. MANOVA indices are presented in Table 4.

Table 4: MANOVA indices

Tests	Value	F	df Assumption	df error	p-value
Pillai's trace test	1.034	9.103	4.000	34.000	.0000
Wilks' lambda test	.131	14.141a	4.000	32.000	.000
Hotelling's Trace test	5.397	20.240	4.000	30.000	.000
Roy's largest root test	5.152	43.795b	2.000	17.000	.000

As shown in Table 4, the F values were significant at the 0.01 significance level, thus the difference between a pair of means was significant. A summary of MANCOVA is presented in Table 5.

Table 5: A summary of MANCOVA

Source of change	Scale	Sum of squares (SS)	the degrees of freedom (DF)	Mean squares (MS)	F test	p-value	Eta Squared
Group	Depression	8310.226	1	8310.226	69.876	.000	.814
	QOL	1479.227	1	1479.227	107.532	.000	.870
Error	Depression	1902.845	16	118.928			
	QOL	220.098	16	13.756			
Total	Depression	110755.000	20				
	QOL	28476.000	20				

As shown in Table 5, F values for the group variable were statistically significant ($p \leq 0.05$) indicating that the ACT was effective in reducing depression and improving the quality of life in the experimental group.

Discussion & Conclusion

This study aimed to evaluate the effectiveness of ACT on reducing the depression and improving the QOL in patients with MS. Our results showed that ACT could reduce depression and improve QOL in patients with MS. The results of this study are consistent with previous studies (2, 5, 18). In line with our findings, previous studies showed the effectiveness of ACT on reducing depression and improving QOL in the different populations (19, 20, 21).

For example, Forman (2008) and Hor et al. (2012) showed that ACT was effective in the treatment of depression in the diabetic Patients. In their study, Branstetter et al. (2004) found that ACT led to a significant reduction in depression compared to cognitive behavioral therapy (CBT). Ebrahimi et al. (2013) showed that ACT was effective in improving quality of life and reducing anxiety in patients with chronic pelvic pain. Moreover, Alamdari (2013) showed that ACT is effective in marital satisfaction and QOL in infertile couples.

To explain the findings of this study, it can be said that in the process of ACT, the clients are taught to recognize their negative thoughts, unpleasant feelings, and daily problems caused by this disease and accept them as a part of life without their positive and negative evaluations. Also, ACT teaches mindfulness skills to help individuals accept that thoughts, feelings, and beliefs as well as life problems are part of the life process and should not be separated from their thoughts and feelings. Value-based life is considered as a useful alternative to deal with unpleasant thoughts and emotions by living in the present moment and changing patients' attitudes toward what changes grief to an illness, changing their attitudes toward the goal of treatment (increasing QOL instead of reducing psychological symptoms), developing creative helplessness in them compared to solutions based on avoidance and control, and fostering the acceptance for the unpleasant thoughts and emotions. The introduction of this process to the clients in the first session remains very limited, but since one of the strengths of ACT is that it is experimental; it showed its effect when it practically engages the clients through metaphors and experimental exercises such as tombstones or valuable paths. Therefore, according to the results obtained, therapists can help the clients to accept and experience thoughts and feelings rather than changing the focus on content and use mindfulness exercises to improve the clients' attention and awareness. In addition, the main advantage of ACT over other psychotherapies is to consider the motivational and cognitive aspects in order to make the treatment more effective.

Given the type of discourse in ACT, and performing the assignments during the sessions; therefore, it is necessary that the clients be literate and also the higher the level of understanding and perception, the better they can participate in the treatment. Therefore, selecting literate clients, preferably those who have a diploma or higher, from among clients referred to the MS Society, most of whom were illiterate (with low education levels), was one of the main limitations of this study. In addition to MS and depression, clients had other problems, including physical and family problems that caused them to change the timing of sessions due to hospitalization or other events, which led to longer treatment times for one or two cases. Another limitation of the present study was the lack of follow-up due to lack of time. Also, the small sample size, which limited the generalizability of the results, was another limitation of this study, which could highlight the need for caution in explaining the findings and generalizing the results.

Given the effectiveness of ACT in reducing depression and improving the QOL in MS patients; it is recommended that further research be conducted on the effectiveness of ACT in various fields. ACT has recently been employed in Iran and is effective in reducing the psychological problems and improving the QOL in individuals with psychological disorders.

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Conflict of interest

The authors have no conflict of interest in this study.

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