The effect of acceptance and commitment therapy on the life expectancy in patients with multiple sclerosis

Sahar Asqari[1], Reza Donyavi[2]

[1]Department of Clinical Psychology, Faculty of Psychology and Educational Sciences, Islamic Azad University Sari Branch, [2]Department of Clinical Psychology, Faculty of Psychology and Educational Sciences, Islamic Azad University Neka Branch, Mazandaran, Iran

Abstract

Context: MS is a chronic and debilitating disease, in which the immune reactions damage myelin sheath of axons in the central nervous system. Psychological consequences of MS and the treatment have been the subject of many research activities

Aims: The present study examines the effectiveness of acceptance and commitment therapy (ACT) based on the life expectancy in patients with multiple sclerosis (MS).

Setting and Design: This study was a randomized clinical trial and conducted from September 2016 to May 2017 in the MS patients of North Khorasan Province and Shirvan city in 2016.

Methods and Material: This is an applied and quasi experimental research with pretest, posttest, and control group. Using the available sampling method, 30 samples were selected by random assignment and included in experimental and control groups (15 people per group). The instrument used in this study was Schneider's life expectancy questionnaire. The experimental group received eight sessions of therapeutic intervention.

Statistical Analysis Used: We used mean and standard deviation, regression line, analyze covariance to analysis of data.

Results: The results of covariance analysis showed that ACT significantly improves life expectancy in patients with MS.

Conclusions: According to the results, it is expected that ACT maintains its effects in the long run with features such as encouraging people to live in the present moment, mindfulness, commitment to the pursuit of worthwhile goals, and an emphasis on process rather than the outcome.

Keywords: Acceptance and commitment therapy, Life expectancy, Multiple sclerosis

Address for correspondence: Dr. Reza Donyavi, Department of Clinical Psychology, Faculty of Psychology and Educational Sciences, Islamic Azad University Neka Branch, Mazandaran, Iran.
E-mail: kadous.sh@gmail.com

INTRODUCTION

Chronic medical problems are long-term diseases that in recent years have increasingly spread with great speed, especially in developed countries. These chronic diseases cause physical changes in the body, the patient will have limited functionality, they are usually incurable, the treatment is long, and recovery process is difficult.[1] One of these chronic diseases, multiple sclerosis (MS), is a chronic and debilitating disease, in which the immune reactions damage myelin sheath of axons in the central nervous system (brain and spinal cord).[2] Some of the most common early physical symptoms of the disease include

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visual disturbances, pain, urinary incontinence, and fatigue. Apart from the physical problems, demyelination of the nerve cells usually leads to psychological problems such as anxiety, depression, and hopelessness.[3] Today, in spite of significant developments, yet determining the cause and how to cure the disease is unknown and the cause of exacerbation and remission is not entirely clear.[4]

Research shows the psychological sufferings associated with the disease.[5] In addition to physical instability, MS imposes psychological, social, and economic pressure on the individual and his/her family[6] and the rising trend of the disease in the world shows the necessity to pay special attention.[7]

Psychological consequences of MS and the treatment have been the subject of many research activities. Due to debilitating symptoms of the disease, MS patients are not compatible with the disease and their life expectancy will be lost. Therefore, improvement is not the goal in treatment of these diseases; however, the goal is to continue an independent life with good quality, sense of satisfaction, and efficiency. Thus, acceptance and commitment treatment which is effective in a wide range of common disorders in the mental health field aims to help people to live a rich, full, and meaningful life while accepting the inevitable suffering of life.[8]

Research shows that acceptance and commitment treatment has been effective in various fields such as depression,[9] antipsychotics,[10] drug abuse,[11] job burnout,[8] and pain relief.[12] The concern about the future is the existence of some stressors among patients with MS.[13] Because there is no cure for this disease,[14] it will become necessary that efforts go toward the acceptance of illness and limitations caused by the disease and observe it as the natural life of his/her own and try a way of life that fits the conditions of his/her existing life.[15] However, all recent MS researches believe that MS treatment should be done as a holistic, team, and interdisciplinary approach to disease management and drug treatments are not the only treatment required by this disease, but many patients need counseling, psychotherapy, psychiatry, rehabilitation, speech therapy, social workers, etc., to help bear the mental and social problems caused by the disease.[16]

Therefore, the availability of psychological treatment for people with MS with the above features is felt. It seems that the present research offers appropriate treatments for MS patients in clinical and therapeutic centers. It also provides a condition that is effective in treating the disorder and leads to a better functioning of young people in the country, improves the quality of life satisfaction of MS patients

and their families, and avoids the high cost of treatments. Acceptance and commitment therapy (ACT) can be effective on improving health condition of chronic patients such as MS. Research has shown that treatment based on acceptance and commitment was effective in various fields such as depression,[17] psychosis,[18] drug abuse,[19] burnout,[20] and pain relief.[21] The basic construct and concept in ACT is that the psychological sufferings and tastes are created by avoiding cognitive fusion experiences and failing to meet behavioral needs and not aligning with fundamental values. ACT interacts with thoughts and emotional distress so that people do not perceive them as a symptom of a disease or even takes it in a way that they are harmless (even if they are upset or unpleasant).[22] The main message of ACT is the acceptance of something that is beyond the control of the individual and committing to do everything under control of the person.[23] With these interpretations, acceptance-based treatment can improve the conditions of chronic patients, including those suffering from MS.

Therefore, we want to answer this question in this study that whether ACT impacts life expectancy of people with MS or not.

MATERIALS AND METHODS

The present study is a quasi-experimental study with a pretest, posttest, and control group. Given that it is not possible to control all relevant variables in the study, in this method, the researcher tries to close his/her research to a real test with knowledge of the limitations. Therefore, this research is characterized by the methods that allow for a precise control of the factors affecting the internal and external validity which provides a relative control. The prototype selection was done with available method.

The statistical population of this study consisted of MS patients of North Khorasan Province and Shirvan city in 2016. The patients have at least 2 years and at most 10 years of disease age and they are in the age range of 18–60 years. Their MS type is relapsing-remitting, and finally, 57 patients have entered the study. By visiting the MS Society in the city of Shirvan and using the method of available sampling, and considering that nonrandom sampling method has been used, the sample size formula is not available in this method, and also the available sampling method was used; based on similar clinical studies (several articles), two samples of 15 and totally 30 samples were selected.

The criteria of the study are a minimum age of 18 years and maximum of 60 years, minimum qualification in education, no history of severe psychiatric disease, having

MS, and membership in support of people with this disease for a maximum of 10 years, and relapsing-remitting MS type. The absence of more than two sessions, symptoms of severe neurological and cognitive difficulties, and requiring hospitalization for special treats are the criteria for withdrawal from the study. Whenever participants wanted to quit the test, they could do so.

In this study, first, we referred to the MS Association of North Khorasan, and after obtaining the relevant licenses, a briefing was formed for the members of association before the treatment process. Participants in the meeting expressed their consent to participate in this study. Thirty applicants were randomly assigned into two experimental and control groups and four applicants were assigned to be replaced in case of loss as well. In the first meeting, the pretest group was conducted on both control and experimental groups. Then, the experimental group received acceptance and commitment in eight sessions (two sessions/week) and each session for 2 h, and the control group received no intervention. The posttest was performed on both groups.

In this study, data collection was done by a questionnaire of Schneider's life expectancy. Schneider's life expectancy is a self-report scale questionnaire, which has 12 questions and two subscales of factor and strategy. Questions are multiple-choice in a continuum of 4 degrees (1 score for totally wrong and 4 for totally correct). Scores range is between 8 and 32. Four questions are related to the factor subscale (questions 2, 9, 10, and 12) and four questions to the strategy subscale (questions 1, 4, 6, and 8); four trick questions (questions 3, 5, 7, and 11) were not scoring. Sum of strategy and factor subscale scores determines the total score of hope. Preliminary evidence about the validity of the test is provided by Schneider *et al.* (2000). Cronbach's alpha is between 74% and 84% and reliability is calculated 80% over a period of 10 weeks. Exploratory and confirmatory analysis confirmed the two subscales (factor and strategy). The validity and reliability of this scale have been confirmed in Alaeddin's research in Iran.[18] In a research conducted by Golzari (2007) on 660 female students in Tehran, the reliability of Schneider's life expectancy scale was assessed by internal consistency and Cronbach's alpha coefficient was 0.89.

Data analysis method

Analytical and statistical analysis is done by 22-SPSS software (SPSS Inc., IBM). Experience and data analysis were conducted in two levels of descriptive and inferential statistics. Descriptive statistics were used to describe the variables and include tables and graphs for better average comparison of the pre- and post-test. Further, due to the nature of the plan and the two groups (control and experimental), the statistical method of analysis of covariance and the effect size were used. It should be noted that the analysis of the preconditions for covariance analysis, including normal distribution of sample values, equality of variances, equality of means in the pretesting, equality of the slope of the regression line, and existence of a linear relationship between initial level of variables and the dependent variable, has been fully tested and used to analyze covariance. Initial variables have been considered as auxiliary variables.

Research findings

Table 1 shows that 73.3% of the experimental group and 60.0% of the control group were female, and 26.7% of the experimental group and 40% of the control group were male. The marital status showed that 93.3% of the experimental group and 66.7% of the control group were married. A review from the perspective of education showed that in the experimental and control groups, 33.3% had Graduate School Diploma and 33.3% had association degree; in the control group, 26.7% had Certificate of Middle School and 20.0% had association degree; 6.7% of the experimental group and 13.3% of the control group had a bachelor's degree or higher. The age range of patients showed that 40.0% of the experimental group and 46.7% of the control group were under 30 years of age and 60% of the control group and 53.3% of the control group were above 30 years of age. The average age range in the experimental group was 33.1 years and in the control group was 32.9 years.

The mean values and standard deviation before and after the training in each group are calculated [Table 2].

To perform the inferential study, preconditions of covariance analysis were performed. In level of 0.05 error during the study in both experimental and control groups, hypothesis of being normal, as well as the assumption of average level in the pretest, was confirmed

Table 1: Epidemiology of respondents in each group

	Group		P
	Experimental, frequency (%)	Control, frequency (%)	
Gender			
Female	11 (73.3)	9 (60.0)	0.439
Male	4 (26.7)	6 (40.0)	
Marital status			
Married	14 (93.3)	10 (66.7)	0.169
Single	1 (6.7)	5 (33.3)	
Education			
Certificate of middle school	4 (26.7)	3 (20.0)	0.924
Diploma	5 (33.3)	5 (33.3)	
Associate degree	5 (33.3)	5 (33.3)	
Bachelor's degree or higher	1 (6.7)	2 (13.3)	
Age range			
30 years and under	6 (40.0)	7 (46.7)	0.713
Over 30 years	9 (60.0)	8 (53.3)	

$(P > 0.05)$. Moreover, the assumption of equality of variance using Levene's test in pretest and posttest in life expectancy variable was accepted $(P > 0.05)$. The precondition of linear relationship between the variables in the pretest and posttest was also accepted. Besides, the assumption of equality of regression slope was confirmed.

There are two groups in which both are afflicted by MS patients, one of which is an experimental group that received intervention-based treatment of acceptance and commitment and another one of which is a control group that did not receive the relevant intervention. Group effect in Tables 3-5 means that the group of patients who received the intervention in contrast to the group of patients who did not receive the same intervention was different in the traits examined after intervention; therefore, the intervention was effective in the variation of the trait. In these pretest tables, the primary effect of the measured variable was evaluated, which indicates its meaningful effect due to the postinterventional changes of group effect and the initial level of the desired trait of the patients.

Results of Table 3 shows that ACT had a significant impact on the life expectancy in patients with MS ($P < 0.001$; degrees of freedom [df]:1, 27, F = 72.228, MS = 278.298). Further, the score in life expectancy in the pretest had a significant impact on life expectancy in posttest ($P < 0.001$; df: 1, 27; F = 69.892, MS = 269.300).

At first, the simultaneous analysis of the components of life expectancy and then the analysis of each of the components were performed separately, the results of which are given in Tables 4 and 5. Results of Table 4 shows that ACT had a simultaneous impact on component of life expectancy in patients with MS ($P < 0.001$; df: 2, 25; F = 36.514). Furthermore, the scores of factor and strategy in the pretest had a significant impact on factor and strategy in posttest ($P < 0.001$).

Then, each component of life expectancy is studied independently, and the results are shown in Table 5.

Results of Table 5 shows that ACT had a significant impact on factor component of life expectancy in patients with MS ($P < 0.001$; df: 1, 27; F = 53.713, MS = 66.0).

The score of factor in the pretest had a significant impact on factor components of life expectancy in posttest ($P < 0.001$, df: 1, 27; F = 96.561, MS = 118.681).

ACT in strategy element had a significant impact on patients with MS ($P < 0.001$; df: 1, 27; F = 64.286, MS = 78.224).

Table 2: Descriptive variables of life expectancy and their components in each group during the study

Variable	Group	Pretest		Posttest	
		Average	SD	Average	SD
Factor	Experimental	14.1	2.3	17.1	2.1
	Control	13.9	2.7	13.9	2.6
Strategy	Experimental	14.7	2.2	17.9	1.7
	Control	14.3	2.1	14.4	2.1
Life expectancy	Experimental	28.9	4.1	35.0	3.3
	Control	28.1	4.2	28.3	3.9

SD: Standard deviation

Table 3: Covariance analysis test related to life expectancy

Source	Sum of square	df	Mean of square	F	P	Effect size
life expectancy (pre)	269.300	1	269.300	69.892	0.000	0.721
Group	278.298	1	278.298	72.228	0.000	0.228
Error	104.033	27	3.853			

Table 4: Multivariate analysis of covariance for component life expectancy in Pillai method

Source	Index value	F	df	P	Effect size	Box's test (P)
Factor (pre)	0.781	44.610	2, 25	0.000	0.781	2.573 (0.499)
Strategy (pre)	0.677	26.206	2, 25	0.000	0.677	
Group	0.745	36.514	2, 25	0.000	0.745	

Table 5: Analysis of covariance for component life expectancy

Variable	Source	Sum of square	df	Mean of square	F	P	Effect size
Factor	Factor (pre)	118.681	1	118.681	96.561	0.000	0.781
	Group	66.018	1	66.018	53.713	0.000	0.665
	Error	33.185	27	1.229			
Strategy	Strategy (pre)	65.680	1	65.680	53.977	0.000	0.667
	Group	78.224	1	78.224	64.286	0.000	0.704
	Error	32.845	27	1.217			

The score of strategy in the pretest had a significant impact on its strategy in posttest ($P < 0.001$; df: 1, 27; F = 53.977, MS = 65.680).

DISCUSSION

Results showed that variable of life expectancy and their features were not significantly different in the pretest in both groups. In pretest, life expectancy and its components in the experimental group were at the lowest level. After the intervention of group receiving intervention (experimental) in the posttest, a significant increase of scores in life expectancy and its components has been observed.

Since no research has taken place previously on the effects of ACT on life expectancy, consonant researches do not exist directly. However, given that decrease of hope in people with depression is a clear feature of disease, the results of the hypothesis are consistent with the research of Buhrman

et al.,[19] Powers et al.,[20] Mc Crachen and Gutierrez,[21] Brown and Jones[22] titled as " the Overall Effectiveness of Treatment Based on Acceptance and Commitment on Depression and Anxiety in Patients with Chronic Pain" as well as researches of Rajabi et al.[23] titled as "the Efficacy of ACT in Reducing Anxiety and Depression Among Females with MS", and Abedini et al. titled as "the Effectiveness of Hope Therapy in Increasing Expectancy, Reducing Depression, and Improving the Quality of Life in Women with MS".

Hope is a request of one for the future[24] and commonly referred as an important factor in compatibility, unclear situations, and suffering.[25] ACT impacts on the person with the disease in a way that can reduce depression and thus increases hope in patients. It can be concluded that the treatment with the processes of mindfulness, acceptance, self-observation, behavior change, and engagement to create psychological flexibility can cause a person as a conscious human being to make a relationship with the present moment fully and without defense and take steps in selected values by changing behavior.[26] In fact, the ACT therapist encourages clients to know the disease as well as advantageous fight to reduce the psychological content and create a reception of disease to move in a worthwhile direction.[27] In this therapy, patients observe their depression causing destructive thoughts and separate themselves from mental rumination that leads to depression. Thus, content of thoughts is experiencing at present regardless of threatening aspects and mental ruminations. In addition, component of acceptance in this treatment provides the person to accept his/her inner bad experiences and this makes the experiences look less threatening, and thus their impact on one's life is reduced and this leads to the reduction of depression and ultimately enhances the level of hope among people. Since no research has taken place on the effects of acceptance and commitment therapy on life expectancy previously, consonant researches do not exist directly. However, the results of the researches are consistent with the research of Kiani et al.,[28] Abdollahipour et al.,[29] and Izadi et al.[30] Since ACT puts the focus on teaching their clients to do their actions with reason of (x) and not for the reason of (x), so if an activity is performed for some reasons, when the reasons are changed, acts also should be clearly changed. In contrast, if an action is done for some reasons, the action can continue independently of the reasons. The therapist should emphasize that this is an important issue on that commitment, engaging in a process not the ability to achieve specific goals and outcomes.[31] It is expected that acceptance and commitment treatment with features, such as encouraging people to live in the present moment, mindfulness, commitment to the pursuit of worthy goals, and focusing on the process rather than the outcome, would maintain its effects in long term.

Research proposals

According to the results of the present study, an inclusive, holistic, team, and interdisciplinary method is suggested in the treatment of MS patients. Hence, that interdisciplinary cooperation of specialists in physical, mental, and social issues is a mainstay of treatment and it is the only way to improve the quality of life of these patients.

Because the treatment will improve life expectancy and resiliency, the treatment is recommended for other chronic diseases with similar problems.

Because the treatment had a significant effect on fear of death, the treatment is recommended for those who are at the verge of death due to hard disease and old age.

Psychotherapy and counseling centers or psychosomatic clinics (psychosomatic medicine) in hospitals are recommended, particularly for certain diseases, and in the recovery of these patients.

Since, in positive psychology, it is believed that the positive structures of psychology, including hope and resiliency, can protect people against stressful life events, it seems that developing prevention programs to improve expectancy and resiliency for students and young people will be useful.

Since the possible effects of acceptance and commitment treatment will not be sustained after a few months, the helpless are recommended to exploit the method. The support meetings should be held from time to time after treatment to maintain therapeutic effect and to think for the long term.

Conflicts of interest

There are no conflicts of interest.

Authors' contributions

All authors contributed equally to the writing of the scientific proposal, data collection, and manuscript drafting. The final manuscript was reviewed and approved by all the authors.

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