

Original Article

The Effectiveness of Solution-Focused Brief Therapy on Improving the Quality of Life in Patients with Multiple Sclerosis

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Abstract

Background and Aim: Multiple sclerosis (MS) is a chronic inflammatory disease and its psychological symptoms and effects, including reduced quality of life, have a huge impact on various aspects of the patients' life. The aim of this study was to investigate the effectiveness of solution-focused brief therapy in improving the quality of life in patients with multiple sclerosis.

Materials and Methods: In a quasi-experimental study with pre-test-posttest design and a control group, 36 patients with multiple sclerosis that referred to the M.S Clinic in Ghaem Hospital and MS society of Khorasan-Razavi in Mashhad were selected using a convenience sampling method and then randomly assigned into treatment and control groups. The treatment group received the seven, 2 hours' sessions of solution-focused brief therapy (SFBT). Data was collected at pre-test and post-test with the Multiple Sclerosis Quality of Life-54 Tool (MSQOL-54). The analysis of covariance was used for analyzing the data with SPSS-21.

Results: The findings showed that SFBT has a significant impact on the quality of life ($F=11.92$, $P<0.002$) and its components ($F=31$, $P<0.001$) in patients with multiple sclerosis.

Conclusion: The SFBT is an effective therapeutic approach to improve the quality of life in patients with multiple sclerosis. In fact, solution-focused therapy improves quality of life indicators in MS as a concise and evidence-based intervention. Although these results are promising, they require further and more comprehensive study of the effectiveness of such interventions in neuropsychological disorders.

Keywords: Brief psychotherapy, Quality of life, Autoimmune disease, Multiple Sclerosis

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Introduction

Multiple Sclerosis (MS) is a chronic autoimmune inflammatory disease in the central nervous system (CNS), which is caused by self-reactive lymphocytes that pass the blood-brain barrier to enter the CNS. As the main cause of inflammation, this leads to demyelination, and the elimination of axons and glottic ulcers (1). There are very few known treatments for the progressive types of this disease, and it is now generally acknowledged that MS is a heterogeneous and multifactorial disease influenced by a set of genetic and environmental factors (2). The symptoms of this disease, depending on the severity of damage to the CNS, may include visual impairments, motor symptoms, sensory symptoms, urinary incontinence and cognitive impairment (3). Many genes and several environmental factors, especially exposure to ultraviolet radiation, infections, obesity, and smoking increase the risk of the four distinct types of MS (4). The Relapsing Remitting MS (RRMS) is characterized by a set of relapses and recoveries over a period of several years or decades that 85% of patients are initially in this phase. Secondary Progressive MS (SPMS) is characterized by low recovery and progressive disability. Primary Progressive MS (PPMS) is characterized by an initial progressive phase and there is no remission in the relapsing phase. Progressive Relapsing MS (PRMS) is associated with a progressive phase at its outset as well as several relapsing periods without full recovery (1, 4).

The manifestation and severity of dysfunction and disability is related to the severity of the underlying disease, the duration of MS, and the extent of spinal cord involvement (5). MS is relatively common in Iran and is increasing dramatically. The results of a systematic review and meta-analysis showed that the pooled prevalence of MS in Iran is 100 per 100,000, which is a high rate (6). Comorbidity of psychiatric disorders such as depressive symptomology can adversely affect the quality of life and interpersonal relationships in patients with MS (PwMS), partially accounting for the high rates of marital discord and unemployment in these patients (7). People with MS, in addition to deteriorating in quality of life, have a

lower overall survival and a higher risk of death from chronic diseases such as cardiovascular and infectious diseases, as well as a higher risk of suicide and accidents (8). Studies have shown that PwMS has a lower quality of life than the healthy people in the community (9). According to the definition of the World Health Organization (WHO), quality of life refers to people's perception of their position in life in terms of culture, goals, expectations, standards, priorities, and value system (10). Quality of life is a multidimensional concept that embraces physical health, mental health and social health. It is increasingly recognized in health studies as a measure of the effectiveness of therapeutic interventions (10, 11). Extensive physical disabilities, lack of effective treatments, and unknown causes of MS provide compelling evidence of the adverse impact of this disease on patients' quality of life (11, 12). Many of the factors that appear to affect the quality of life in PwMS, including depression, fatigue, and avoidance of activity, are modifiable factors. Assessment and effective intervention in such factors may improve the quality of life in PwMS.

There is currently no definitive cure for MS, and treatment is largely based on the administration of immunosuppressive drugs. However, several remedial therapies, including psychological interventions, have been designed to reduce the recurrence of the disease, delay its progression, and improve the quality of life indicators associated with the disease (13,14). Psychological interventions in PwMS, in addition to improving the general indicators of quality of life, often affect the cognitive symptoms and psychosocial dimensions of the disease (15,16). One of these therapies is solution-focused brief therapy (SFBT). The solution-focused brief therapy (SFBT) is a psychological intervention that increasingly focuses on helping patients create solutions rather than solving problems (17). This therapeutic approach has been evaluated in several clinical situations, but has been less studied in the controlled empirical evaluation in the case of MS. This therapy, instead of stressing past events, encourages patients to focus on their abilities and talents in order to find solutions to their problems (16). The SFBT as a short, client-centered, task-oriented, and goal-oriented therapeutic intervention is

an effective intervention in long-term physical health conditions (17,18). Previous studies showed the effectiveness of the SFBT in health improvement of neurological diseases (19, 20, 21). Research in Iran has also shown that SFBT is effective in psychological dimensions and quality of life in medical conditions (18, 22, 23). Due to the destructive effects of MS on the dimensions of quality of life, in addition to the need for medication, the patient needs effective psychological therapies to improve the psychological dimensions of quality of life for better management of the psychosocial dimensions of the disease. Therefore, considering the popularity of the SFBT with patients and its inherent value and importance, this study aims to describe the effectiveness of the SFBT in improving the quality of life in PwMS.

Methods

This study is a quasi-experimental design with pre-test-post-test and a control group. The statistical population consisted of all PwMS who had registered in 2019-2020 by the referral of neurologists from the M.S Clinic in Ghaem Hospital and MS society of Khorasan-Razavi in Mashhad. The sample (n=36), which was selected using convenience sampling and then randomly assigned into treatment and control groups (n=18 in each group), included PwMS who were able to attend the study. Adequacy of sample size was determined based on the G*Power software calculation according to the effect size in previous similar studies, test power, alpha coefficient, and significance level. The inclusion criteria were a definitive diagnosis of multiple sclerosis by the neurologist, an age range of 19 to 50 years, and a minimum high school diploma. The exclusion criteria consisted of enduring severe and acute distress in the past six months, medical comorbidity (e.g., diabetes and hyperlipidemia), psychiatric comorbidity (e.g., major depressive disorder and bipolar), pregnancy, lack of independence in walking and dependence on wheelchairs, the use of psychotropic drugs and psychotherapy at the same time. Both groups were similar in the context of administration and demographic and cultural

characteristics.

Materials

The Multiple Sclerosis Quality of Life-54 tool (MSQOL-54)

The MSQOL-54 developed by Vickrey et al. in 1995, was used to assess the quality of life in PwMS (24). This tool contains 54 items that include 12 subscales specific to PwMS (physical function, role limitations-emotional, role limitations-physical, emotional well-being, pain, energy, cognitive function, social function, sexual function, health perceptions, health distress, and overall quality of life). In this 54-item tool, there are also two summary scores and two additional one-item scales. Two summary scores of "physical health" and "mental health" are obtained from the weighted combination of overall scale scores. The total score is between 0-100 and the score of each domain is calculated from the average scores. Finally, the patient's quality of life is determined by scores assigned to two combined domains, "physical health" and "mental health". The scores of all 12 domains as well as the two combined domains are in the range of 0 to 100, with higher scores indicating a better condition. In subsequent studies, this tool has desirable psychometric properties (25). The MSQOL -54 (52 items in 12 scales and two single items) has good internal consistency. Reliability estimates by internal consistency method for 12 multi-item scales varied from 0.75 to 0.96 in 179 patients with multiple sclerosis. Internal correlation coefficients with the test-retest method also ranged from 0.66 to 0.96. In addition, exploratory factor analysis confirmed the two main dimensions of physical health and mental health (24). The reliability and validity of this tool have also been documented in Iran (26).

The Solution-Focused Brief Therapy Protocol

The SFBT protocol was tailored to the characteristics of the participants and administered by the trained instructor. Strategies and content of SFBT meetings, as outlined by Trepper et al. (27) was applied in accordance with each intervention session (Table 1). Besides, in all treatment sessions, emphasis was placed on recognizing internal resources in exploring solutions and setting up outstanding, clear, specific, and achievable personal goals as essential components

of SFBT.

Procedure

The necessary permits were obtained for the referral of PwMS by neurologists in Ghaem Hospital in Mashhad in accordance with the code of ethics (ID IR.MUMS.REC.1397.027) that is approved by the Institutional Review Board in Mashhad University of Medical Sciences (2018-04-21) as well as the Clinical Trial code (IRCT20180522039785N1) received from the Iranian Registry of Clinical Trials (IRCT) on 2019-02-02. Besides, the written informed consent was attained from participants and the confidentiality of data was observed in all research stages. All participants who had registered to participate in the study filled out an informed consent form before completing MSQOL-54. After obtaining informed written consent and randomization of samples in treatment and control groups, both groups filled out the research questionnaires. In order to control the effect of diffusion with regard to the homogeneity and equality of conditions between the groups, the treatment and control groups were not enrolled from the same center to participate in the study. Also, in order to control the effects of the ceiling and the floor, the tool for measuring the outcome variable was performed by counterbalancing method. The treatment group received seven sessions of SFBT (each lasting for 2 h) once a week, but the control group did not receive any intervention, but in order to comply with the

ethics of the research, it was decided that after the intervention for the treatment group, the control group could also receive training about the disease. At the end of the treatment, all participants were asked to complete the questionnaire again. At the end of the research, SPSS-21 software was used for data analysis and univariate and multivariate analysis of covariance were utilized to test the research questions.

Results

Both groups were controlled for demographic variables. Table 2 presents the demographic characteristics of the participants in the treatment and control groups.

As Table 2 shows, the mean age and standard deviation of the participants in the treatment group (32.33 and 6.37, respectively) and the control group (35 and 7.18, respectively) were obtained. In the T test, there was not a significant difference between the groups ($P=21$). Also, Table 1 shows the number of participants in terms of categorical demographic variables. The Chi-square test showed no difference between the two groups in categorical variables (In all cases the P value was greater than 0.14). To shed further light on the trend of changes in quality of life, descriptive statistics of variables (mean and standard deviation) are presented with the assessment stages in the treatment and control groups (Table 3).

Table 1: The content summary of SFBT sessions (27).

Sessions	Content
First session	Introduction, familiarization, and acquaintance of participants with the rules and regulations of treatment sessions; necessity of exploration a positive and solution-oriented position
Second session	Helping participants to formulate treatment goals and goal setting in a positive, definite, tangible, and measurable way; Encourage search for previous solutions
Third session	Strengthen participants' understanding of different interpretations of an event and self-regulation in correctly understanding problems; identifying their abilities and resources to understand problems correctly, and performing assigned tasks; encourage search for exceptions
Fourth session	Help participants identify positive exceptions in their lives; strengthen questioning strategies and encourage asking questions vs. directives or interpretations
Fifth session	Use the miracle question; strengthen questioning with questions focused on the present and the future versus past-oriented focus questions
Sixth session	Strengthen search strategies to find other novel ways of reflection, feeling and behavior in order to experience new alternative emotions; encourage compliments
Seventh session	Gentle nudging for detection of working actions; summarizing; focus on continuing strategies for performing intervention techniques and relapse prevention; encourage homework assignments

Table 2: Demographic characteristics of participants in the groups.

Variable		Treatment group	Control group
		Mean(SD)	Mean(SD)
Age		32.33(6.37)	35(7.18)
		Frequency (Percent)	Frequency (Percent)
Gender	Male	5(27.8)	5(27.8)
	Female	13(72.2)	13(72.2)
Marital status	Single	13(72.2)	14(77.8)
	Married	5(27.8)	4(22.2)
Literacy Level	Diploma	5(27.8)	11(61.1)
	Associate degree	3(16.7)	2(11.1)
	Bachelor's degree	5(27.8)	4(22.2)
	Master's and doctoral degree	5(27.8)	1(5.6)
Medication	Sinovex	9(50)	11(61.1)
	Rituximab	3(16.7)	3(16.7)
	Resijen	2(11.1)	0(0)
	Tai sabri	1(5.6)	2(11.1)
	Milobayox	1(5.6)	1(5.6)
	Betaferon	2(11.1)	1(5)
Disease duration (years)	1-5	8(44.5)	6(33.3)
	5-10	9(50)	12(66.7)
	10-15	1(5.6)	0(0)

Table 3: The mean and standard deviation of variables at the assessment stages in the groups.

Variables	Solution-based group				Control group			
	Pre-test		Post-test		Pre-test		Post-test	
	M	SD	M	SD	M	SD	M	SD
Physical health	52.22	23.65	57.50	21.50	37.50	33.48	53.05	22.43
Physical role Limitation	37.50	33.48	43.05	31.86	37.50	39.52	31.94	40.04
Emotional role limitation	48.14	36.55	88.88	28	40.74	38.86	31.48	38.72
Pain	64.53	17.32	72.12	17.85	64.62	16.69	63.42	21.13
Emotional health	51.77	15.18	70.88	10.43	46.22	10.82	45.11	12.48
Energy	46.22	12.44	70	8.02	41.55	13.52	42.22	12.13
Perception of health	53.88	19.36	79.44	15.98	51.38	22.08	50.27	20.54
Social performance	63.88	18.52	81.01	15.60	62.96	19.43	70.83	32.49
Cognitive function	58.88	13.77	74.94	11.64	55	23.88	55	23.76
Health problem	57.77	24.98	84.16	10.74	56.38	20.42	53.61	19.31
Sexual function	67.31	27.52	67.51	31.45	47.61	36.17	46.42	36.36
Sexual satisfaction	51.92	40.13	63.46	36.25	37.50	33.61	37.50	35.1
Health change	54.16	30.01	79.16	21.43	52.77	26.96	51.38	20.05
Overall quality of life	52.61	8.55	66.16	11.06	60.53	9.48	53.73	7.20
Summary score of physical health	46.83	23.46	59.65	17.15	44.10	19.82	54.56	16.08
Summary score of mental health	54.16	15.70	80.46	12.69	50.91	15.11	50.95	10.28

Before testing the hypotheses, assumptions of normality of data distribution, homogeneity of variances and homogeneity of regression slopes were

considered. To ensure the normality of data distribution, the Kolmogorov-Smirnov Goodness of Fit Test was carried out. Given the fact that the

Table 4: Univariate analysis of covariance to compare groups in terms of the overall quality of life.

Statistical index/variable	Source of change	SS	Df	MS	F	P	Eta ²
Overall quality of life	Pre-test	200.05	1	200.05	2.38	0.13	0.06
	Group	998.41	1	998.41	11.92	0.002	0.26
	Error	2763.45	33	83.74			
	Total	139715.44	36				

Table 5: Multivariate analysis of covariance to compare the groups in the summary scores of quality of life.

Source of variation	Variable	SS	Df	MS	F	P	Eta ²
Group	Summary score of physical health	2040.04	1	2040.04	30.02	0.001	0.48
	Summary score of mental health	6161.99	1	6161.99	72.33	0.001	0.69
Error	Summary score of physical health	2174	32	67.93			
	Summary score of mental health	2725.95	32	85.18			
Total	Summary score of physical health	132067.44	36				
	Summary score of mental health	161451.33	36				

significance level was greater than 0.05 in the pre-test ($F=0.12$, $P=0.17$), and on the posttest (0.13 , $P=0.10$) the data distribution was normal. The homogeneity of variances in the quality of life was also assessed using the Levene's test. A significant level greater than 0.05 suggested a homogeneous variance between the groups ($F=2.63$, $P=0.11$). The homogeneity of regression slopes also revealed that the F value was not significant for the quality of life ($F=2.10$, $P=0.15$) and therefore, the assumption regarding the homogeneity of regression slopes for the quality of life variable was confirmed. Considering the above findings, univariate and multivariate analysis of covariance were used to test the research questions. Table 4 presented the univariate analysis of covariance to compare groups in terms of the overall quality of life.

Analysis of covariance showed that by controlling the effect of pre-test, a significant difference was observed between the treatment group (group based SFBT) and the control group in terms of the quality of life ($Eta^2=0.26$, $P=0.002$, $F=11.92$). Solution-focused intervention has significantly improved the quality of life.

Multivariate analysis of covariance (MANCOVA) was used to compare the treatment group and the control group in quality of life subscales. The results of the box's M test for variance-covariance homogeneity were not statistically significant, meaning that the assumption of homogeneity of covariance matrix was confirmed ($P=0.52$, $F=0.74$, $M=2.38$). Besides, the results of multivariate analysis of covariance for the subscales of quality of life by

controlling the pre-test indicated that the difference is statistically significant between the treatment group and the control group in terms of at least one of the dependent variables (Wilks' $\lambda=0.29$, $F=31$, $P=0.001$ and $Eta^2=0.70$). Multivariate analysis of covariance was also used to determine which variable was different between the two groups in terms of summary scores (combined domains) of quality of life (Table 5).

As depicted in Table 5, by controlling the pre-test, a significant difference was documented between the treatment and the control groups in the summary score of physical health ($P<0.001$; $F=30.02$) and in the summary score of mental health ($p<0.001$; $F=72.33$) in the post-test. The Eta^2 in the summary score of physical health and in the summary score of mental health were 0.48 and 0.69, respectively. Hence, the results demonstrate the effectiveness of the SFBT on the summary score of quality of life.

Discussion

The results indicated a remarkable improvement in overall subjects' quality of life in the treatment group (group based SFBT) compared to the control group. The findings are aligned with the results reported by Gameian *et al.* (18), Kolovos *et al.* (28), Nasirnejhad *et al.* (23) and a systematic qualitative review by Gingerich & Peterson (29). Trepper *et al.* (27) argued that SFBT improves quality of life by teaching problem-solving strategies, enhancing self-efficacy in the face of problems, and dealing with crises. Razaghikhameneh *et al.* (30) also argue that SFBT has

an effect on improving the quality of life in PwMS by enhancing self-efficacy and a sense of problem-solving ability. The results of this study can be justified on a theoretical basis. Solution therapy is theoretically based on postmodernism and emphasizes the hypothesis that people's knowledge and perceptions of reality are formed through linguistic interactions and conversations with others. Therefore, this intervention improves the quality of life by strengthening interpersonal problem-solving strategies and strengthening social interactions. In this therapeutic approach, the therapist works on possible solutions to problems with the patient. In fact, one of the factors that impairs the quality of life in PwMS is the lack of adaptive skills and appropriate solutions to the psychosocial and medical challenges posed by the disease. It is argued that the SFBT improves their quality of life by focusing on discovering different solutions rather than solving problems, modifying patients' responses to disease-related limitations, and modifying patients' attitudes toward MS.

An important explanation of the findings of this research was tailored content of the SFBT that was designed based on psychosocial risk factors affecting the exacerbation and persistence of MS symptoms. Gil-González *et al.* (31) argues that adequate biopsychosocial assessment is critical to effective intervention for modifiable risk factors and to promoting protective factors to improve the quality of life in PwMS in public care. Besides, GökselKaratepe *et al.* (32) emphasize the important role of depression, fatigue, and disability in quality of life in patients with multiple sclerosis. In this study, these factors affecting the quality of life in these patients were targeted in the implemented SFBT protocol. The quality of life is a subjective concept and is closely related to patients' satisfaction with their life (33). The SFBT changes patients' attitudes toward dealing with the challenges of the disease, and gradually modulates attitudes to strengthen patients' abilities to cope with the disease. It also encourages patients to adopt a problem-solving approach and experience new emotions, including satisfaction and hope, which in turn change patients' mental experience of quality of life. In terms of approach to clients, SFBT sees individuals as

competent and capable experts who are able to solve their problems and considers treatment as a process that is led by clients and therapists to the process of dealing with problems or challenges. In the treatment process, it is vital for the therapist to build participatory relationships to focus on correcting the client's language, beliefs, and problem-solving strategies.

The results of this study showed that the SFBT is effective on two main components of quality of life, namely summary score of physical health and summary score of mental health, and these findings are consistent with the findings of studies by Bilgi *et al.* (35), Carr *et al.* (19), GökselKaratepe *et al.* (32), and Kolovos *et al.* (28). The focus of the SFBT is on the process rather than the content, focusing on the present and the future, rather than immersing oneself in the past and tracing the roots of the problem. Therefore, it is based on such orientations that SFBT can be effective in improving the quality of life of PwMS. In this regard, Weld-Blundell *et al.* (34) argue that solution-based interventions include lifestyle interventions and complementary therapies in the multiple sclerosis guidelines, which can improve the physical health and mental health indicators in these patients by focusing on teaching practical strategies in disease management. In support of these findings, Bilgi *et al.* (35) explain that the use of solution-based interventions in group psychotherapy improves cognitive dysfunction and depression in PwMS, and therefore patients find new strategies that use them to manage symptoms and better adjustment to the disease. One of the important techniques of SFBT is the miracle and confrontational questions. In fact, such questions are asked by patients to show how they respond to the challenges of the disease. The use of these techniques strengthens patients' problem-solving strategies and ultimately leads to improved health-related quality of life in the person with the disease. In general, the use of SFBT help participants to formulate their views on MS-related issues and coping strategies. This treatment was also able to shift patients' focus from disease-related physical and psychological problems to available solutions, resulting in more effective strategies to improve the disease. Overall, these strategies improved the physical health and mental health indicators in these patients.

The present study had a few limitations. This study was face-to-face and active intervention, and due to the COVID-19 epidemic and the time limit in order to comply with health protocols related to this epidemic and its subsequent strains, it was not possible to follow the results to determine the continuity of treatment effects. Also, the tool for measuring the outcome variable (quality of life) in this study was a quantitative tool, and due to the subjective nature of this variable, the use of interviews or other quality assessment methods is also important. Although the sample was sufficient, due to the small size of the sample, it was not possible to test the hypotheses based on any minor subscales in quality of life. Therefore, to evaluate the continuity of the therapeutic effect, it is recommended to follow the results of the study in future studies. It is also recommended that in future research, mixed (quantitative-qualitative) methods be used in measuring and conducting the study. In addition, in the future, this treatment should be compared with other treatments for this disease and similar cases. A single case study in this field can also offer new directions in this field. Examining large experimental designs and indicators of clinical significance can also inspire new results in future studies. This study adds to the existing knowledge in the field of psychotherapy for patients with multiple sclerosis, but there is still a need for experimental data and especially comprehensive and valid clinical trials, because these data cover the psychosocial aspects of treatment, and these data additionally expand existing information.

Conclusion

The results showed that the group based SFBT improved overall quality of life and two domains of physical health and mental health in PwMS. Solution-focused therapy has a structured therapeutic approach and has obvious effects on quality of life. SFBT as a short, reference-oriented, and goal-oriented approach, by strengthening problem-solving strategies as well as promoting patients' self-efficacy, ultimately helped to improve their quality of life. In fact, focusing the patient on finding solutions and resources for disease management has positive

consequences for the patient. The SFBT is an effective therapeutic approach to improve the quality of life in patients with multiple sclerosis. In fact, solution-focused therapy improves quality of life indicators in MS as a concise and evidence-based intervention. Although these results are promising, they require further and more comprehensive study of the effectiveness of such interventions in neuropsychological disorders.

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Conflict of Interest

The authors declare that they have no conflict of interest in this study.

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