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The Effect of Benson Relaxation Technique on General Health in Multiple Sclerosis (MS) Patients in Kashan, Iran: A Randomized Controlled Trial

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Abstract

Background: MS is a potentially disabling disease of the brain and spinal cord (central nervous system). Patients with MS have some problems in their general health. The purpose of this study was to determine the effects of Benson relaxation technique on general health in MS patients.
Methods: This randomized controlled trial study was done on MS patients who registered in MS center in Kashan, Iran, from March 2017 to July 2018. The first sixty eligible patients were recruited through convenient sampling method and then patients were randomly assigned to experimental and control groups. Patients in both groups were completed the Goldberg General Health Questionnaire (GHQ-28) before and after the intervention. Benson relaxation technique was performed by patients in the intervention group twice a day, 20 minutes per session, over a period of eight weeks. Data were analyzed using Chi-square, independent t-test, and paired t-test in the SPSS software (version 16). The level of significance was set at 0.05.
Results: There was significant difference in the mean scores of general health before (44.22±12.4) and after (31.14±11.09) the intervention in the experimental group (P=0.002). After intervention, the difference between the mean difference scores of general health in the control (1.78±3.5) and experimental (13.08±2.88) groups was significant (P=0.002).
Conclusion: According to the findings, the Benson relaxation technique can be effective for improving MS patients' general health, physical and mental status, and social function. Due to the cost-effectiveness and safety of this technique, we propose the inclusion of the technique in the treatment protocol for MS patients.

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Introduction

MS is an autoimmune disease that deteriorates the central nervous system (1). In industrialized countries, the prevalence of the disease varies between 15 to 145 per 100,000 people (2). Although the disease can affect people at any age, most incidences occur between ages 20 and 40 (3). Because MS progresses differently, patients' experience of the disease is variable, and their future health and general body functioning are unpredictable (3-5). Frequent mental and physical symptoms associated with MS include muscle weakness, balance problems, abnormal walking mechanics, spasticity, fatigue, cognitive impairment, and depression (6). The International Advisory Committee on MS Clinical Trials has classified MS into four periods including; clinically isolated syndrome (CIS), relapsing-remitting (RR), secondary progressive (SP), and primary progressive (PP). CIS is manifested by the first episode of symptoms associated with the central nervous system inflammation or demyelination and continues at least for 24 hours. RR is also called relapses or exacerbations and manifested by periods of remissions and episodes or relapses. RR subsequently progresses to SP that is a state of progressive deterioration of neurologic functioning. PP is manifested by deterioration of neurologic functioning without manifestation of early relapses or remissions (7). Initially, about 85% of MS patients are diagnosed with relapsing-remitting MS (RRMS) (8). During the RRMS relapse phase, the patients experience acute exacerbations of existing or new symptoms (7-8) that can lead to multiple complications (9-10). General health is defined physical, mental, social, and moral well-being (11). In MS patients, conventional therapies, such as immuno-modulating medications and steroid therapy, have not been effective in many patients and adversely caused side-effects, such as fatigue, nausea, depression, fever, and headache (12-13). These side effects, along with reduced physical and social function, lead to fundamental changes in patients' lifestyle and poor general health (13). Complementary and alternative medicine not only provides therapeutic effects for chronically ill patients but also can improve general health (14-15). Common complementary and alternative interventions include biofeedback, music therapy, yoga, relaxation, lifestyle changes (15-18). Relaxation is a nursing intervention and an ancient method in medicine, clinical psychology, and psychoanalysis (19). Evidence shows that relaxation is effective in improving quality of life in MS patients (20). Relaxation leads to a balance in the activities of posterior and anterior hypothalamic regions, sympathetic nervous system, and catecholamine secretion (20). Relaxation technique is also suggested for reducing patients' psychological problems (21). Dayapoglu and Tan (2012) showed that the relaxation technique 30 minute every day for six weeks reduced MS patients' fatigue and improved their sleep quality (22).

Benson relaxation technique is a type of relaxation method with a combination of individuals' belief systems or faith factors. In this technique, clients select a word that has a calming sense to them. They repeat the word verbally with a regular rhythm with resignation. For example, a client may choose to repeat the names of God (21).

Solehati & Rustina (2015) showed that after caesarean section, the Benson relaxation technique, 10 minutes every 12 hours for four days, had significant effects in reducing women's pain intensity and improving their general health (21). Moazami Gudarzi et al., (2018) used Benson relaxation technique 20 minutes twice a day for three consecutive days, and reported that after the intervention, there was no significant difference between the intervention and control groups in terms of anxiety and general health among angiography patients (23). Using the technique, 15 minutes twice a day for four weeks, Mahdavi et al., (2013) reported that after the intervention, there was no significant difference between the intervention and control groups regarding depression and general health in hemodialysis patients (24). Similarly, Galvin et al., (2017) showed that Benson relaxation technique, 20 minutes a day for five weeks, had no significant effect in health status and performance of healthy aging adults (25).

Research teams have used different designs for different populations and found contradictory results regarding the effects of Benson relaxation technique. Study of Benson relaxation technique among MS patients is rare (26). The previous studies addressed the effects of the technique on MS patients' anxiety and fatigue. Based on the authors' knowledge, there was no research regarding the effects of the technique on general health of MS patients. The purpose of this study was to determine the effects of Benson relaxation technique on MS patients' general health.

Methods

This single blind randomized controlled trial was performed on with 60 MS patients who registered in MS center, in Kashan, Iran from March 2017 to July 2018. The first sixty eligible patients were recruited through convenient sampling method and then patients were randomly assigned to experimental and control groups. The research objectives were explained to all MS patients and a written informed consent was obtained. All MS patients were also informed about voluntary participation and the right for withdrawal at any time. They also were assured that their anonymity would be protected and their personal information would be kept confidential. Inclusion criteria were as follows: aged 20–45 years, diagnosed with RRMS by a neurologist for more than a year, Expanded Disability Status Scale score of less than 5, having no experience of cerebral or heart attacks in the last three months, should not be diagnosed with psychiatric disorder, dementia and mental retardation, and were not participating in any other regular programs, including exercise, physical activities, or cognitive-behavioral techniques, six months before the intervention. The participants who were absent in educational sessions and showed unwillingness to continue the study were also excluded from the study. Using the Pocock's sample size formula (27), the optimal sample size for each group was 30. The sample size in each group was calculated based on power=0.80, α=0.05, the minimum expected difference in SD=2.9, and the minimum expected difference in means=2.18 (20). First, 110 patients with RRMS were assessed for eligibility. They completed the Expanded Disability Status scale. Patients with scores of less than 5 were eligible to participate in the study. Accordingly, 40 patients did not meet the inclusion criteria. Ten patients also declined to participate. A total of 60 patients with RRMS were randomly allocated in to two experimental (n=30) and control (n=30) groups by block randomization (Figure 1).

Before the study, patients in both groups completed the demographic and general health questionnaires (GHQ-28) (28). The GHQ-28 consists of four: physical symptoms, anxiety, social function, and depression subscales. Each subscale contains seven Likert questions, ranging from 0 (never) to 3 (always). The total score of the questionnaire varies from 0 to 84. The overall score of the scale indicates the individual's level of general health. Higher scores indicate lower level of general health (17, 29). Javanmard and Mamaghani was translated this instrument to Persian and they content validity and reliability instrument and its subscales with Cronbach's alpha 0.93 confirmed (30). In this study Cronbach's alpha was 0.90. The experimental group participants were trained to perform the relaxation technique. The training sessions were held in groups of 3-4 participants and included a discussion on the benefits of relaxation as well as a practical exercise on the Banson technique. Practical training sessions were held in a quiet room with proper ventilation. As a part of the training session, the participants were asked to perform the relaxation technique in presence of the researcher for 20 minutes. This training was repeated until the researcher made sure that the patients had acquired the necessary skills. In addition to the training sessions, an educational booklet with a CD about method of performing the Banson relaxation technique was given to the participants. The Benson relaxation technique instruction included five steps. The participants were instructed to (1) sit in a relaxed state, (2) close eyes, (3) relax all the body muscles, from

the soles of the feet moves forward, (4) breath in and out through nose, concentrate on breathing sounds, and (5) say the word one quietly after exhalation (20, 31).

After training, the participants were asked to independently perform the technique twice a day, 20 minutes per session, for eight weeks. The training sessions were held during the patients' hospitalization period. The performance of the technique could continue during the hospitalization and also after discharge from the hospital. To avoid potential biases, the participants were not supervised by the research team during performing the technique. The participants' compliance with the Benson relaxation technique was ensured via phone contacts. They were also asked to complete a daily self-report performance sheet. The first author that has a training certificate in this field attended the MS center every day for the participants' performance follow-up and reinforcements and collected their daily self-report performance sheets. The first author's cell phone number was given to the participants, and they were asked to contact him if they had any complications or questions during performing the Benson relaxation technique. To avoid data contamination, the participants in the experimental group were trained in a separate room from the control group. The control group received MS patients' routine treatments and care. Eight weeks after the intervention, the general health in both groups was evaluated using the GHQ-28.

Data analysis was performed using the SPSS software (version 16). For determining the normal distribution of quantitative variables was used to Kolmogorov-Smirnov test. Chi-square tests were used to compare nominal variables in the two groups. For comparing the mean scores in two groups' were used to the independent t-tests. Also for comparing the mean scores of each group at the beginning and at the end of the study, the paired t-test was used (32). The level of significance was set at 0.05.

Results

The patients' mean age in the experimental and control group was 33.3±3.1 and 35.1±3.8 respectively. Most of the patients in the experimental (60%) and control (53.4%) groups were women, respectively. There wasn't significant difference between the two groups in the demographic characteristics (P>0.05) (Table 1).

The two groups were not significantly different in the mean scores of the general health at the beginning of the study (P>0.05). Comparison mean scores of the general health before and after intervention in the control group does not have significant difference (P=0.45). But comparison mean scores of the general health before and after intervention in the experimental group indicated a significant difference (P=0.01). Also in the experimental group, there were significant differences in all the subscales' scores general health before and after the intervention (P<0.05) (Table 2).

In the experimental and control groups, the mean difference in general health were respectively 13.8±2.88 and 1.78±3.5 that was significant (P= 0.002). Also the differences between the scores dimensions of general health were significant (P< 0.05) (Table 3).

Table 1. Demographic Characteristics of patients in two groups

Variable		Groups: Experimental (N = 30)	Groups: Control (N = 30)	P value
		N (%)	N (%)	
Gender	Women	18(60)	16(53.4)	χ^2=4.65
	Men	12(40)	14(46.6)	p =0.52
Education	Elementary	16(53.4)	19(63.3)	χ^2=3.53
	Higher than elementary	14(46.6)	11(36.7)	p = 0.70
Marital status	Single	12(40)	11(36.7)	χ^2=3.13
	Married	18(60)	19(63.3)	p =0.34
Occupational status	Office worker	2 (6.6)	3(10)	χ^2=3.65 p = 0.71
	Worker	5(16.7)	4(13.3)	
	Retired	8(26.7)	6(20)	
	Housewife	6(20)	5(16.7)	
	Unemployed	7(23.4)	7(23.3)	
	Self-employed	2 (6.6)	5(16.7)	

Table 2. Comparison of mean scores of patients' general health scores before and after the intervention in two groups

General Health Dimensions	Group: Experimental			Control		
	Before Mean±SD	After Mean±SD	P-Value*	Before Mean±SD	After Mean±SD	P-Value*
Physical Symptoms	10.6±3.07	6.5±2.76	0.00	11.43±2.43	11.37±2.43	0.71
Anxiety	12.77±3.22	7.9±2.89	0.01	12.61±2.32	12.23±2.60	0.36
Social Dysfunction	11.34±2.8	5.44±2.76	0.01	10.54±3.33	10.54±3.76	0.16
Depression	10.32±1.9	7.56±2.41	0.02	11.32±3.71	11.02±2.87	0.42
Total Score of General Health	44.22±12.4	31.14±11.09	0.01	45.6±16.13	44.42±12.5	0.45

Note. * = Based on a Paired t-test

Table 3. Comparing the mean differences of patients' general health scores at the beginning and the end of the study in the two groups.

Dimensions of General Health	Mean± SD	Mean± SD	t-test*	P value**
Physical Symptoms	3.1±0.31	0.08±0.29	2.15	0.01
Anxiety	3.37 ±1.29	0.3± 0	1.99	0.002
Social Dysfunction	4±0.57	0.3±0.11	2.13	0.001
Depression	2.61±0.71	1.1±3.1	2.56	0.02
Total	13.08±2.88	1.78±3.5	1.93	0.002

Note. * = The mean difference is the difference between the mean dimensions of general health at the beginning and end of the study, ** = Based on Independent t- test

Discussion

At the end of the study, the participants in experimental group had better scores of general health compared to the control group. The general health score of patients in experimental group was significantly improved after the Benson relaxation technique. However, the general health score of patients in control group was not significant.

Since no study found to examine the effect of relaxation on the general health of MS patients, so the effect of relaxation on other populations and variable such as pain, quality of life and fatigue is noted. Several studies' results were in agreement with these findings in terms of the significance of Benson relaxation technique in improving health status and its dimensions of different populations

(21, 31, 33, 34). Bagheri-Nesami et al., (2006) indicated the positive effects of Benson relaxation technique, 20 minutes twice a week for eight weeks, on reducing rheumatoid arthritis patients' anxiety and depression and improving their well-being (31). Mowla et al., (2017) also found that Benson relaxation technique, 60-70 minutes a week for four weeks, had positive effects on quality of life of primary caregivers of children with chronic diseases (33). Seifi et al., (2018) showed positive effects of Benson relaxation technique, 20 minutes twice a day for three consecutive days, on reducing fatigue and improving health status among heart failure patients (34). Solehati and Rustina (2015) reported that Benson relaxation sessions, 10 minutes twice a day for four days, had significant effects in reducing women's pain intensity and improving their general health after cesarean section (21). According to the results of the present study and reviewed studies, it seems that the use of relaxation technique, regardless of the number and length of relaxation sessions, promotes variables related to patients' health.

The findings indicated significant change before and after the intervention in the mean score of general health and all the subscales including physical symptoms, anxiety and insomnia, and social dysfunction and depression in the experimental group. The results of Bagheri-Nesami et al., (2006) (31) and Seifi et al (34). (2018) studies showed Benson relaxation improved general heath and its dimensions. Taking into account that MS patients suffer more physical, mental, social, and even economic problems comparing with diabetic and hypertension patients, it appears that achieving a higher level of effectiveness by relaxation technique to improve the general health of MS patients depends on more support by nursing managers.

While some studies have shown no significant effects of Benson and other relaxation techniques on different patients (24-25, 35). Smith and Norman (2017) showed that relaxation techniques, 10 minutes once a week for four weeks, had no significant effect on experiences of pain in healthy individuals (35). Galvin et al., (2017) reported no significant effects on health status and performance of healthy aging adults after using Benson relaxation technique, 20 minutes per day for five weeks (25). Using the technique, 15 min twice a day for four weeks, Mahdavi et al., (2013) reported that among hemodialysis patients, there was no significant difference between the intervention and control groups regarding depression and general health after the intervention (24). Moazami Gudarzi et al., (2018) also used Benson relaxation technique, 20 minutes twice a day for three consecutive days, in angiography patients, and reported that there was no significant difference between the intervention and control groups in terms of anxiety and general health after the intervention (23). The reason the inconsistency of these studies with the present study is the relaxation method. In the present study, Benson relaxation technique has been used, but in the above studies other relaxation methods have been used. Therefore, it seems that the effects of relaxation techniques are different in various diseases.

A limited number of studies regarding Benson and other relaxation techniques were conducted in MS patients. Nazari et al., (2017) indicated the positive effects of Benson relaxation technique, 40 minutes twice a week for four weeks, on reducing MS patients' pain (36). Novais et al., (2016) also showed the positive effects of relaxation, fifteen 20-minute sessions over eight weeks, on reducing MS patients' stress level (37). However, Jain et al., (2007) indicated no significant effects of relaxation techniques, 20 minutes twice a week for four weeks, on MS patients' spiritual experience (38).

Although several studies indicate the effectiveness of different relaxation techniques on different populations of patients, there are other studies wherein their findings contradict the effectiveness of the relaxation techniques. Methodological limitations of the studies or differences among their relaxation designs are causing contradictory in studies. The differences were in the design of the studies including the training duration, number of relaxation sessions, and intervals between the sessions. Additionally, the studies that indicate the effectiveness of the techniques are limited, so that they fail to confirm a standard design for improving chronic patients' health.

There are arguments for realistic predictions of positive results about relaxation interventions. One of the predicators that might interfere with the results of relaxation clinical trials is the communication or phone calls between researchers and participants for follow-up purposes. A sense of connection to a therapist may bias the results regarding the intervention group participants' higher scores of health. Rahimimoghadam et al., (2017) also argued that presence of a person for training can be a confounding variable and can bias the results of studies (17)

Taking these arguments and the contradictory results of the Benson relaxation technique into account, this study was performed to evaluate the effect of this method in patients with MS. More studies are needed to verify the results of this study and integrate the results of the related studies into the body of evidence-based practice and knowledge.

One of the limitations of the research is the small size of the samples. So, larger sample size research is recommended in the future. A sense of connection to a therapist and presence of a person for training in the intervention group can be a confounding variable in this clinical trial. One of the weaknesses of the study is the lack of follow-up of patients. Therefore, studies to compare the effects of the Banson relaxation technique and other interventions can help ensure the correct interpretation of issues related to the effectiveness of the Banson relaxation technique.

Conclusion

According to the findings, the Benson relaxation technique can be effective for improving MS patients' general health, physical and mental status, and social function. Due to the cost-effectiveness and safety of this technique, we propose the inclusion of the technique in the treatment protocol for MS patients.

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Ethical statement

This study was approved by the Research Ethics Committee of Kashan University of Medical Sciences (Code: IR.KAUMS.NUHEPM.REC.1396.31). This study was registered at the Iranian Registry of Clinical Trials (IRCT) with registration code IRCT20111210008348N44.

Conflict of interest

No conflict of interest in this study.

Author contributions

Conceptualization: Saeed Mirhosseini, Mahboobeh Rezaei, Neda Mirbagher Ajorpaz. Methodology, analysis, research a review: Mahboobeh Rezaei , Neda Mirbagher Ajorpaz, Writing- review and editing: Mahboobeh Rezaei , Neda Mirbagher Ajorpaz,, Supervision: Neda Mirbagher Ajorpaz,

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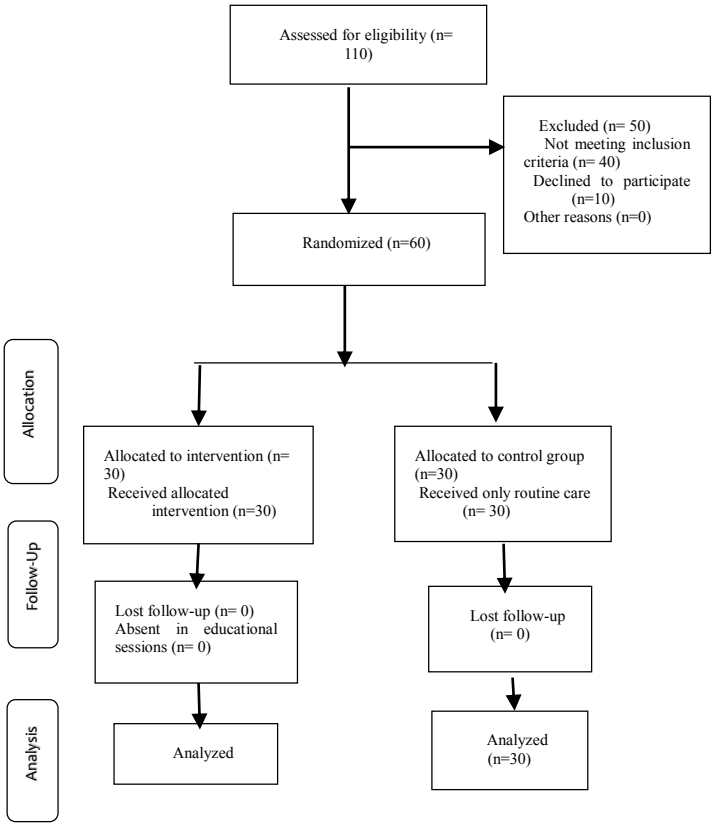

Figure 1. Sampling flow diagram

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