Original Article

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The Effect of Benson Relaxation Technique on Depression in Patients Undergoing Hemodialysis

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ABSTRACT

BACKGROUND AND OBJECTIVE: Depression is the most common mental disorder in patients undergoing hemodialysis. This disorder has adverse effects on the course of disease and treatment process and is recognized as an independent risk factor for death in hemodialysis patients. The purpose of this study was to determine the relaxing effects of Benson relaxation technique on depression in patients undergoing hemodialysis.

METHODS: This clinical trial was performed on 65 hemodialysis patients. Subjects were randomly divided into two groups: control group (n=32) and intervention group using Benson relaxation technique (n=33). The intervention group performed Benson relaxation exercises twice a day for 20 minutes over one month. Beck Depression Inventory was completed one month before and one month after the intervention. The control group received usual treatments (IRCT: 2014011115393N2)

FINDINGS: Overall, 51 patients were male in the present study. The mean age of participants was 48.57±9.18 years in the intervention group and 49.93±8.17 years in the control group. Before the intervention, there was no significant difference between the groups in terms of the studied variables. The mean score of depression in the intervention group decreased from 32.46±9.86 before the intervention to 23.30±9.23 after the intervention; the difference was statistically significant ($p<0.001$). Also, the mean score of depression in the control group changed from 30.58±9.24 before the intervention to 30.83±9.63 after the intervention.

CONCLUSION: The results of this study showed that Benson relaxation technique is effective in reducing depression in hemodialysis patients. Therefore, by applying this technique, we can take a major step towards improving and preventing patients' psychological problems

KEY WORDS: Benson Relaxation Technique, Depression, Hemodialysis.

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Introduction

Chronic kidney disease (CHD) is a progressive, irreversible reduction in renal function (1). CHD is recognized as one of the most important causes of morbidity and mortality, worldwide (2). The incidence of this condition is increasing, worldwide, and the number of individuals diagnosed with CHD doubles every seven years (3). Approximately 60,000 people die globally due to renal diseases each year (1). Moreover, in Iran, the number of hemodialysis patients increases by approximately 15% every year (4). Common treatment methods for CHD include replacement therapy, hemodialysis, peritoneal dialysis and kidney transplant, among which hemodialysis is the most commonly applied method, with major impacts on patient health (5). Although hemodialysis utilizes advanced technologies for the treatment of CHD patients, it is a stressful experience for the patients and is accompanied by a high incidence of mental disorders such as depression and anxiety (6).As reported by Bossola et al., prevalence of depression in patients with advanced renal failure is estimated at 20-70% (7). Depression is one of the most common and important mental disorders in hemodialysis patients, with adverse effects on the course of disease and treatment process. Moreover, this disorder is recognized as an independent risk factor for mortality in patients (8). Depression in hemodialysis patients increases their vulnerability to suicidal behaviors (9).

Treatment of depression includes medicinal and non-medicinal interventions. Considering the complications associated with medicinal treatments, use of non-medicinal methods, which can decrease depression in CHD patients, seems reasonable. Recently, non-medicinal methods, commonly known as complementary therapies, have attracted the attention of patients including hemodialysis patients. Complementary therapies are holistic in nature and are applied to increase patients' physical and mental well-being (10).

Common non-medicinal interventions include biofeedback, music therapy, yoga, mind distraction techniques, relaxation, time control, lifestyle changes, cognitive restructuring and guided imagery. In this regard, Hadadian et al. demonstrated that complementary therapy leads to fatigue reduction in hemodialysis patients (11). Relaxation is a nursing intervention, which has been introduced as a complementary treatment method and sometimes an alternative medicinal therapy in many studies (12). This technique is a well-known, ancient method in medicine, clinical psychology and psychoanalysis, which has attracted researchers' attention over the past few decades (11). As Rambod et al. stated, relaxation is an effective nursing intervention, which reduces pain and improves the quality of life in hemodialysis patients (13). Relaxation by balancing the posterior and anterior hypothalamic regions, reducing the activities of sympathetic nervous system and inducing catecholamine secretion leads to reduced muscle tension, alleviation of adverse physiological effects, reduced blood pressure and regular breathing, pulse rate and muscle spasms induced by stress (14). In Benson relaxation technique, since the patient relaxes all the muscles and concentrates, he/she can overcome a range of physical and mental symptoms such as anxiety, depression, stress and pain (15).

Dayapoglu et al. showed that relaxation techniques (applied every day for six weeks) leads to reduced fatigue and improved sleep quality in multiple sclerosis (MS) patients (16). Despite the introduction of a wide range of relaxation methods to medical circles, Benson relaxation technique, introduced in 1970, seems to be a suitable option, considering its simplicity and easy application (14).Relaxation technique is a commonly applied method for confronting psychological problems. This cost-effective method requires no special equipments and can be easily applied by patients. So far, some studies have evaluated the effects of relaxation on some symptoms associated with disease treatment (e.g., stress and anxiety) in hemodialysis patients. However, no study has evaluated the effect of Benson relaxation technique on depression in these patients. Therefore, the present study was performed to evaluate the effect of Benson relaxation technique on depression in hemodialysis patients..

Methods

This randomized, controlled, clinical trial was performed on 70 hemodialysis patients, referring to the hemodialysis section of Vase'ee Hospital of

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Sabzevar, Iran in 2013 (IRCT: 2014011115393N2). The inclusion criteria were as follows: 1) age range of 18-65 years; 2) undergoing hemodialysis for at least six months; 3) availability of medical files in the dialysis center of the hospital (no guest or temporary dialysis patients); 4) undergoing dialysis three times a week; and 5) absence of any mental/muscular disorders or severe physical disabilities. The subjects were randomly divided into control and intervention (using Benson relaxation technique) groups.

The exclusion criteria were as follows: 1) unwillingness to continue the study; 2) use of medicines affecting one's mental health; 3) prior history of depression or hospitalization due to mental disorders before CHD and hemodialysis; 4) history of accidents or unpleasant events over the past six months; 5) kidney transplant or peritoneal dialysis; and 6) death. In order to calculate the sample size, a pilot study was performed on 20 individuals. The sample size was calculated at 62 cases, according to data analysis (power of 90% and 95% confidence interval). Considering the risk of sample dropout, 70 cases were included in the study. In the intervention group, one case due to renal transplant and one case due to unwillingness to continue the study were excluded from the study. Also, in the control group, one subject due to kidney transplant and one case due to death were excluded from the study. Finally, the study started with 65 subjects including 33 cases in the intervention group and 32 cases in the control group. Data collection tools included Beck Depression Inventory-II (BDI-II) and a demographic questionnaire on subjects' age, gender, occupational status, marital status, educational level, history of renal failure and duration of hemodialysis. BDI-II is considered as a valid and reliable tool. This scale consists of 21 items (i.e., 15 items on emotional symptoms and 6 items on physical symptoms) and is graded on a four-point scale. Each answer is scored on a scale value of 0 to 3, with the total score ranging between 0 and 63 (16,17).

BDII-II has been applied in many studies on advanced renal failure. The validity and reliability of this scale have been confirmed in previous research (18-21). The reliability of BDI was calculated by Cronbach's alpha in the current study (α=0.85). Scores higher than the cut-off point (score 14) in BDI-II were indicative of depression; moreover, patients' depression had to be confirmed by a neurologist.The present study was performed after receiving a letter of introduction and permission from the Ethics Committee. The participants received the required instructions and were familiarized with the objectives of the study. Finally, informed consents were obtained from 70 patients.The training sessions included discussions about the benefits of relaxation and practical training on Benson technique.

After practical training, the participants were asked to perform the exercises in the presence of the researcher to ensure their training. After making arrangements with the head of the department, the sessions were held in a separate room, which was exclusively used for hemodialysis patients to rest.The participants performed relaxation exercises in front of the researcher for 20 minutes during each hemodialysis session. Also, the training method, an educational pamphlet and a CD, on which the exercises were recorded, were handed to subjects and they were asked to perform the exercises twice a day (20 minutes per session). Moreover, subjects' compliance with the training program was ensured through text messages. The control group received the usual treatments.

Also, they received text messages about self-care, diet and medicines and their related questions were answered. The intervention group, in addition to usual care, was trained on how to perform relaxation exercises. After training, the patients performed the exercises independently and no particular attention was paid to subject in the intervention group.

In fact, we tried to avoid biased behaviors towards the intervention group. Four weeks after the intervention, the level of depression in both groups was evaluated, using BDI-II.Data were analyzed, using SPSS version 16. Kolmogorov-Smirnov test was applied to determine the normal distribution of quantitative variables. In order to compare quantitative variables with a normal distribution, independent t-test was utilized. On the other hand, for quantitative variables without a normal distribution, Mann-Whitney test was applied. To compare qualitative variables between the two groups, Chi-square test was used. Also, Fisher's exact test was applied to compare depression before and after the intervention in the

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groups. p<0.05 was considered statistically significant.

Results

In total, 51 (78.46%) and 56 (86.15%) subjects were male and married, respectively. The mean age of participants was 48.57±9.18 years in the intervention group and 49.93±9.24 years in the control group (table 1). The mean score of depression in the control group changed from 30.58±9.24 before the intervention to 30.83±9.63 after the intervention; however, the difference was not statistically significant. On the other hand, in the intervention group, the mean score of depression reduced significantly from 32.46±9.86 before the intervention to 23.30±9.23 after the intervention (p<0.001).

Table 1. Distribution of demographic characteristics in the intervention and control groups

Variables \ Group	Intervention N(%)	Control N(%)
Age(years)		
18-35	3(9.09)	2(6.25)
35-45	10(33.33)	7(21.88)
45-55	15(45.45)	17(53.13)
55-65	5(15.15)	6(18.75)
Gender		
Female	6(18.18)	8(25.00)
Male	27(81.82)	24(75.00)
Marital status		
Single	4(12.12)	5(15.63)
Married	27(84.38)	29(87.87)
Educational level		
Illiterate	6(18.18)	5(15.63)
Below high school diploma	21(63.63)	22(68.75)
High school diploma	4(12.12)	2(6.25)
Higher than high school diploma	2(6.06)	3(9.38)
Occupational status		
Unemployed	14(42.42)	19(59.38)
Self-employed	11(33.33)	8.(25.00)
Employee	4(12.12)	3(9.38)
Retired	4(12.12)	2(6.25)

Before the intervention, there was no statistically significant difference between the intervention and control groups in terms of the mean score of depression, while a significant difference was observed after the intervention (p=0.01). Based on statistical tests, there was no significant association between depression and demographic characteristics.

Discussion

The present study showed the positive effects of Benson relaxation technique on depression in hemodialysis patients after four weeks. The findings showed a significant difference in the mean score of depression before and after the study in the intervention group. The reason behind this statistical difference could be the use of Benson relaxation technique for one month.

Ghafari et al. evaluated the effect of relaxation technique on depression in MS patients and showed that this technique (applied once a day for two months) decreased the level of depression in patients (20); these results were in accordance with the present findings. The obtained results can be confirmed due to the chronic nature of both MS and CHD. Relaxation and regular exercise can improve the health of patients through regulating the autonomic nervous system and controlling patients' emotions in stressful situations. Use of these exercises can alter hemodynamic variables; this is probably the reason why patients' status progressed. In this regard, Jorm et al. in their review study showed that the effect of relaxation on depression improvement is greater than expectant therapy; moreover, this method can be applied at lower costs (22).In a study by Murphy et al., which aimed to compare the effects of cognitive behavioral therapy, relaxation training, and tricyclic antidepressants on depression, cognitive behavioral therapy and relaxation training were equally effective in the alleviation of depression symptoms. Depression scores in cognitive behavioral therapy, relaxation and antidepressant groups decreased by 82%, 73% and 29%, respectively (23). Also, based on previous studies, performing 5-20 minutes of relaxation exercises in one session could increase patients' energy (similar to one hour of sleep) (24). The present study was in accordance with a study by Tayyebi and colleagues. The mentioned study showed that complementary methods such as hatha yoga and exercise can cause a significant difference in the psychiatric symptoms of patients. In hatha

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yoga, special attention is paid to relaxation and a calm, relaxing feeling in the body. In the mentioned study, the mean score of depression in the intervention group reduced from 9±3.5 before the intervention to 7.5±3.3 after the intervention. However, no significant change was reported in the control group (21), which was in congruence with the present study. The results reported by Field et al. regarding the effects of relaxation on depression were different from the present study. In the study by Field et al., there was no statistically significant difference in the mean score of depression in the relaxation group before and after the intervention on the first and last days of exercises (25). Depression evaluation tool in the mentioned study was Profile of Mood States (POMS), which was applied half an hour before and half an hour after the intervention. Also, relaxation techniques were applied twice a week for two months, whereas relaxation exercises in the present study were performed twice a day for four weeks.

Another significant finding of the present study was the absence of a relationship between depression and demographic characteristics such as gender, marital status, educational level and occupational status. In a study by Rahimi et al., which aimed to evaluate the effect of continuous care model on the depression level of hemodialysis patients, no significant relationship was observed between depression and subjects' demographic characteristics (26).

Patten et al. also did not report any significant relationship between the mentioned variables and depression level in MS patients (27); these results were consistent with the present study. However, lack of a significant relationship between depression and demographic characteristics cannot demonstrate the actual relationship between these variables, since the sample size of this study was not estimated for the evaluation of such correlations. Therefore, further studies with suitable sample sizes and emphasis on these variables are required. Benson relaxation technique, as a complementary treatment method, could be easily applied in hemodialysis patients. This technique was successful in alleviating depression, which is one of the most common and debilitating symptoms in CHD patients. Therefore, evaluation of this technique and its effects on other symptoms of patients with CHD or other chronic diseases is recommended.One of the limitations of the present study was biased attention to the intervention group, which was mostly overcome by independent performance of exercises. According to the results, which indicated the positive effect of Benson relaxation technique on depression in hemodialysis patients, Benson technique can be applied as a potent, simple and cost-effective method for improving and preventing psychological problems of patients with CHD and other chronic diseases. Therefore, training on this technique for students, who will be held accountable for patients' lives in their future careers, should be taken into account.

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