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# Investigating the effects of Benson's relaxation technique on quality of life among patients receiving hemodialysis

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**ABSTRACT**

**Aims:** End-stage renal disease is a major health challenge worldwide. Patients with this disease need to receive frequent hemodialysis. The disease and hemodialysis both negatively affect patients' quality of life. The aim of this study was to investigate the effects of Benson's relaxation technique on quality of life among patients receiving hemodialysis.

**Methods:** A convenience sample of 60 patients receiving hemodialysis in Imam Reza Hospital, Kermanshah, Iran, was recruited to this clinical trial. Initially, patients' quality of life was evaluated by a disease-specific questionnaire. Then, patients were randomly allocated to either the control or the treatment groups. Patients in the treatment group were trained to perform Benson's relaxation technique at their home on a daily basis for 60 consecutive days. Patients in the control group received no relaxation intervention. Immediately after the study, the same questionnaire was used for reevaluating patients' quality of life. The independent-samples t-test was used for data analysis.

**Results:** After the study, the mean scores of general and total quality of life were significantly higher than the corresponding pretest readings ($p = 0.001$ and 0.02, respectively). However, the mean score of specific quality of life did not change significantly after the study ($p=0.2$).

**Conclusions:** Benson's relaxation technique has positive effects on quality of life among patients receiving hemodialysis and therefore, it can be used for enhancing patients' quality of life in hemodialysis units.

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## 1. Introduction

Currently, one of the major healthcare problems worldwide is the increasing prevalence of chronic diseases [1]. A chronic disease is a medical condition or a health problem which is associated with different symptoms and disabilities and needs long-term management [2]. One of the commonest chronic diseases is end-stage renal disease

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(ESRD). ESRD is a progressive and irreversible kidney disorder in which the body fails to maintain fluid and electrolytes balance and the afflicted patient may finally develop uremia or azotemia [3]. Hence, it is a major health problem throughout the world [4].

Statistics show that the number of patients with ESRD worldwide is more than two million from which, 1.38 million patients receive hemodialysis and 170000 ones undergo peritoneal dialysis [5]. Currently, there are 450000 patients with ESRD in the United States [6]. This number will increase to 2.24 million patients by the year 2030 [7]. In our country, Iran, the incidence of ESRD is around 22.6%. Consequently, 4000 new cases of ESRD are diagnosed each year. Currently, the number of patients with ESRD in Iran is greater than 33000 [8].

ESRD and its complications significantly affect afflicted patients' lifestyle, health and well-being, social and familial roles, and quality of life (QOL). One of the reasons for initiating hemodialysis for patients with ESRD is its positive effects on patients' sense of well-being [9]. However, although dialysis significantly improves survival, QOL of patients who receive dialysis is lower than healthy people [10]. Valderrabano et al. (2001) noted that dialysis and other treatments alleviate the symptoms of ESRD and promotes patients' lifestyle; nonetheless, patients' QOL is compromised due the complications of ESRD and most of these patients experience different degrees of disability [11]. Feroze et al. (2011) also reported that QOL among patients receiving hemodialysis is poor [12].

Poor QOL affects all aspects of patients' lives. According to Rambod et al. (2008), hemodialysis negatively affects patients' functional status and impairs their ability to perform activities of daily living [13]. Moreover, as these patients need to receive frequent dialysis treatments, they may be either unable to find a regular and continued employment or lose their employment and therefore, experience financial problems [14]. In addition, ESRD- and dialysis-related fatigue, anxiety, and neurohormonal disorders negatively affect psychological, familial, and social aspects of patients' lives [15] and hence, compromise the social aspect of QOL [16]. Mehraban et al. (2011) found that the QOL of patients receiving kidney transplantation and peritoneal hemodialysis is similar to that of healthy people and significantly higher than patients undergoing hemodialysis [17]. However, Smaeli et al. (2005) reported a good QOL among Iranian patients receiving hemodialysis [18].

Most Americans use complementary and alternative modalities for promoting their heath and recovering from diseases. Studies showed that about 50% of Americans use these modalities as part of their treatment plan. The use of complementary and alternative modalities is increasing progressively. Complementary and alternative modalities include a wide range of modalities such as Chinese medicine, yoga, acupuncture, homeopathy, naturopathy, music therapy, energy healing approaches, chiropractic, body mind interaction, and relaxation [19].

One of the complementary and alternative modalities is Benson's relaxation technique. Herbert Benson based his technique on the concepts of transcendental meditation. In this technique, a person adopts a passive mode and allows relaxation to arise and progress [20]. The progressive muscle relaxation technique (PMR) was developed for alleviating tension and anxiety. The aim of this cost-effective, non-invasive, self-administered technique is to enhance people's awareness of muscular tension and relaxation and also to help them relax their muscles [21]. Shariati et al. (1982) found that PMR was effective in relieving anxiety among patients receiving hemodialysis [22]. Yildirim and Fadiloglu (2006) also found that PMR significantly alleviated state anxiety and enhanced QOL among patients undergoing dialysis [23]. Studies conducted in Iran also have shown the positive effects of PMR on QOL among patients with breast cancer [24]



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and rheumatoid arthritis [25] as well as patients undergoing coronary artery bypass graft [26].

To the best of our knowledge, no studies in Iran have yet investigated the effects of muscle relaxation on QOL among patients undergoing hemodialysis. Accordingly, this study was conducted to provide evidence in this area. The aim of the study was to investigate the effects of Benson's relaxation technique on QOL among patients receiving hemodialysis.

## 2. Methods

This was a quasi-experimental clinical trial. The population of the study consisted of all patients receiving hemodialysis in Kermanshah, Iran. A convenience sample of 60 patients receiving hemodialysis in Imam Reza Hospital, Kermanshah, Iran, was recruited. Patients were randomly assigned to either the control or the treatment groups. Patients were included in the study if they were desired for participation, had no debilitating underlying condition which interfered with implementing relaxation, were able to establish face-to-face communication, and neither performed relaxation or stretching exercise at the time of the study nor used narcotics. The exclusion criteria were patients' withdrawing from the study, using tranquilizers, anxiolytic agents, or antidepressants, requiring hospitalization, failing to perform three consecutive or five intermittent relaxation sessions, and using treatments other than hemodialysis (such as peritoneal dialysis or kidney transplantation).

A demographic questionnaire and the Kidney Disease Quality of Life Short Form (KDQOL-SF) were used for data collection. The KDQOL-SF is a disease-specific questionnaire for assessing QOL among patients undergoing hemodialysis and consists of two main domains including general QOL and specific QOL. The general domain includes two physical and emotional sub-domains. The physical sub-domain, in turn, consists of four sub-scales including general health (six items), physical functioning (ten items), physical role performance (four items), and physical pain (three items) while the emotional sub-domain includes three sub-scales of emotional role performance (three items), social functioning (two items), and mental health (eight items). On the other hand, the specific domain of the KDQOL-SF consists of nine sub-scales including limitations related to kidney disease (eleven items), health-related mental problems (six items), health-related physical performance (twelve items), general health status (three items), health-related family satisfaction (four items), sleep status (on a 0¬–100 rating scale), health-related employment status (three items), sexual problems (two items), and satisfaction with both care and healthcare professionals (three items). The total score of each sub-scale ranges from 0 to 100. Moreover, the total scores of the two domains of QOL were classified as poor (0–33), moderate (34–66), and good (> 66). The reliability and the content validity of the Persian version of KDQOL-SF had been evaluated and confirmed by Rahimi et al (2006) [27]. They used the split-half technique and reported a correlation coefficient of 0.9 for the questionnaire, confirming its reliability.

Initially, eligible patients were informed about the aim and the methods of the study and were asked to sign the study informed consent form. Then, after measuring their QOL by using the KDQOL-SF, patients were allocated to either the control or the treatment groups. Patients in the treatment group were trained to implement Benson's relaxation technique. Trainings were continued until patients were able to independently perform relaxation. All trainings were provided in one session. In the next day following trainings, patients were provided with an audio file and a written booklet containing trainings about Benson's relaxation technique. Patients were asked to perform the relaxation exercises at home on a daily basis for two months—60 sessions in total. The six steps of Benson's relaxation technique were as follows:

1. Assume a comfortable position;

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Table 1: The mean scores of the general QOL sub-scales before and after the study

| The sub-scales of the general QOL domain | | Mean | Standard deviation | Z | P |
|---|---|---|---|---|---|
| General health | Before | 56.57 | 17.61 | – 2.02 | 0.04 |
| | After | 63.60 | 18.90 | | |
| Physical functioning | Before | 56.96 | 23 | – 2.36 | 0.01 |
| | After | 70.03 | 23.61 | | |
| Physical role performance | Before | 39.86 | 24.55 | – 1.80 | 0.07 |
| | After | 49.82 | 25.82 | | |
| Emotional role performance | Before | 61.48 | 23.29 | – 2.20 | 0.04 |
| | After | 73.74 | 19 | | |
| Social functioning | Before | 44.06 | 24.03 | – 4.12 | < 0.001 |
| | After | 69.16 | 33.45 | | |
| Physical pain | Before | 52.43 | 31.47 | – 1.89 | 0.05 |
| | After | 61.96 | 29.52 | | |
| Mental health | Before | 59.65 | 24.61 | – 1.72 | 0.08 |
| | After | 66.10 | 21.68 | | |

2. Close the eyes gently;
3. Deeply relax all the muscles of your body. Start from the sole and gradually move towards face. Keep muscles relaxed.
4. Breathe normally through your nose. Try to become aware of your breathing and say a single word softly at each exhalation.
5. Continue this exercise for 15–20 minutes. Try to keep all your muscles relaxed. After 15–20 minutes, open your eyes gently and remain in place for a few minutes.
6. Avoid being worried about whether having relaxation or not. Instead, let relaxation happens gradually. Push away disturbing thoughts.

The SPSS16 was used for conducting the Mann-Whitney as well as the paired- and the independent-samples t tests.

Official permissions for conducting the study were obtained from Kermanshah Faculty of Nursing and Midwifery, the Research council of Kermanshah University of Medical Sciences, and the administrators of Imam Reza Hospital, Kermanshah, Iran. Then, the researchers and the research project were introduced to the participants and a written consent was obtained from them. Research participants were ensured that their information will be managed and reported confidentially. They were completely free to either participate or reject participation in the study.

## 3. Results

In total, 60 patients participated in the study from which, 57% were female. The mean, the minimum, and the maximum of participants' ages were 45.31±14.70, seventeen, and 75 years, respectively. Most participants were single (58%) and housewives (50%), held secondary diploma (33%), and had sufficient income (51%). The means of the length of having kidney disease and receiving hemodialysis were 5.48±6.10 and 3.19±2.96 years, respectively.

About 93% of the participants knew about their kidney disease and strategies for its management while 88% of them reported that they required additional information about their disease.

Disease-related limitations were tolerable, almost tolerable, and intolerable for respectively 33%, 54%, and 13% of the participants.

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Table 2: The mean scores of the specific QOL sub-scales before and after the study

| The sub-scales of the specific QOL domain | | Mean | Standard deviation | Z | P |
|---|---|---|---|---|---|
| Disease-related limitations | Before | 45.17 | 13.79 | – 1.16 | 0.24 |
| | After | 50.47 | 13.16 | | |
| Mental health | Before | 5.28 | 10.09 | – 0.73 | 0.46 |
| | After | 56.71 | 8.91 | | |
| Physical functioning | Before | 66.82 | 17.52 | – 2.69 | 0.007 |
| | After | 76.10 | 17.68 | | |
| General health status | Before | 53.60 | 28.39 | – 0.58 | 0.55 |
| | After | 55.82 | 23.99 | | |
| family satisfaction | Before | 63.23 | 25.82 | – 2.08 | 0.03 |
| | After | 73.70 | 27.27 | | |
| Sleep status | Before | 9.89 | 17.47 | – 0.98 | 0.32 |
| | After | 7.44 | 1.99 | | |
| Employment status | Before | 8.64 | 1.90 | – 0.65 | 0.51 |
| | After | 8.39 | 1.68 | | |
| Sexual problems | Before | 50 | 43.73 | – 0.05 | 0.95 |
| | After | 51.17 | 36.03 | | |
| Satisfaction with healthcare professionals | Before | 8.23 | 1.43 | – 0.02 | 0.98 |
| | After | 8.26 | 1.61 | | |

Study findings revealed that in the treatment group, except for the physical role performance (p=0.07) and the mental health (p=0.08) subscales, the posttest values of the other five sub-scales of general QOL (i.e. general health, physical functioning, physical pain, emotional role performance, and social functioning) were significantly higher than the corresponding pretest values (p<0.05; Table 1). On the other hand, only the posttest readings of the health-related physical functioning (p=0.007) and the health-related family satisfaction (p=0.03) sub-scales of the specific domain of QOL were significantly higher than their pretest readings (p<0.05).

Moreover, in the treatment group, the mean scores of the general domain of QOL (p=0.001) and total QOL (p=0.01) significantly increased after the study while the changes in the mean score of the specific domain of QOL were statistically insignificant (p=0.2; Table 3).

Before the intervention, the general QOL of only 12.3% of participants was good.

This value increased to 30.2% after the study. Moreover, before the intervention, 38.7% and 61.3% of participants had respectively poor and moderate specific QOL while after the intervention, these values changed to 28.1% and 71.9%, respectively.

Finally, before the study, the total QOL of 20% and 80% of the participants was respectively poor and moderate; meanwhile,

Table 3: The mean scores of specific, general, and total QOL in both groups before and after the study

| The domains of QOL | | Mean and standard deviation | T | P |
|---|---|---|---|---|
| General QOL | Before | – 2.53±14.89 | – 3.64 | 0.001 |
| | After | 13.72±14.68 | | |
| Specific QOL | Before | 4.03±9.08 | – 1.21 | 0.2 |
| | After | 0.06±6.47 | | |
| Total QOL | Before | 0.66±10.44 | – 2.35 | 0.01 |
| | After | 10.48±11.15 | | |



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Table 4: The mean scores of different levels of specific, general, and total QOL in both groups before and after the study

| Total QOL and its domains | Levels | Before | After |
|---|---|---|---|
| The general QOL domain | Poor (0–33) | 20.4% | 15.1% |
| | Moderate (34–66) | 67.3% | 54.7% |
| | Good (> 66) | 12.3% | 30.2% |
| The specific QOL domain | Poor (0–33) | 38.7% | 28.1% |
| | Moderate (34–66) | 61.3 | 71.9% |
| Total QOL | Poor (0–33) | 20% | 12.5% |
| | Moderate (34–66) | 80% | 84.4% |
| | Good (> 66) | --- | 3.1% |

these values changed to 12.5% and 84.4%, respectively after the study and the total QOL of 3.1% participants turned good (Table 4).

## 4. Discussion

This study was conducted to investigate the effects of Benson's relaxation technique on QOL among patients receiving hemodialysis. The findings of the study indicated the effectiveness of Benson's relaxation technique in enhancing patients' QOL.

After the study, the mean scores of different sub-scales of the general QOL were significantly higher than the pretest readings, confirming the positive effects of Benson's relaxation technique on QOL. These findings are in line with the findings reported by Shariati et al. (2011) [22].

They found that Benson's relaxation technique significantly improved all aspects of QOL, except for the sexual activity sub-scale, among patients with breast cancer [24]. Our findings revealed that Benson's relaxation technique significantly alleviated patients' physical pain. Fayazi et al. (2010) also found that this relaxation technique was effective in relieving postoperative pain among patients undergoing coronary artery bypass graft [29].

Moreover, Shaban et al. (2006) found that both progressive muscle relaxation and music therapy significantly reduced pain among patients with cancer [30].

Dehdari et al. (2009) also reported that progressive muscle relaxation was effective in improving all aspects of QOL and alleviating state and trait anxiety after coronary artery bypass graft surgery [24]. However, our intervention had no significant effect on the mental health sub-scale of QOL. This conflicting finding can be attributed to the difference in the samples of the two studies. ESRD is a chronic condition which affects QOL.

Moreover, hemodialysis-related complications also reduce the QOL of patients with ESRD. Accordingly, the combined negative effects of ESRD and hemodialysis on QOL may be much greater than the effects of a short-term coronary artery bypass graft.

We also found that apart from the physical functioning and the health-related family satisfaction sub-scales, the Benson's relaxation technique had no significant effect on the other sub-scales of the specific domain of QOL. However, Ashktorab et al. (2012) reported that progressive muscle relaxation significantly affected sleep quality among patients undergoing hemodialysis.

This contradiction between the findings of the two studies is probably due to the differences in the instruments and the interventions of the studies.

Ashktorab et al. (2012) assessed only patients' sleep quality by using the Pittsburgh Sleep Quality Index while in our study, sleep quality was evaluated as a sub-scale of QOL. Moreover, we used Benson's relaxation technique while the intervention implemented



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by Ashktorab et al. (2012) was Jacobson's relaxation technique.

Study findings also revealed that Benson's relaxation technique significantly improved patients' general and total QOL while having no significant effect on their specific QOL. Masoudi et al. (2011) also reported that progressive muscle relaxation was effective in enhancing QOL among caregivers of patients with multiple sclerosis [31].

Moreover, Yildirim and Fadiloglu (2006) found that progressive muscle relaxation significantly alleviated state and trait anxiety and enhanced QOL in patients receiving dialysis [23]. Zamanzadeh (2008) also reported the same findings [32].

## 5. Conclusions

The Benson's relaxation technique has positive effects on QOL among patients receiving hemodialysis. Accordingly, this technique can be used for enhancing patients' QOL in hemodialysis units.

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