



The effect of foot reflexology and back massage on hemodialysis patients' fatigue and sleep quality



Kevser Sevgi Unal^a, Reva Balci Akpınar^{b,*}

^a Osmaniye Korkut Ata University, School of Health, Osmaniye, Turkey

^b Atatürk University, Faculty of Health Sciences, Erzurum, Turkey

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ABSTRACT

Objective: The aim of this study is to examine the effectiveness of foot reflexology and back massage on optimizing the sleep quality and reducing the fatigue of hemodialysis patients.

Methods: The study includes 105 volunteer patients who were registered at a private dialysis clinic and were receiving hemodialysis treatment. Foot reflexology and back massage were administered to the patients two times a week for four weeks. The Visual Analogue Scale for Fatigue and the Pittsburg Sleep Quality Index were used to collect data.

Results: The differences between the pretest and posttest score averages of the patients on the Visual Analogue Scale for Fatigue and the Pittsburg Sleep Quality Index were statistically significant ($p < 0.001$).

Conclusion: Foot reflexology and back massage were shown to improve the sleep quality and reduce the fatigue of hemodialysis patients. Compared to back massage, foot reflexology was determined to be more effective.

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1. Introduction

Hemodialysis patients experience fatigue due to a variety of reasons, including the accumulation of metabolic waste in the body, fluid-electrolyte imbalances, abnormal energy expenditure, inappetence, anemia and depression. As this feeling of fatigue tends to persist even after resting and is difficult to prevent. Fatigue and sleeplessness negatively affect patients' work, leisure activities, nutritional habits, sexual lives and relationships with family and friends [1–4]. It has been reported that between 50% and 83% of hemodialysis patients experience sleep disorders [1,2], and that between 7% and 92.5% experience fatigue [1,3,4].

Controlling the sleeplessness and fatigue experienced by hemodialysis patients requires a multidisciplinary approach, one in which nurses play a particularly important role in eliminating or mitigating these complaints. Included among the complementary practices nurses use to overcome problems with sleeplessness and fatigue are massage, aromatherapy and music therapy [5]. Massage is included in the Nursing Intervention Classification and is a simple and noninvasive method for ensuring relaxation [5]. Involving the

palpation of soft tissue and muscles, massage is therapeutic touch that leads to both physical and mental relaxation and is capable of generating energy transmission between the practitioner and the subject, and therefore can be used to help patients overcome sleep problems [6,7]. Field et al. (2007) reported that back massage resulted in reduced pain, anxiety and sleep disorders and improved their participants' moods by relaxing them [8].

Reflexology is defined as: "A technique for helping to normalize body functions by applying the hands to reflex points in the hands, feet and ears that are related to the entire body's glands, organs and parts" [9–11]. In reflexology, which is the stimulation of neural pathways, reflex areas are stimulated using the fingers in order to transmit nerve impulses, restore proper flow of the blood stream and maintain the homeostasis of the body. More particularly, foot reflexology is a pressure technique applied to the nerve endings in feet. The effects of reflexology on subjects have been demonstrated in various clinical trials [11–25]. Studies have shown that reflexology reduces anxiety [12], nausea and vomiting [16,23], pain [17,18,24], sleeplessness [17,18,21] and fatigue [18–20,22–24]. In one particular study conducted on patients with chronic renal failure and hemodialysis patients, reflexology was shown to have positive effects on cramps, fatigue, emotions and the immune system [20]. In the literature review, no studies, however, were found that compare the effects of foot reflexology

* Corresponding author.

E-mail addresses: Kevser-Sevgi@hotmail.com (K.S. Unal), reva@atauni.edu.tr (R. Balci Akpınar).

and back massage on hemodialysis patients.

This study, therefore, analyzes the effects of foot reflexology and back massage on the fatigue and sleep quality of hemodialysis patients.

2. Methodology

The data for this randomized, controlled, experimental study were collected between January 2014 and February 2015.

2.1. Population

The study population consisted of 200 patients registered at a private dialysis center in Turkey. Of these 200 patients, 90 were excluded from the study for failure to meet the inclusion criteria, leaving 110 patients for participation in the study. The patients were randomly assigned to three groups: the foot reflexology group ($n = 36$), the back massage group ($n = 37$) and the control group ($n = 37$). From the 110 patients, a total of 105 patients (35 patients per group) reached the end of the study, with one patient in the foot reflexology group and two patients in the back massage group having withdrawn from the study, and two patients in the control group having left the dialysis center.

2.2. Inclusion criteria

The inclusion criteria for participation in the study involved patients between the ages of 18 and 60 who received hemodialysis therapy twice a week, who did not have any communication problems.

2.3. Exclusion criteria

Patients with skin lesions, open foot wounds, malignant diseases, thrombosis, or bleeding disorders were excluded from the study [9,10,26,27].

2.4. Data collection tools

Demographic data were collected with a Patient Information Form, which included input on the age, gender and other features related to the patient, the Visual Analogue Scale for Fatigue (VASF) and the Pittsburg Sleep Quality Index (PSQI).

VASF: This scale, developed by Lee et al. (1991), features 18 items. The 1st, 2nd, 3rd, 4th, 5th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, and 18th items form the fatigue subscale, while the 6th, 7th, 8th, 9th, and 10th items form the energy subscale [28]. The scale uses a 10 cm line, where extremely positive statements constitute one end and extremely negative statements the other end. The most positive and negative statements on the fatigue subscale are scored 0 and 10, respectively, with the reverse being true for the energy subscale. In other words, the items on the fatigue subscale and the energy subscale are ordered from the most positive to the most negative and vice versa, respectively. A high score on the fatigue subscale and a low score on the energy subscale indicate severe fatigue. The VASF scale was translated into Turkish by Yurtsever and Bedük in 2003 [3]. In the Turkish version, the Cronbach's α internal consistency coefficient was found to be 0.90 for the fatigue subscale and 0.74 for the energy subscale [3].

PSQI: The PSQI, developed by Buysse et al. (1989), is used to evaluate sleep quality [29]. Answers to this scale are made according to the patient's sleeping experience within the last month. The scale comprises 19 self-rated questions, and these 19 items are grouped into 7 component scores (Subjective Sleep Quality, Sleep Latency, Sleep Duration, Sleep Efficiency, Sleep Disturbance,

Hypnotic Medication Use, Daytime Dysfunction). Each item is given a score between 0 and 3, and the total score on the 7 subscales yields the PSQI score. Total PSQI scores range between 0 and 21, where a PSQI score higher than 5 indicates poor sleep quality. The reliability coefficient of the original scale is 0.83 [29], while the scale translated into Turkish by Ağgün et al. (1996) has a Cronbach's alpha reliability coefficient of 0.80 [30].

2.5. Intervention

The VASF and the PSQI were administered to the patients as a pretest immediately before they were taken to hemodialysis. Foot reflexology, back massage and tests were administered by the researcher in a 22 °C, completely quiet room, which was equipped with an examination couch to conduct the massages.

The foot reflexology group was given foot reflexology two days a week for four weeks (a total of 8 sessions). The patients were first asked to remove their socks (if any) and then placed in either sitting or lying position, before proceeding to administration of foot reflexology for 30 min, 15 min for each foot. Three to five drops of baby oil were applied at room temperature to facilitate the massage [9,10].

Particular attention should be given to avoiding applying the baby oil in large amounts, as it is thought to decrease the amount of pressure. Foot reflexology begins with relaxation exercises, which involve thumb, finger and squeezing movements and rubbing and patting actions. The application of foot reflexology is performed in a top to down manner, where the actual massage starts on the pituitary gland, hypothalamus, brain and pineal body points of the big toe, followed by massage on the medulla spinalis body point, which is located on the area stretching from the big toe to the middle of the back side of the heel. Pressure is then applied to the solar plexus, after which reflexology techniques are applied to all of the areas corresponding to the nerve projections on the feet. The foot reflexology ends with the performance of the same relaxation exercises mentioned above [9,10].

The back massage group was given back massages two days a week for four weeks (a total of 8 sessions). The patients were asked to lie down on whichever side they felt most comfortable and were then given a back massage for 30 min. Three to five drops of baby oil, applied at room temperature, were used to reduce friction during the massage. The effleurage, petrissage and friction styles of massage were performed [27].

After completion of the back massage and foot reflexology sessions, the VASF and the PSQI were administered to both groups as a posttest. The control group did not receive foot reflexology or back massage but was administered the posttest at the end of the fourth week. Foot reflexology, back massage and tests were administered before the patients were taken to hemodialysis (Fig. 1).

2.6. Data analysis

The statistical analyses were performed with SPSS for Windows. Averages and percentages were used for analysis of descriptive features, while the *t*-test was performed for dependent groups in intragroup comparisons and the ANOVA for intergroup comparisons.

2.7. Ethical considerations

The approval of the Atatürk University Faculty of Health Sciences Ethics Committee and the written permission of the relevant dialysis center were obtained prior to conducting the study. After being informed about the study, the written and oral consent of the patients was obtained.

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