



Original article

Effect of aromatherapy via inhalation on the sleep quality and fatigue level in people undergoing hemodialysis[☆]Gamze Muz^{a,*}, Sultan Taşçı^b^a Nevşehir Hacı Bektaş Veli University, Semra and Vefa Küçük Health College, Department of Nursing, 50300, Nevşehir, Türkiye^b Erciyes University, Faculty of Health Sciences, 38039, Kayseri, Türkiye

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ABSTRACT

The most common problems in hemodialysis patients are sleep disorders and fatigue. This randomized-controlled experimental study was conducted to determine the effect of aromatherapy applied by inhalation on sleep quality and fatigue level in hemodialysis patients. The study was completed in five hemodialysis centers settled in two provinces with 27 intervention group patients and 35 controls, being totally 62 patients, recruited with simple randomization. Ethical approval, informed consent from the individuals and institutional permission were obtained. Data were collected with a questionnaire form and Visual Analogue Scale (VAS) for fatigue, Piper fatigue scale, Pittsburgh Sleep Quality Index (PSQI), and follow-up forms for the patient and the researcher. Aromatherapy inhalation (sweet orange and lavender oil) was performed before going to bed every day for one month to the intervention group patients. No other application has been made to the control group patients except for standard hemodialysis treatment. All of the forms were performed at baseline and at follow-up at the end of the four weeks (baseline and last follow-up), VAS and Piper fatigue scale were performed during follow-ups at the end of every week (the first, second and third follow-ups). Data were statistically analyzed with Independent Samples *t*-test, one way analysis of variance, Pearson correlation analysis, chi-square test, Friedman and Mann Whitney *U* tests and Bonferroni test. $p < 0.05$ was set as statistically significant in comparisons. Mean total and sub-dimension scores of VAS, Piper fatigue scale and PSQI (except for daytime sleepiness dysfunction sub-dimension) of the intervention and control groups at baseline were not significantly different ($p > 0.05$). It was found that mean total and sub-dimension scores of VAS, Piper fatigue scale and PSQI of the intervention group significantly decreased in other follow-ups compared to the control group ($p < 0.05$). Consequently, it was determined that aromatherapy applied by inhalation improved sleep quality, decreased fatigue level and severity in hemodialysis patients. Accordingly, aromatherapy prepared with sweet orange and lavender oil may be recommended to increase sleep quality and to decrease fatigue level of the hemodialysis patients.

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1. Introduction

Recent progress in technology may improve hemodialysis (HD) by extending the lifespan of patients undergoing dialysis, which can cause some physical and mental problems (e.g., fatigue, pain, itching, sleepiness, and depression) (Eti Arslan and Karadakovan, 2010). Iliescu et al. determined that 71% of dialysis patients suffer from poor sleep (Iliescu et al., 2003). Given that sleep disorders occur depending on psychological factors and stress, anxiety and depression can affect the subjective sleep quality of people undergoing dialysis. By contrast, sleep problems may improve because of certain problems as limited lifespan, metabolic changes, pain, diet limitations, excess liquid, dyspnea, fatigue,

cramp, advanced age, hypocapnia with chronic metabolic acidosis, and peripheral neuropathy that affects upper respiratory ways (Kuzeyli Yildirim, Fadiloglu, and Durmaz Akyol, 2004; Parker, 2003; Uzun, Kara, and Iscan, 2003). Fatigue can occur because of sleep disorders among patients undergoing HD. Dialysis and disease progress can affect the quality of life (Liu, 2006; McCann and Boore, 2000; Mollaoglu and Arslan, 2003; O'Sullivan and McCarthy, 2009).

Fatigue is the most common problem that affects daily life function and quality of life in patients with end-stage renal failure (Karakoç, 2008; Liu, 2006; McCann and Boore, 2000; Mollaoglu and Arslan, 2003; Murtagh, Addington-Hall, and Higginson, 2007; O'Sullivan and McCarthy, 2009; Williams, Crane, and Kring, 2007; Yurtsever and Beduk, 2003). People define fatigue as becoming tired quickly, apathy, weakness, and exhaustion. Fatigue decreases physical abilities, increases dependency levels, and affects the quality of life of people by influencing daily life activities, work lives, social life, sexual life, and treatment progress (Karakoç, 2008; Swain, 2000; Yurtsever, 2004). To

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cope with fatigue and insomnia, complementary and integrative methods should be used besides pharmacologic interventions (Chang, Chu, Kim, and Yun, 2008; Imura, Misao, and Ushijima, 2006; Karadag and Karadakovan, 2015; Mitchell and Berger, 2006; Mustian et al., 2007; Tsay, 2004). Integrative treatment methods include yoga, aromatherapy, massage, energy therapy, music therapy, reflexology, acupuncture, and acupressure (Chang et al., 2008; Imura et al., 2006; Karadag and Karadakovan, 2015; Mitchell and Berger, 2006; Mustian et al., 2007; Tsay, 2004). Previous studies have shown that aromatherapy can effectively control some symptoms such as fatigue, insomnia, uremic pruritus, anxiety, and stress (Hsu, Chen, Hwu, Chanc, and Liu, 2009; Imura et al., 2006; Itai et al., 2000; Shahgholian, Dehghan, Mortazavi, Gholami, and Valiani, 2010). In our country, the effect of aromatherapy through sweet orange and lavender oil on sleep problems and fatigue in patients undergoing dialysis has not yet been determined. Thus, this study was conducted to determine the effect of aromatherapy practiced by inhalation (sweet orange and lavender oil) on the sleep quality and fatigue level in people undergoing HD.

1.1. Hypothesis of the study

H₀₁: Aromatherapy (sweet orange and lavender oil) that practiced by inhalation during one month, for 2 min before sleeping is not effective on increase the sleep quality in patients treated with hemodialysis.

H₁₁: Aromatherapy (sweet orange and lavender oil) that practiced by inhalation during one month, for 2 min before sleeping is effective on increase the sleep quality in patients treated with hemodialysis.

H₀₂: Aromatherapy (sweet orange and lavender oil) that practiced by inhalation during one month, for 2 min before sleeping is not effective on decrease fatigue level in patients treated with hemodialysis.

H₁₂: Aromatherapy (sweet orange and lavender oil) that practiced by inhalation during one month, for 2 min before sleeping is effective on decrease fatigue level in patients treated with hemodialysis.

H₀₃: Aromatherapy (sweet orange and lavender oil) that practiced by inhalation during one month, for 2 min before sleeping is not effective on decrease fatigue severity in patients treated with hemodialysis.

H₁₃: Aromatherapy (sweet orange and lavender oil) that practiced by inhalation during one month, for 2 min before sleeping is effective on decrease fatigue severity in patients treated with hemodialysis.

2. Methods

2.1. Study design and sample

This randomized controlled study was conducted with five HD units in two cities in Turkey. This study involved 62 patients: 27 patients comprised the experimental group, whereas 35 patients comprised the control group. These patients were studied between 17.08.2014 and 29.02.2015 (Fig. 1). According to power analysis, $\alpha = 0.05$ and $\beta = 0.20$, and the power of the study was 99.9%.

Inclusion criteria of the study:

- Patients aged 18 and above,
- No eye or hearing disabilities,
- Voluntary participation in the study,
- To undergo HD for 3 months,
- To continue dialysis in the same unit/center,
- To undergo HD treatment for three sessions in one week,
- Not to take any sleeping pill before aromatherapy and during the course of the study,
- To have average or severe fatigue symptoms (Visual Analogue Scale (VAS) fatigue score should be 3 or more)
- To have a score of 5 or more from the Pittsburgh Sleep Quality Index (PSQI),
- To speak Turkish.

Exclusion criteria of the study:

- To have any respiratory system disease,
- To have any allergy to essential oils used,

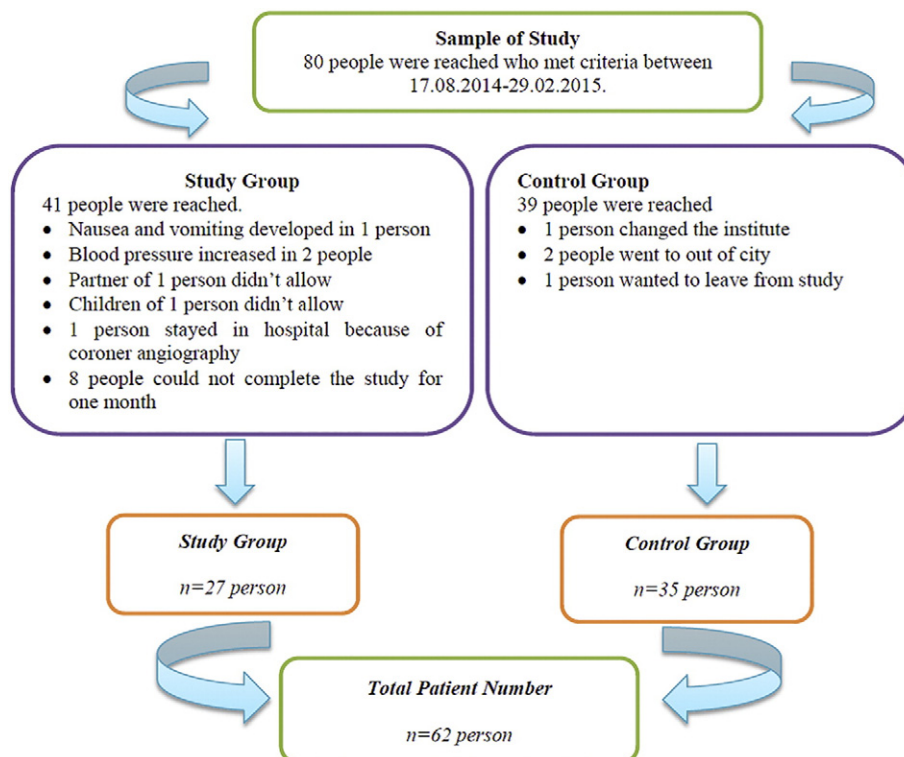


Fig. 1. Sample diagram.

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