

The Effectiveness of Aromatherapy on Sleep Quality, Anxiety, and Fatigue in Patients Undergoing Hemodialysis : A Systematic Review

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ABSTRACT

Introduction: Aromatherapy is a complementary alternative medicine, its a natural way of treatment for patient undergoing hemodialysis. This study systematically reviews the literature to ensure the effectiveness of aromatherapy on sleep quality, anxiety and fatigue in patients undergoing hemodialysis.

Methods: We used "aromatherapy" restricted our search to "sleep quality" and "anxiety" and "fatigue" and used "hemodialysis", keywords and abstract connected by the Boolean operator "AND". Search articles in the international database; EBSCO, Science Direct, Scopus, ProQuest, limited to the last 5 years, 2016 to 2020 obtained 15 International Journal. The inclusion criteria to focused aromatherapy just on sleep quality, anxiety, and fatigue, in patient hemodialysis. The article were all RCT design. Other than that is included in exclusion criteria.

Results: The aromatherapy that used lavender, rose, and orange essential oil. Frequency of therapy there are for every day until three times a week. During one week until ten months. Intervention with aromatherapy gives good result on sleep quality, anxiety and fatigue in patients undergoing hemodialysis.

Conclusions: The results of the reviewed studies shown the beneficial effect of inhalation and massage aromatherapy on sleep quality, fatigue, and anxiety in hemodialysis patients

Keywords : Aromatherapy, sleep quality, anxiety, fatigue, hemodialysis.

BACKGROUND

The most common problems in hemodialysis patients are sleep quality, anxiety, and fatigue (Sevil Bicer, 2017). Hemodialysis is the most important treatment, of the 3 million people undergoing replacement renal treatment, 2.5 million (80%) use hemodialysis. Hemodialysis has

saved the lives of millions. Alternative treatments using complementary alternative medicine approaches have gained popularity in the last decade (Hughes et al., 2018). Aromatherapy is a complementary alternative medicine, its a natural way of treatment for patient undergoing hemodialysis (Muz & Taşçı,





2017). Methods of using aromas include inhalation, massage, and simple use on the skin (Barati et al., 2016). In aromatherapy, essential oils extracted from plants, flowers, fruits and the roots of the trees are used as the therapeutic agent. Aromatherapy has been used to treat improve sleep quality and to reduce anxiety and fatigue. Aromatherapy results in the secretion of endorphins and noradrenaline by influencing the nervous system to create positive psychological and physical effects in the body (Karadag & Samancioglu Baglama, 2019). The major types of aromatherapy are: Massage (with the use of oil) (Malekshahi et al., 2018); Olfactory (inhalation) (Şentürk & Tekinsoy Kartın, 2018). The types of aromatherapy for sleep disorder and anxiety were lavender and rose, and for fatigue were used aromatherapy lavender and orange essential oil.

The purpose of this study was to conduct a systematic review of the effectiveness of interventions aromatherapy to improved sleep quality, reduced anxiety and fatigue in patients undergoing hemodialysis. The results of the systematic review is expected to be applied to the health service. Systematic review is presented in the form of an article that consists of abstract, introduction, material and methods, results, discussion, a conclusion, and references.

METHOD

Strategy for searching for studies

The systematic review search strategy resulted to focused on the limited to the last 5 years. The systematic review method was based on the preferred Reporting Items for Systematic Reviews and Meta-Analyzes (PRISMA) approach.

Search articles using the PICOT framework in the database EBSCO, Science Direct, Scopus, ProQuest. The keywords in English used are "aromatherapy" restricted our search to "sleep quality" and "anxiety" and "fatigue" and used "hemodialysis", keywords and abstract connected by the Boolean operator "AND".

After a number of articles was obtained, the researcher then selected them again according to the specified inclusion and exclusion criteria. The search for articles used keywords that had been determined by the researchers and they also provided limits as per the inclusion and exclusion criteria. The data obtained from EBSCO, Science Direct, Scopus, and ProQuest were then selected one by one by the researchers to determine their suitability. After obtaining articles that were in accordance with the researchers' intentions, the articles were analyzed one by one and grouped to get the results. The next step was to discuss what had been found based on the points obtained from the results.

Inclusion and Exclusion Criteria

The inclusion criteria desired articles were articles published between 2016 – 2020 and articles written in English focusing on the keywords in the search for relevant articles. In this study to focused aromatherapy just on sleep quality, anxiety, and fatigue, in patient hemodialysis. Research design article were RCT (randomize control trial), articles based on a systematic review, narrative review, thesis, books or chapters, were not used in this study. Exclusion criteria is an article about giving intervention in addition to aromatherapy (Figure 1).





RESULT

Study Selection

A total of 170 articles were retrieved from the initial search. This review systematic reviewed 15 selected articles from various countries. Of the after title screening process, 133 were excluded because they had unrelated titles. Of the 45 articles not on hemodialysis patient, 37 not focused on sleep quality, anxiety, and fatigue, and 53 articles not in 2016-2020. Of the 19 excluded studies, 10 articles not a full text, 8 articles not RCT and 4 articles duplicates removed. At the end of the process, 15 studies were included in this systematic review (Fig. 1. is a study selection process).

Characteristic of the study

Population characteristics in all studies only included aromatherapy just on sleep quality, anxiety and fatigue. The identified methods intervention for used for aromatherapy were inhalation ($n = 13$) and massage ($n = 2$). The studies were conducted on 923 hemodialysis patients having a mean age of 41 – 70 years. Most participants were female ($n=54\%$).

Inhalation and massage aromatherapy

The aromatherapy doses were one to six drops, but the most frequent dose used was three drops. The treatment frequency was every day to three days a week, but the most common frequency was three days a week. The administration method differed between studies. In most, the method used for inhalation aromatherapy was by diluting the droplets and pouring the solution onto a cotton ball /gauze to be placed on the patient's collar at an appropriate distance (7–30 cm). The patient was then asked to breath normally

for a few minutes and the cotton ball was discarded (Sevil Bicer, 2017).

The massage aromatherapy doses differed by study and ranged from one to three drops of 0.1–5 ml (Azimpour et al., 2019). The treatment frequency was three days a week. The administration method differed. In most studies, the method used for massage aromatherapy was lubrication and massage by the researcher of the target area (hand, face, or palm) of the patient with oil combined with aromas for 5 to 10 minutes (Azimpour et al., 2019; Malekshahi et al., 2018). Massage aromatherapy was performed during dialysis in most studies. The duration per session was 15 minutes. The total duration of intervention was four weeks (Malekshahi et al., 2018).

Sleep quality

There are five studies evaluated the effect of aromatherapy on improving sleep quality in hemodialysis patients. They used inhalation and massage aromatherapy. The aroma used was lavender and orange. All of the aromas had a positive effect on improving sleep quality in five studies (Azimpour et al., 2019; Malekshahi et al., 2018; Muz & Taşçı, 2017; Şentürk & Tekinsoy Kartın, 2018; Taşan et al., 2019). The results of the studies indicated a positive effect for lavender and orange on improving the sleep quality of patients undergoing hemodialysis (Muz & Taşçı, 2017).

Anxiety

There are six studies evaluated the effect of aromatherapy on reducing anxiety in hemodialysis patients. All used inhalation aromatherapy. The aromas used was lavender and rose aromatherapy reduced anxiety in patients undergoing hemodialysis.





Lavender aromatherapy had a positive effect on reducing anxiety in three studies (Karadag & Samancioglu Baglama, 2019; Kiani et al., 2016; Şentürk & Tekinsoy Kartin, 2018), one studies shown no significant used lavender aromaterapy on anxiety (Bagheri-Nesami et al., 2017), and rose aromatherapy significant to reduced anxiety in two studies (Barati et al., 2016; Tayebi et al., 2017). The result lavender and rose aromatherapy reducing anxiety in patients undergoing hemodialysis (Kiani et al., 2016).

Fatigue

Seven studies addressed the effect of aromatherapy on reducing fatigue in hemodialysis patients. All of them used inhalation aromatherapy. The aromas used included lavender, orange (Ahmady et al., 2019; Sevil Bicer, 2017). Lavender aromatherapy had a positive effect on reducing fatigue in all studies. Orange aromatherapy in two studies had a positive effect on reducing fatigue (Ahmady et al., 2019; Hassanzadeh et al., 2018)

DISCUSSION

In this systematic review was conducted to determine the effect of aromatherapy on sleep quality, anxiety, and fatigue in hemodialysis. A review of the literature found 15 relevant studies conducted on 923 hemodialysis patients. The most commonly used method was inhalation aromatherapy and the most common aroma used was lavender. Most studies have shown the beneficial effect of lavender on fatigue among patients undergoing hemodialysis. Studies show a positive effect for aromatherapy on improving sleep quality in patients undergoing hemodialysis. Similar to study Farideh and Somayeh's in hemodialysis patients (Azimpour et al., 2019;

Malekshahi et al., 2018). There was no difference though with the massage aromatherapy method, this should be due to the similarity in duration, session length, session frequency, study design, scale used and the type of aroma used. Research has shown a positive effect of aromatherapy on sleep quality in hemodialysis patients (Azimpour et al., 2019; Malekshahi et al., 2018).

Most studies have shown the beneficial effect of lavender on anxiety among patients undergoing hemodialysis (Karadag & Samancioglu Baglama, 2019; Kiani et al., 2016; Şentürk & Tekinsoy Kartin, 2018). In contrast, according to Bagheri et al, a research study conducted showed that lavender does not affect anxiety in hemodialysis patients. Bagheri et al, the present study showed that the severity of anxiety did not differ significantly between the two groups before, two and four weeks after the intervention. However, the two groups differed significantly in the severity of depression before, two and four weeks after the intervention. The effects of different concentrations of lavender essential oil on anxiety and depression have been examined in a number of studies, yielding conflicting results (Bagheri-Nesami et al., 2017). Evaluated the effects of inhalation with lavender essential oil 10% for 5 minutes on anxiety prior to a scheduled colonoscopy or esophagogastroduodenoscopy. The control group was given inert oil (placebo) for inhalation. They found that aromatherapy had no effects on the level of anxiety in patients scheduled for colonoscopy or esophago gastro duodenoscopy. Lavender does not affect the anxiety of patients colonoscopy is may be due to larger sample size and patients





physical and psychological conditions of included studies in current systematic review, most evidence suggests a beneficial effect of lavender on anxiety level (Bagheri-Nesami et al., 2017). Rose aromatherapy also had a positive effect on anxiety levels in hemodialysis patients (Barati et al., 2016; Tayebi et al., 2017). Lavender aromatherapy was shown to reduce fatigue in hemodialysis patients. Individual Studies on middle age women showed similar positive effects of aromatherapy on fatigue that it is may be due to same dose and frequency of aromatherapy sessions (Bagheri-Nesami et al., 2016). As well as Sevil Bicer et al study showed a positive effects of aromatherapy on fatigue in patients with hypertensive nephrosclerosis which it is may be due to same design and total numbers of sessions of included studies in current study. Orange and rose also were shown to reduce fatigue in patients undergoing hemodialysis. The results of a study on diabetic patients also show the positive effect of aromatherapy on fatigue (Ahmady et al., 2019). This is should be due to chronic disease conditions in the patients in this study including the reasons for patients undergoing hemodialysis.

CONCLUSION AND RECOMMENDATION

The results of the reviewed studies shown the beneficial effect of inhalation and massage aromatherapy on sleep quality, fatigue, and anxiety in hemodialysis patients. The results showed that aromatherapy improved sleep quality in hemodialysis patients. Considering it appears that aromatherapy can be used as an inexpensive, fast acting and effective treatment to reduce the fatigue

and anxiety levels in hemodialysis patients subject to further study to assure the safety and effectiveness of the procedures. The results of study included suggesting that the dialysis health care team could use two different aromatherapy methods (inhalation and massage) using an appropriate dose of aroma (lavender, rose, and orange) as complementary therapy to improve on sleep quality, to reduce on anxiety, and fatigue. Also can be improve the quality of life in hemodialysis patients, as well as the correct choice of dosage and frequency of aromatherapy in several studies due to limitations in the amount of research required to conduct further research.

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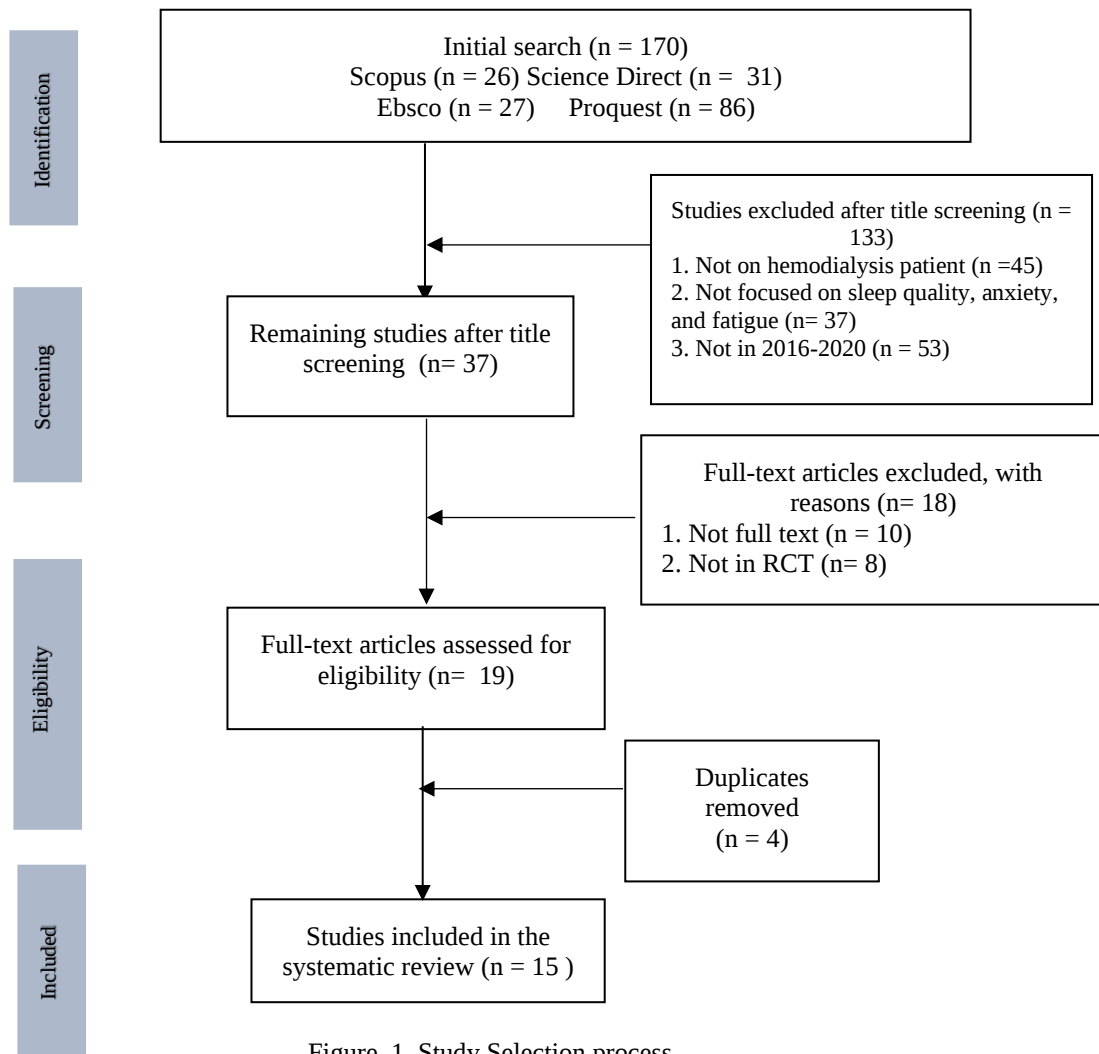


Figure. 1. Study Selection process

APPENDICES

Author	Place	Design	Time and sample size	Result
(Arzu et al, 2018)	Turkey	RCT	1 week, 34 respondents	Significant to reduced anxiety level and improved on sleep quality
(Gamze et al, 2017)	Turkey	RCT	4 weeks, 62 respondents	Aromatherapy significant improved on sleep quality and fatigue
(Soma et al, 2019)	Iran	RCT	4 weeks, 80 respondents	Significant effect of massage aromatherapy on sleep quality





(Tayebi Ali et al, 2017)	Iran	RCT	4 weeks, 60 respondents	Significant positive to depression, reduced anxiety and stress
(Sevil bicer et al, 2017)	Turkey	RCT	1 week, 50 respondents	Significant positive reduced on fatigue
(Tasan et al, 2019)	Turkey	RCT	6 weeks, 60 respondents	Significant to improved on sleep quality
(Bagheri et al, 2017)	Iran	RCT	4 weeks, 72 respondents	No Significant positive effect on anxiety and Significant positive effect on depression
(Farideh et al, 2018)	Iran	RCT	4 weeks, 80 respondents	Significant effect for massage aromatherapy improved on sleep quality
(Balouchi et al, 2016)	Iran	RCT	4 weeks, 30 respondents	Significant effect to reduced on fatigue
(Bagheri et al, 2016)	Iran	RCT	4 weeks, 59 respondents	Significant effect to reduced on fatigue
(Kiani et al, 2016)	Iran	RCT	4 weeks, 35 respondents	Lavender aromatherapy significant to reduced on anxiety
(Barati et al, 2016)	Iran	RCT	4 weeks, 46 respondents	Rose aromatherapy significant reduced on anxiety
(Hassanzadeh et al, 2018)	Iran	RCT	10 months, 105 respondents	Significant effect from aromatherapy to reduced fatigue
(Karadag et al, 2019)	Turkey	RCT	9 months, 60 respondents	Significant to reduced on fatigue and anxiety
(Ahmady et al, 2019)	Iran	RCT	8 months, 90 respondents	Significant to reduced fatigue level

