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EFFECTIVENESS OF LAVENDER AROMATHERAPY INHALATION ON HEMODIALYSIS SIDE EFFECTS IN PATIENTS WITH CHRONIC RENAL FAILURE

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ABSTRACT

Chronic renal failure (CKD) is a chronic condition resulting in loss of kidney function that requires complex medical and nursing management. It affects 10% of the population worldwide and is expected to increase to 30% by 2050. This study aimed to determined effectiveness of lavender aromatherapy inhalation on hemodialysis side effect in patient with chronic renal failure. Methods of this study using quasi experimental involving 19 patient with CRF in Haemodialysis unit. Based on the results of analysis using the Paired T-Test Sample statistical test paired obtained p-value = 0.000 (p <0.05) which means there is a difference in average anxiety and has effectiveness before being given Lavender aromatherapy and after being given Lavender aromatherapy.The use of lavender aromatherapy is an independent nursing intervention that has no side effects, is easy to use, non-invasive, and cost-effective. The shortcomings in this study are that the study was only conducted for one day and only measured anxiety, for other side effects such as fatigue, sleep quality disorders, AVF puncture pain were not carried out by the group due to limited practice time in the room.

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1. INTRODUCTION

Chronic renal failure (CKD) is a chronic condition resulting in loss of kidney function that requires complex medical and nursing management. It affects 10% of the population worldwide and is expected to increase to 30% by 2050 (Mohamed & Hafez, 2019; Wijaya & Padila, 2019). In 2018, the Global Burden of Disease estimated that there were 5-10 million deaths/year caused by kidney disease (Luyckx et al., 2018). In Indonesia, the prevalence of Chronic Kidney Failure disease based on a doctor's diagnosis in the population aged ≥15 years in 2013 was 2.0‰ and increased in 2018 by 3.8‰ or around one million people. Meanwhile, Chronic Renal Failure patients who underwent hemodialysis in 2015 were 51,604 patients, then increased in 2017 to 108,723 patients. In the Kenanga room of Sumedang Regency Hospital, Chronic Kidney Failure is included in the top 5 diseases that are often treated. Data in February 2023 patients with Chronic Kidney Failure were 16 people. Of the 16 patients who underwent hemodialysis were 5 people. The Haemodialysis Installation at Sumedang Regency Hospital serves 22 hemodialysis patients per day. Most patients are scheduled to undergo hemodialysis 2x/week.

Hemodialysis is the most commonly used therapeutic intervention for patients with end-stage renal disease. Although HD is generally a safe procedure, complications related to hemodialysis therapy are common. The most commonly associated complications include hypotension, muscle cramps, nausea and vomiting, headache, pruritus, fever, chills, depression, sleep problems and fatigue, pain and anxiety (Raja & Seyoum, 2020). Drug-treated hemodialysis complications are associated with side effects and in the long run lead to dependence and exacerbation of disease-related complications, in addition hemodialysis complications are also associated with high treatment-related costs that must be incurred annually. Replacing the original treatment with Complementary and Alternative Medicine (CAM) has gained popularity over the past decade (Dehghan et al., 2020). One of the CAM therapies is using aromatherapy because aromatherapy is a cheap and popular method that is often used by the public.

Aromatherapy as a non-pharmacological method, has been exploited in many studies due to its harmless and convenient use. Aromatherapy uses fragrant oils extracted from flowers and plants to treat various diseases. Aromatherapy is part of herbal medicine with the same basis of action as modern pharmacology and can produce physiological or psychological benefits. One of the essential oils that is often used is lavender essential oil.

Lavender is one of the herbs used in aromatherapy. Lavender belongs to the lamiaceae family with the scientific name lavandula angustifolia. Many studies have discussed its anti-pain, antianxiety and antidepressant effects, and sleep enhancement. Some researchers believe that lavender exerts its psychological effects through effects on the limbic system, especially the amygdala and hippocampus (Jafari-Koulaee et al., 2020; Beyliklioğlu & Arslan, 2019; Özkaraman et al., 2018).

The use of lavender oil inhalation has attracted the attention of many researchers, this is because this technique is easy to do and has been shown to have a positive effect on several complaints felt by patients, especially hemodialysis patients. Research conducted by hemodialysis Özdemir & Akyol (2021) found that lavender oil inhalation can affect hemodialysis complications in the form of a significant decrease in AVF puncture pain in patients. Similar research results on hemodialysis complications were conducted by hemodialysis Varaei et al., (2021) this study found that inhaling lavender aromatherapy can reduce fatigue in hemodialysis patients.

This study is a systematic review study that specifically discusses the effects of lavender aromatherapy on hemodialysis side effects, besides that this study also collects articles that only discuss one type of aromatherapy with one specific technique, namely the administration of lavender aromatherapy with inhalation techniques so that the conclusions obtained in the systematic review can be used as a detailed evidence-based practice so that it is expected to be easier to apply in nursing interventions.

2. METHOD

This type of research uses pre-experiments with the design design used in this study is one group pre test-post test in this design there is no comparison group (control). One group is the treatment group. Before treatment in the treatment group, an initial measurement (pre-test) was carried out to determine the ability or initial value of the respondent before. Furthermore, the treatment group was intervened in accordance with the planned trial protocol. In addition to the treatment, a final measurement (post test) was carried out on the treatment group to determine the effect of the treatment on the respondents.

The population in this study were all patients who performed hemodialysis in the Haemodialysis room of the Sumedang Regency Hospital on April 6, 2023.The sample in this study were patients who were running hemodialysis in the Haemodialysis room of the Sumedang Regency Hospital on April 6, 2023 afternoon shift with a total of 19 respondents with the criteria being registered as patients in the Haemodialysis Installation of the Sumedang Regency Hospital and able to communicate well.

The instrument used was the Back Anxiety Inventory (BAI) questionnaire with 21 statement items, with the answer options Never = 1, Almost Never = 2, Sometimes = 3, Often = 4. Bivariate analysis was conducted to determine the effectiveness of Lavender aromatherapy on anxiety in patients undergoing hemodialysis. Bivariate analysis used Paired T Test statistical test to see the difference between pre test and post test.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1 Frequency Distribution of Anxiety Before Being Given Lavender Aromatherapy in the Hemodialysis Room at Sumedang Regency Hospital

Table 1.
Frequency Distribution of Anxiety Before Being Given Lavender Aromatherapy in the Hemodialysis Room

Sumedang Regency Hospital

Anxiety	Frequency	Percentage (%)
Low	1	5,3
Medium	4	21,1
High	14	73,7
Total	**19**	**100**

Based on table 1 above, it can be seen that the frequency distribution of anxiety before being given Lavender aromatherapy in the Hemodialysis room at Sumedang Regency Hospital is mostly in the high category as many as 14 people (73.7%).

3.1.2 Frequency Distribution of Anxiety After Being Given Lavender Aromatherapy in the Hemodialysis Room at Sumedang Regency Hospitalm

Table 2.
Frequency Distribution of Anxiety after Lavender Aromatherapy in Hemodialysis Room
Sumedang Regency Hospital

Anxiety	Frequency	Percentage (%)
Low	17	89,5
Medium	0	0
High	2	10,5
Total	**19**	**100**

Based on table 4.2 above, it can be seen that the frequency distribution of anxiety after being given Lavender aromatherapy in the Hemodialysis room at Sumedang Regency Hospital is mostly in the low category as many as 17 people (89.5%).

3.1.3 Effectiveness of Lavender Aromatherapy Inhalation on Anxiety in the Hemodialysis Room at Sumedang Regency Hospital

Table 3.
Effectiveness of Lavender Aromatherapy Inhalation on Anxiety in the Hemodialysis Room
Sumedang Regency Hospital

Anxiety	N	Mean	SD	Correlation	P-Value
Pre Test	19	23,368	17,020	0,446	0,000
Post Test					

Based on the results of analysis using the Paired T-Test Sample statistical test paired obtained p-value = 0.000 (p <0.05) which means there is a difference in average anxiety and has effectiveness before being given Lavender aromatherapy and after being given Lavender aromatherapy. Before being given Lavender aromatherapy, most of the respondents' anxiety frequency was in the high category, while after being given Lavender aromatherapy, most of the respondents' anxiety frequency was in the low category, so it can be concluded that there is an effectiveness of Lavender aromatherapy on anxiety in Chronic Kidney Failure patients undergoing hemodialysis. The results of the Paired T-Test Sample statistical test also found that r count = 0.446, which is positive, which means that the more often Lavender aromatherapy is given, the success in reducing anxiety increases.

3.2. Discussion

Anxiety is a negative emotion felt by humans, the emergence of tense feelings and thoughts, usually accompanied by symptoms of fast heartbeat, sweating, and tightness (Annisa & Ifdil, 2016). anxiety is a normal feeling that humans have, because when feeling anxious humans are made aware and reminded that there is a threatening dangerous situation. However, when anxiety that was normal and can be controlled

turns into anxiety that is continuous and cannot be controlled, it will interfere with daily activities (Dewi & Fauziah, 2018).

Anxiety in hemodialysis patients is a complex phenomenon related to behavioral, psychological, physical, and mental. Changes in family marriage and social life; dependence on the dialysis machine, health care team, and family; sexual dysfunction; and economic problems that occur with hemodialysis therapy cause patients to suffer from anxiety. Anxiety is one of the most common complications of hemodialysis, accounting for 38%.

In a study conducted by Senturk et al (2018) with the title Effect of Lavender Oil Application Via Inhalation Pathway on Hemodialysis Patients' Anxiety Level and Sleep Quality. The study was conducted on 34 Hemodialysis patients who were divided into 2 groups, namely the intervention group and the control group, the results showed that lavender oil inhalation for a week can reduce anxiety as seen from the decrease in anxiety scores on the psychological and somatic subscales. Lavender oil inhalation can also improve sleep quality with increased sleep duration and increased average sleep score with VAS.

Research conducted by Ahmady et al (2019) with the title Comparing Effects Of Aromatherapy With Lavender Essential Oil And Orange Essential Oil On Fatigue Of Hemodialysis Patients. Where Respondents in this study totaled 82 patients at Imam Reza Hospital with most of the subjects being male. It was mentioned that lavender oil inhalation can reduce the severity of fatigue among patients undergoing hemodialysis. Fatigue is one of the inevitable consequences of hemodialysis, and most hemodialysis patients suffer from high levels of fatigue. Some of the factors that cause it include nutritional deficiencies, physiological changes, abnormal haemoglobin and ureum levels, sleep disorders and depression. Lavender aromatherapy inhalation is a method that is easy to perform, affordable and effective in reducing patient fatigue levels.

Research conducted by Karadag et al (2019) with the title The Effect of Aromatherapy on Fatigue and Anxiety in Patients Undergoing Hemodialysis Treatment. The study was conducted on 30 intervention group patients and 30 control group patients in Turkish hospitals. The results showed a statistically significant difference between the prestest and posttest scores of the fatigue severity scale (t=7.177, P=0.001) and Beck Anxiety Inventory (t=10.371, P=0.001). The mean scores of fatigue and anxiety decreased after aromatherapy was administered.

In a study conducted by Sahin et al (2021) entitled Effect of Lavender Aromatherapy on Arteriovenous Fistula Puncture Pain and the Level of State and Trait Anxiety in Hemodialysis Patients. It was stated that from the intervention carried out on 32 intervention group patients, it was found that the use of lavender aromatherapy could significantly reduce the pain score due to arteriovenous fistula (AVF) puncture, namely 6.24 ± 1.24 in the first session, to 3.56 ± 1.28 in the second session in intervention group patients The average STAI score decreased in intervention group patients after aromatherapy was 39.12 ± 6.71 in the state anxiety subscale and 30.04 ± 1.39 in the trait anxiety subscale.

In a study conducted by Niken at al (2022) with the title The Effect Of Lavender Essential Oil Aromatherapy On Sleep Quality In Hemodialysis Patients. Where the purpose of the study was to determine the effect of lavender essential oil aromatherapy on sleep quality in hemodialysis patients. The study was conducted on 32 hemodialysis patients who were divided into two groups, namely 16 intervention groups and 16 control groups. The intervention was carried out for 3 times during intra hemodialysis. The instrument used was the Pittsburgh Sleep Quality Index (PSQI) which was applied before and after the intervention. Analysis of test data using an independent sample test showed that there was a difference in the average sleep quality score with a p value of 0.000, meaning that there was an improvement in sleep quality in patients undergoing hemodialysis in the intervention group. Lavender Essential Oil Aromatherapy can be applied as an effective nursing intervention to overcome sleep quality disorders in patients undergoing hemodialysis.

Lavender aromatherapy inhalation is proven to reduce the level of anxiety experienced by hemodialysis patients, this can be seen from the four articles evaluated, four articles showed that anxiety in hemodialysis patients decreased after lavender aromatherapy inhalation. These results are similar to the results of other studies in different patient groups, namely, lavender aromatherapy inhalation can reduce anxiety in patients experiencing anxiety due to burn pain, patients undergoing chemotherapy, in patients experiencing preoperative anxiety and in postpartum mothers (Tsai et al., 2020; Jaruzel et al., 2019; Özkaraman et al., 2018).

Researchers argue that the administration of lavender aromatherapy inhalation has a significant effect on reducing the anxiety of Chronic Renal Failure patients undergoing hemodialysis. Lavender is thought to have a diazepam effect. The limbic system provides tranquilizing effects and relaxing effects by interacting with the cerebral cortex and affecting heart rate, blood pressure, breathing, stress, and hormonal levels (Karadag & Baglama, 2019). The use of lavender aromatherapy is an independent nursing intervention that has no side effects, is easy to use, non-invasive, and cost-effective. The shortcomings in this study are that the study was only conducted for one day and only measured anxiety, for other side effects such as fatigue, sleep quality disorders, AVF puncture pain were not carried out by the group due to limited practice time in the room.

4. CONCLUSION

Lavender aromatherapy inhalation is effective in overcoming hemodialysis complications of fatigue, anxiety, AVF puncture pain and improving sleep quality. Lavender is thought to have a diazepam effect. The limbic system provides tranquilizing and relaxing effects by interacting with the cerebral cortex and affecting heart rate, blood pressure, breathing, stress, and hormonal levels (Karadag & Baglama, 2019).

The results of research conducted on the Effectiveness of Lavender Aromatherapy Inhalation on Hemodialysis Side Effects in Chronic Kidney Failure Patients in the Hemodialysis Room at Sumedang Regency Hospital can be concluded as follows.

1. The description of anxiety before being given Lavender aromatherapy in the Hemodialysis room at Sumedang Regency Hospital was mostly in the high category 73.7%.
2. The description of anxiety after being given Lavender aromatherapy in the Hemodialysis room at Sumedang Regency Hospital is mostly in the low category 89.5%.
3. There is an Effectiveness of Lavender Aromatherapy Inhalation on Hemodialysis Side Effects (Anxiety) in Chronic Kidney Failure Patients in the Hemodialysis Room at Sumedang Regency Hospital with a p-value of 0.000 ($p < 0.05$).

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