Jurnal Aisyah: Jurnal Ilmu Kesehatan

Volume 7, Issue S2, 2022, p. 285–290
ISSN 2502-4825 (print), ISSN 2502-9495 (online)

The Effect of Aromatherapy on Anxiety in Patients Undergoing Hemodialysis during COVID-19 Pandemic

Aris Setyawan[1], Syahruramdhani Syahruramdhani[2]*, Niken Setyaningrum[1]

[1] School of Nursing, Institute of Health Science, Surya Global Yogyakarta, Indonesia
[2] School of Nursing, Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta, Indonesia

ARTICLE INFO

Article history:

Received 15 July 2021
Accepted 29 October 2022
Published 10 November 2022

Keyword:

Aromatherapy
Lavender
Anxiety
Hemodialysis
COVID-19

A B S T R A C T

The COVID-19 pandemic causes psychological issues such as anxiety, particularly in kidney failure patients who must undergo hemodialysis. Aromatherapy Lavender could be used to help patients overcome anxiety. The purpose of this study was to see how lavender aromatherapy affected the anxiety of patients undergoing hemodialysis during the COVID-19 pandemic. The research design of this study was a quasi-experimental with a pre-post-test control group. A simple random sampling technique was used to select 32 patients as respondents. The Zung-Self Rating Anxiety Scale is used by the instrument (ZSAS). The parametric t-Test test was used to analyze the data. The study's findings revealed a significant decrease in the intervention group's pre-post value, with a p-value of 0.001. The delta value of the control and intervention groups differed significantly, with a p-value of 0.001. During the pandemic, lavender aromatherapy is effective in reducing anxiety of hemodialysis patients. Nurses can use aromatherapy lavender as a complementary therapy to help patients undergoing hemodialysis overcome their anxiety.

Kata kunci:

Aromaterapi
Lavender
Kecemasan
Hemodialisis
COVID-19

**) corresponding author*

Syahruramdhani

School of Nursing, Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta, Indonesia
Jl. Brawijaya, Kasihan, Bantul, Yogyakarta 55183

Email: syahruramdhani@umy.ac.id
DOI: 10.30604/jika.v7iS2.1440

A B S T R A K

Pandemi COVID-19 menyebabkan masalah psikologis seperti kecemasan, terutama pada pasien gagal ginjal yang harus menjalani hemodialisis. Aromaterapi Lavender dapat digunakan untuk membantu pasien mengatasi kecemasan. Tujuan dari penelitian ini adalah untuk melihat bagaimana aromaterapi lavender mempengaruhi kecemasan pasien yang menjalani hemodialisis selama pandemi COVID-19. Desain penelitian penelitian ini adalah eksperimen semu dengan pre-post-test control group. Teknik simple random sampling digunakan untuk memilih 32 pasien sebagai responden. Skala Kecemasan Peringkat Zung-Self digunakan oleh instrumen (ZSAS). Uji parametrik t-Test digunakan untuk menganalisis data. Temuan penelitian mengungkapkan penurunan yang signifikan dalam nilai pra-pasca kelompok intervensi, dengan nilai p 0,001. Nilai delta kelompok kontrol dan intervensi berbeda secara signifikan, dengan p-value 0,001. Di masa pandemi, aromaterapi lavender efektif mengurangi kecemasan pasien hemodialisis. Perawat dapat menggunakan aromaterapi lavender sebagai terapi komplementer untuk membantu pasien yang menjalani hemodialisis mengatasi kecemasannya.

INTRODUCTION

The pandemic COVID-19 has had a significant impact on mental health and overall health. Anxiety, depression, and stress are all on the rise during the pandemic, compared to before the pandemic (Kwong et al., 2021; Pierce et al., 2020). Anxiety is one of the most common mental health issues in the community, particularly among people who have kidney failure and must visit the hospital on a regular basis for hemodialysis.

Previous research found that the proportions of anxiety and depression symptoms among patients receiving maintenance hemodialysis during the pandemic were 34.89% and 30.02%, respectively. (Hao et al., 2021). Another study found that the prevalence of depressive disorder and anxiety disorder was around 66% and 61%, respectively, among chronic kidney disease (CKD) patients. In these patients, depression and anxiety were significantly related to gender, occupation, income, and duration of haemodialysis (Dehkordi et al., 2017).

One of the causes of anxiety and other psychological problems is linked to negative clinical outcomes such as increased hospitalizations and mortality (Farrokhi et al., 2014; Palmer et al., 2013) and the COVID-19 pandemic has heightened the anxiety previously felt by hemodialysis patients (Hao et al., 2021). Patients who experience excessive anxiety will have a negative impact on adherence to the planned treatment as well as the outcome of treatment, which will result in death.

According to one study, anxiety and depression significantly reduce the quality of life in elderly hemodialysis patients. Moreover, several studies have found that depression and anxiety are strong predictors of suicidal ideation, and researchers have attempted to reduce the risk of suicidality. (Dehkordi et al., 2017). Furthermore, the patient's anxiety will worsen his physical health. Anxiety can activate the hypothalamus, which then secretes Corticotrophin Releasing Hormone (CRH) to stimulate the secretion of Adrenocorticotropin Hormone (ACTH) and the hormone cortisol, causing blood pressure to rise (Sherwood, 2021).

As a result, it is critical to manage the patient's anxiety using a simple and safe method so that the hemodialysis process runs smoothly. Non-pharmacological methods of anxiety management are preferred because they have fewer side effects and are safe for long-term use (Reyes et al., 2020). Aromatherapy is one of the non-pharmacological treatments for anxiety that is recommended as a complementary therapy. Previous research has found that aromatherapy has a positive effect on anxiety reduction (Dehkordi et al., 2017; Reyes et al., 2020; Setyawan et al., 2021). Aromatherapy is widely used to treat anxiety because it is regarded as a safe, effective, easily accessible, and low-cost treatment (Reyes et al., 2020). A meta-analysis revealed that aromatherapy with various essential oils can significantly reduce anxiety, but lavender essential oil outperformed rose, orange, and others (Gong et al., 2020).

Lavender is an essential oil that has long been used to treat anxiety due to its calming, sleep-stimulating properties, anxiolytic (anti-anxiety) effects, and other psychological effects (Seifritz et al., 2019; Setyawan & Oktavianto, 2020; Zhang et al., 2016). Aromatherapy with lavender essential oil is expected to be one of the complementary therapies used to help patients relax and the hemodialysis process run smoothly.

A few studies have looked specifically at inhalation aromatherapy in hemodialysis patients. Furthermore, the efficacy of aromatherapy in hemodialysis patients is debatable. On the other hand, not all studies conducted confirm the efficacy of this method, and in some studies, aromatherapy had little effect. The purpose of this study was to see how aromatherapy affected the anxiety of COVID-19 pandemic patients undergoing hemodialysis.

METHOD

Participant characteristics and research design

The study included patients with chronic kidney failure who underwent hemodialysis at the Nur Hidayah Hospital in Yogyakarta, as well as patients with full awareness, no olfactory disorders, and no allergies. This is a quasi-experimental study with a pre-post test control group design. This study was carried out between January and March of 2022. The ethics approval number for this study is 5.12/KEPK/SSG/III/2022.

Sampling procedures

For sampling, simple random sampling is used. To control for the majority of threats to internal validity, respondents were randomly classified or assigned to groups (random assignment). There were 32 patients in total who provided samples. As randomization, a list of the number and names of patients was used. With 16 as the control group and 16 as the intervention group (received lavender aromatherapy treatment by inhalation/inhaling aromatherapy that had been dropped on cotton buds), the odd numbers entered the control group and the even numbers entered the intervention group.

Measures

Both of group was asked to complete an anxiety questionnaire (pretest) on the first day, and then the intervention began. Giving lavender aromatherapy three times while the patient was undergoing hemodialysis After being connected to the dialysis machine, the patient was given a cotton bud soaked in three drops of lavender essential oil. The cotton bud is placed 1 cm below the patient's nose, and the patient is instructed to breathe normally for 15 minutes. After the third aromatherapy treatment, the patient was asked to rest for 10 minutes before filling out an anxiety questionnaire (post-test). Patients in the control group only underwent the procedure.

In this study, the Zung-Self Rating Anxiety Scale (ZSRAS) instrument, which has been validated and reliable, is used to assess the patient's anxiety level. Each scale contains 20 items, each of which is scored on a four-point Likert scale to assess the frequency or severity of anxiety symptoms: "1" denotes no or little time, "2" denotes a small amount of time, "3" denotes a lot of time, and "4" denotes most or all of the time. Questions with reverse scoring were scored as "4, 3, 2, and 1." The results were classified into two categories: no anxiety and anxiety, with thresholds for identifying anxiety of 20 points.

Data analysis

SPSS, version 16.0, was used for statistical analysis. The Paired T-test and the Independent T-test were used to

compare two groups. P values of 0.05 were deemed significant.

RESULTS AND DISCUSSION

Based on the Table 1. it can be concluded that of the 16 control group respondents male and female have the same percentage, and the majority are aged 46-59 and have elementary and junior high school education. Meanwhile, of the 16 respondents in the intervention group, the majority were male, aged 46-59 and had elementary – junior high school education.

Table 2 showed the results of the various tests using the Paired t Test, which revealed a significant difference in the pre post value of the experimental group with p 0.05.

Table 3 showed that the independent t-Test test of different delta values of the experimental and control groups produced significant results with a p value of 0.05.

Table 1
Characteristics of Participants

Variables	Control (n=16)	Experiment (n=16)
Gender		
Male	8 (50%)	14 (87.5%)
Female	8 (50%)	2 (12.5%)
Age		
36-45	2 (12.5%)	5 (31.2%)
46-59	8 (50%)	8 (50)
60-70	6 (37.5)	3 (18.7)
Education		
Elementary School	7 (43.7%)	6 (37.5%)
Junior High School	7 (43.7%)	6 (37.5%)
Senior High School	2 (12.5%)	4 (25%)

Table 2
Paired t Test

Group	Pre test Mean+SD	Post test Mean+SD	P value
Control	44.94+2.0	46.25+4.0	.128
Experiment	45.94+5.51	28.50+2.7	.000

* $p < .05$.

Table 3
Independent t Test

Group	Min-Max	∆ Mean	P value
Control	33-52	-1.31	.000
Experiment	23-55	17.44	

* $p < .05$.

The purpose of this research was to determine how lavender aromatherapy affected anxiety in hemodialysis patients. Our findings show that there is a significant difference in the intervention group's mean anxiety score before and after inhaling lavender aromatherapy. Meanwhile, there was no significant difference in the control group's average anxiety score.

The decrease in anxiety in the intervention group was caused by the positive effect of giving aromatherapy. As previous studies explain that giving aromatherapy has a positive effect on psychological problems such as anxiety, stress and depression because of its calming properties (Akbari et al., 2019; Dehkordi et al., 2017; Setyawan et al., 2021). Aromatherapy works by stimulating the central nervous system (CNS) through the olfactory system so that it can increase comfort, relaxation, and pleasant sensations (Igarashi et al., 2014). Aromatherapy used in this study is lavender essential oil. Lavender is widely recommended for dealing with psychological problems because it contains linalool which has an anxyolytic or anti-anxiety effect (Harada et al., 2018; Setyawan & Oktavianto, 2020). This is consistent with the effect of lavender aromatherapy on anxiety reduction in coronary patients (Cho et al., 2013; Karadag et al., 2017) patients undergoing hemodialysis (Dehkordi et al., 2017) during labor (Mansour Lamadah, 2016) coronary artery bypass graft surgery patients (Rajai et al., 2016). In addition, lavender has also been shown to provide many other effects such as sedative, anti-seizure and epilepsy, anti-pain, anti-addictive, anti-bacterial and anti-fungal (Seifritz et al., 2019).

The most common methods of aromatherapy administration are inhalation (direct or by diffusion) and topical application, sometimes via massage (Lindquist et al., 2018). Both are thought to have the ability to reduce anxiety. However, giving aromatherapy by inhalation showed a better effect in reducing anxiety than massage (Gong et al., 2020). In this study, researchers provided aromatherapy by inhalation by inhaling cotton buds that had previously been dripped with lavender essential oil. When inhaled, the essential oil will give a signal to the receptors in the nose.

Through the olfactory bulb, messages are transmitted to the limbic and hypothalamus which causes the brain to release neurotransmitters such as serotonin and endorphins, thereby providing a feeling of comfort. Overall, giving aromatherapy can result in improved emotional health, calmness, and relaxation (Khosravi et al., 2014; Lv et al., 2013; Reyes et al., 2020).

In addition, the use of aromatherapy by inhalation will accelerate the inhibitory effect of Monoamine Oxidise which plays a role in restoring the balance of neurotransmitters (serotonin, norepinephrine, and dopamine) so that it can improve mood. Several compounds that can inhibit Monoamine Oxidise are eugenol, linalool, and benzyl benzoate (Mathiazhagan et al., 2013; Zhang et al., 2016).

LIMITATION OF THE STUDY

There are several limitations to this study that should be mentioned. First, the number of enrolled patients and their distribution area were both limited. Second, the duration of the intervention is still too short to provide more benefits to the patients.

CONCLUSIONS AND SUGGESTIONS

During the pandemic, lavender aromatherapy is effective in reducing anxiety in hemodialysis patients. As a result, nurses can use lavender aromatherapy as a complementary therapy to treat anxiety in hemodialysis patients. More studies involving more hospitals in larger areas are required to generate the results, as are prospective studies to determine the effective duration of lavender aromatherapy for hemodialysis patients.

Acknowledgment

The authors would like to thank everyone who helped with this study, especially the respondents and nurses at Nur Hidayah Hospital.

ETHICAL CONSIDERATIONS

Funding Statement

There were no funds, grants, or other forms of assistance received.

Conflict of Interest Statement

No conflict of interest

REFERENCES

Akbari, F., Rezaei, M., & Khatony, A. (2019). Effect of peppermint essence on the pain and anxiety caused by intravenous catheterization in cardiac patients: A randomized controlled trial. *Journal of Pain Research*, *12*, 2933–2939. https://doi.org/10.2147/JPR.S226312

Cho, M. Y., Min, E. S., Hur, M. H., & Lee, M. S. (2013). Effects of aromatherapy on the anxiety, vital signs, and sleep quality of percutaneous coronary intervention patients in intensive care units. *Evidence-Based Complementary and Alternative Medicine*, *2013*. https://doi.org/10.1155/2013/381381

Lindquist, R., Tracy, M. F., & Snyder, M. (Eds.). (2018). Complementary and alternative therapies in nursing. Springer Publishing Company.

Dehkordi, A. K., Tayebi, A., Ebadi, A., Sahraei, H., & Einollahi, B. (2017). Effects of aromatherapy using the damask rose essential oil on depression, anxiety, and stress in hemodialysis patients: A clinical trial. *Nephro-Urology Monthly*, *9*(6). https://doi.org/10.5812/numonthly.60280

Farrokhi, F., Abedi, N., Beyene, J., Kurdyak, P., & Jassal, S. V. (2014). Association Between Depression and Mortality in Patients Receiving Long-term Dialysis: A Systematic Review and Meta-analysis. *American Journal of Kidney Diseases*, *63*(4), 623–635. https://doi.org/10.1053/j.ajkd.2013.08.024

Gong, M., Dong, H., Tang, Y., Huang, W., & Lu, F. (2020). Effects of aromatherapy on anxiety: A meta-analysis of randomized controlled trials. *Journal of Affective Disorders*, *274*, 1028–1040. https://doi.org/10.1016/j.jad.2020.05.118

Hao, W., Tang, Q., Huang, X., Ao, L., Wang, J., & Xie, D. (2021). Analysis of the prevalence and influencing factors of depression and anxiety among maintenance dialysis patients during the COVID-19 pandemic. *International Urology and Nephrology*, *53*(7), 1453–1461. https://doi.org/10.1007/s11255-021-02791-0

Harada, H., Kashiwadani, H., Kanmura, Y., & Kuwaki, T. (2018). Linalool odor-induced anxiolytic effects in mice. *Frontiers in Behavioral Neuroscience*, *12*. https://doi.org/10.3389/fnbeh.2018.00241

Igarashi, M., Ikei, H., Song, C., & Miyazaki, Y. (2014). Effects of olfactory stimulation with rose and orange oil on prefrontal cortex activity. *Complementary Therapies in Medicine*, *22*(6), 1027–1031. https://doi.org/10.1016/j.ctim.2014.09.003

Karadag, E., Samancioglu, S., Ozden, D., & Bakir, E. (2017). Effects of aromatherapy on sleep quality and anxiety of patients. *Nursing in Critical Care*, *22*(2), 105–112. https://doi.org/10.1111/nicc.12198

Khosravi, M., Khakpour, S., Adibi, L., & Jahromy, M. H. (2014). A Study of the Effect of <i>Citrus aurantium</i> L. Essential Oil on Anxiety and Its Interaction with GABAergic Pathways in Male Mice. *Journal of Behavioral and Brain Science*, *04*(10), 470–476. https://doi.org/10.4236/jbbs.2014.410046

Kwong, A. S. F., Pearson, R. M., Adams, M. J., Northstone, K., Tilling, K., Smith, D., Fawns-Ritchie, C., Bould, H., Warne, N., Zammit, S., Gunnell, D. J., Moran, P. A., Micali, N., Reichenberg, A., Hickman, M., Rai, D., Haworth, S., Campbell, A., Altschul, D., … Timpson, N. J. (2021). Mental health before and during the COVID-19 pandemic in two longitudinal UK population cohorts. *British Journal of Psychiatry*, *218*(6), 334–343. https://doi.org/10.1192/bjp.2020.242

Lv, X., Liu, Z., Zhang, H., & Tzeng, C. (2013). Aromatherapy and the Central Nerve System (CNS): Therapeutic Mechanism and its Associated Genes. *Current Drug Targets*, *14*(8), 872–879. https://doi.org/10.2174/1389450113314080007

Mansour Lamadah, S. (2016). The Effect of Aromatherapy Massage Using Lavender Oil on the Level of Pain and Anxiety During Labour Among Primigravida Women. *American Journal of Nursing Science*, *5*(2), 37. https://doi.org/10.11648/j.ajns.20160502.11

Mathiazhagan, S., Anand, S., Parthiban, R., Sankaranarayanan, B., & Suresh, S. (n.d.). Antidepressant-like effect of ethanolic

extract from Caryophyllus aromaticus in albino rats. In *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS* (Vol. 4, Issue 2). www.iosrjournals.org

Palmer, S., Vecchio, M., Craig, J. C., Tonelli, M., Johnson, D. W., Nicolucci, A., Pellegrini, F., Saglimbene, V., Logroscino, G., Fishbane, S., & Strippoli, G. F. M. (2013). Prevalence of depression in chronic kidney disease: Systematic review and meta-analysis of observational studies. *Kidney International*, *84*(1), 179–191. https://doi.org/10.1038/ki.2013.77

Pierce, M., Hope, H., Ford, T., Hatch, S., Hotopf, M., John, A., Kontopantelis, E., Webb, R., Wessely, S., McManus, S., & Abel, K. M. (2020). Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population. *The Lancet Psychiatry*, *7*(10), 883–892. https://doi.org/10.1016/S2215-0366(20)30308-4

Rajai, N., Sajadi, S. A., Teymouri, F., Zareiyan, A., Siavoshi, S., & Malmir, M. (2016). The Effect of Aromatherapy with Lavender Essential Oil on Anxiety and Stress in Patients Undergoing Coronary Artery Bypass Graft Surgery. *Jundishapur Journal of Chronic Disease Care*, *5*(4). https://doi.org/10.17795/jjcdc-34035

Reyes, Ma. C. G. M., Reyes, Ma. C. G. M., Ribay, K. G. L., & Paragas, E. D. (2020). Effects of sweet orange aromatherapy on pain and anxiety during needle insertion among patients undergoing hemodialysis: A quasi-experimental study. *Nursing Forum*, *55*(3), 425–432. https://doi.org/10.1111/nuf.12447

Seifritz, E., Schläfke, S., & Holsboer-Trachsler, E. (2019). Beneficial effects of Silexan on sleep are mediated by its anxiolytic effect. *Journal of Psychiatric Research*, *115*, 69–74. https://doi.org/10.1016/j.jpsychires.2019.04.013

Setyawan, A., & Oktavianto, E. (2020). Efektifitas Aromaterapi Lavender terhadap Tingkat Kecemasan Menghadapi Osce pada Mahasiswa Keperawatan. *Jurnal Berkala Kesehatan*, *6*(1), 9. https://doi.org/10.20527/jbk.v6i1.8356

Setyawan, A., Oktavianto, E., Opi, N. P., Sekolah, H., Kesehatan, T., Global, S., Ringroad, J., Blado, S., Perjuangan, J. M., & Lor, B. (2021). *Apakah Aromaterapi Peppermint Efektif Terhadap Penurunan Kecemasan Mahasiswa Di Masa Pandemi Covid-19?* http://journal.stikeskendal.ac.id/index.php/Keperawatan

Sherwood, L. (2001). Fisiologi manusia dari sel ke sistem. EGC.

Zhang, N., Zhang, L., Feng, L., & Yao, L. (2016). The anxiolytic effect of essential oil of Cananga odorata exposure on mice and determination of its major active constituents. *Phytomedicine*, *23*(14), 1727–1734. https://doi.org/10.1016/j.phymed.2016.10.017

 ISSN 2502-4825 (print), ISSN 2502-9495 (online)