DOI: 10.36566/ijhsrd/Vol6.Iss2/279
https://ijhsrd.com/index.php/ijhsrd

Indonesian Journal Of Health Sciences Research and Development
e- ISSN: 2715-4718

Research Article

THE EFFECT OF LAVENDER AROMATHERAPY, BENSON RELAXATION THERAPY, AND A COMBINATION OF BOTH ON ANXIETY LEVELS, SLEEP QUALITY, AND BLOOD PRESSURE IN THE ELDERLY

Mara Imbang Satriawan Hasiolan[1], Fauziah H Wada[2] *, Amzal Mortin Andas[3], Indah Puspitasari[4], Ashar Prima[5]

[1]Nursing Science Study Program S-1. Faculty of Health Sciences. Borobudur University
[2] Department of Maternity and Pediatric Nursing, Universitas Bani Saleh
[3,5] Department of Medical and Surgical Nursing, Universitas Bani Saleh
[4] Department of Family and Community Nursing, Universitas Bani Saleh

Corresponding Author :
Fauziah H Wada. E-mail: fauziahwada63@gmail.com, Phone: +6281244726159

ABSTRACT

Background: The increasing number of elderly causes various health problems, one of which is hypertension. If hypertension is not well controlled it can cause psychological and physiological problems. The combination of Benson relaxation therapy and lavender aromatherapy is a non-pharmacological intervention that can be used to manage anxiety, sleep quality, and blood pressure. This study aims to determine the effects of lavender aromatherapy, Benson relaxation therapy, and their combination on anxiety levels, sleep quality, and blood pressure in elderly individuals with hypertension.
Methods: The research design is quantitative with a quasi-experimental approach without a control group. The sampling selection in this study used purposive sampling. The sample consists of elderly individuals at Sentra Bekasi, totaling 90 respondents, divided into 30 respondents for each intervention. After interventions were carried out and data collected, data analysis was conducted using the MANOVA test.
Results: p-value 0.000 indicating a significant effect of intervention type on sleep quality, anxiety, and blood pressure. The next test is the test of between-subjects effects, which shows a significant effect only on the variables of anxiety and blood pressure. The final test used is the Post Hoc Test (multiple comparisons), which indicates that the variables with significant values and a real difference in relation to the intervention are anxiety and blood pressure. Meanwhile, the variable of sleep quality does not show any real difference across each intervention.
Conclusion: Overall, Lavender Aromatherapy is superior in reducing anxiety and blood pressure compared to the other two therapies.

Keywords: Benson Relaxation, Therapy, Combination, Elderly, Lavender Aromatherapy

INTRODUCTION

The World Health Organization (WHO) defines the elderly as individuals aged 60 years and over. Various biological changes occur during this phase. Currently, the elderly population in Indonesia is increasing every year.(1) According to data from Indonesia's Central Bureau of Statistics (BPS), the percentage of elderly people in Indonesia reached 11.75% in 2023. This figure marks a 1.27% point increase from the previous year, which stood at 10.48%. Of this population, 63.59% are classified as young elderly, aged 60-69 years. Meanwhile, 26.76% are aged 70-79 years, classified as middle elderly. The remaining 8.65% are advanced elderly, aged 80 years and over (2-3).

Based on the Basic Health Research results, the prevalence of hypertension in Indonesia is 34.1%.(4) The prevalence of hypertension in the age group 55-64 is 55.2%, among those aged 65-74 is 63.2%, and in individuals over 75 years old, it reaches 69.5%.

In West Java Province, the prevalence of hypertension increased to 39.6% compared to the results of the Basic Health Research in 2013 which was 29.4%. In Bekasi Regency, the coverage of healthcare services for hypertension patients is 4.41%, while in Bekasi City, it is 8.31%. The achievement rate for hypertensive patients receiving care in Bekasi Regency is only 93,107 people, or 13.31% of the target population of 699,765. This data clearly shows that the number of hypertensive patients receiving healthcare services at health facilities or through community-based services remains low.(1)

Uncontrolled hypertension can lead to fatal complications if not managed promptly. Hypertension patients need to prevent complications to achieve a good quality of life. Therefore, high blood pressure must be managed in ways that preserve quality of life and prevent additional issues, such as sleep disturbances and anxiety, which can worsen hypertension.(4-5) There are two main management approaches for hypertension: pharmacological and non-pharmacological. Pharmacological management involves the use of medications, while non-pharmacological management does not rely on medications and has fewer side effects, making it a valuable alternative in managing hypertension.(7)

One of the non-pharmacological management approaches is Benson relaxation therapy combined with lavender aromatherapy. Benson relaxation therapy can reduce anxiety by involving parasympathetic nerve activity, which leads to decreased heart rate, lowered blood pressure, and reduced anxiety, promoting a state of calmness,(7) and improving sleep quality.(8) However, Benson relaxation therapy requires strong belief and concentration during its practice, making its success dependent on the patient's focus and mental involvement.(9) Lavender aromatherapy has been shown to enhance comfort and concentration when inhaled by patients. This effect occurs because it stimulates serotonin production and increases the action of gamma-aminobutyric acid (GABA), which serves as an inhibitor for anxiety levels, helping patients feel relaxed and at ease. (10-11)

The combination of Benson relaxation therapy and lavender aromatherapy can serve as an adequate intervention to reduce anxiety, improve sleep quality, and lower blood pressure. This is because the effects of each intervention complement one another, ultimately achieving the goal of making patients feel comfortable (12-13).

The Benson relaxation therapy is considered successful if the patient achieves a high level of concentration. An increase in concentration can be facilitated by providing lavender aromatherapy to the patient. This lavender aromatherapy can thus serve as a beneficial combination in interventions requiring concentration, such as Benson relaxation therapy.(14). The aim of the study was to determine the effect of lavender aromatherapy, Benson relaxation therapy, and their combination on anxiety levels, sleep quality, and blood pressure in elderly people with hypertension.

MATERIAL AND METHODS

The research design is quantitative with a quasi-experimental approach, without a control group. Measurements were taken after the intervention was given: (T1) for the group with Benson relaxation therapy, (T2) for the group with Lavender aromatherapy, and (T3) for the group with a combination of both therapies. The sample selection in this study used purposive sampling. The sample in this study were elderly living in the Sentra Terpadu of the Ministry of Social Affairs in Bekasi City, totaling 90 respondents, with 30 respondents in each intervention group. After the intervention was conducted and data were collected, data analysis was performed using MANOVA.(14) Inclusion criteria is elderly over 60 years old, and elderly who do not have smell problems. Exclusion criteria is elderly who have mental disorders.

RESULTS

Respondent Characteristics

Table 1. Demographic Characteristics of the Elderly in the Sentra Terpadu Bekasi

Characteristics		Frequency (f)	Precent (%)
Gender	Male	46	51,1
	Female	44	48,9
	Total	90	100,0
Age	Pre-elderly	42	46,7
	Elderly	44	48,9
	Late elderly	4	4,4
	Total	90	100,0
Education	Uneducated	8	8,9
	Basic education	70	77,8
	Higher education	12	13,3
	Total	90	100,0
Length of stay	≤ 1 year	46	51,1
	1 – 3 year	32	35,6
	3 – 5 year	12	13,3
	Total	90	100,0
History of illness	Non-communicable disease	90	100,0
	Infectious diseases	0	0
	Total	90	100,0

Based on Table 1, the majority of the elderly residents are male, totaling 46 individuals (51.1%). The majority age group consists of elderly individuals, with 44 people (48.9%). The most common educational level among the elderly residents is basic education (Elementary School, Junior High School, and High School/Vocational School), amounting to 70 individuals (77.8%). The majority of the elderly residents have stayed for less than 1 year, totaling 46 individuals (51.1%). As for the disease history characteristic, all residents suffer from non-communicable diseases (Hypertension, Diabetes Mellitus, Gout, Gastritis, Asthma, Stroke), totaling 90 individuals (100%).

Table 2. Characteristics of Sleep Quality, Anxiety Levels, and Blood Pressure of the Elderly at the Sentra Terpadu Bekasi.

Characteristics		Frequency (f)	Precent (%)
Sleep Quality	Good	46	51,1
	Bad	44	48,9
	Total	90	100,0
Anxiety Levels	Normal	2	2,2
	Light	7	7,8
	Moderate	67	74,4
	Heavy	14	15,6
	Very Heavy	0	0
	Total	90	100,0
Blood Pressure	Normal	34	37,8
	Pre Hypertension	44	48,9
	Hypertension Grade 1	12	13,3
	Hypertension Grade 2	0	0
	Total	90	100,0

Based on table 2, the majority of the sleep quality of the elderly at the Sentra Terpadu is good, namely 46 people (51.1%). The anxiety levels of the elderly at the Sentra Terpadu Bekasi are moderate, namely 67 people (74.4%). And the majority of blood pressure in the elderly at the Sentra Terpadu Bekasi is prehypertension, namely 44 people (48.9%).

Data Normality Test

From the normality test conducted using the Kolmogorov-Smirnov test due to the sample size being > 30, the following results were obtained: for the anxiety variable with lavender aromatherapy intervention, p value = 0.192; for anxiety with Benson relaxation, p value = 0.115; and for anxiety with combined therapy, p value = 0.186.

For the sleep quality variable with lavender aromatherapy intervention, p value = 0.16; for sleep quality with Benson relaxation, p value = 0.200; and for sleep quality with combined therapy, p value = 0.100.

The last variable is blood pressure, with normality test results showing that for blood pressure with lavender aromatherapy intervention, p value = 0.140; for blood pressure with Benson relaxation, p value = 0.155; and for blood pressure with combined therapy, p value = 0.200. It can be concluded that all variable groups have normally distributed data, as each has a p-value = > 0.05.

Data Homogeneity Test.

Table 3. Data Homogeneity Test (Levene's test).

Variabel	***df1***	***df2***	***P value***
Anxiety	2	87	0.005
Sleep Quality	2	87	0.685
Blood pressure	2	87	0.968

From Table 3, it can be concluded that for the anxiety variable, the significance value is <0.005, indicating that the data variance is not homogeneous. Therefore, the follow-up test used is the Games-Howell test. Meanwhile, for the sleep quality and blood pressure variables, the significance value is >0.005, indicating homogeneous data variance. Thus, the follow-up test used is the Bonferroni test.

Multivariate Analysis.

Table 4. Multivariate Test.

Effect		Value	P Value
Type of Intervention.	Pillai's Trace	.780	0.000
	Wilks' Lambda	.340	0.000
	Hotelling's Trace	1.588	0.000
	Roy's Largest Root	1.321	0.000
	Pillai's Trace	.780	0.000

Table 4 shows a significant p value = 0.000. Since this value is less than 0.05, it

can be concluded that the type of intervention provided has a simultaneous effect on the respondents' sleep quality, anxiety, and blood pressure.

Table 5. Tests of Between-Subjects Effects.

Type of Intervention.		*df*	*Mean Square*	*P Value*
	Anxiety	2	37.678	0.000
	Sleep Quality	2	7.144	0.142
	Blood pressure	2	4410.000	0.000

Based on Table 5, the anxiety variable shows a p-value of .000. This value is less than 0.05, so it can be concluded that there is a significant effect of the type of intervention on respondents' anxiety. For the sleep quality variable, the p-value is 0.14. This value is greater than 0.05, so it can be concluded that there is no significant effect of the type of intervention on respondents' sleep quality. For the blood pressure variable, the p-value is 0.000. This value is less than 0.05, so it can be concluded that there is a significant effect of the type of intervention on respondents' blood pressure.

Post Hoc Test Analysis.

Table 6. Post Hoc Test (Multiple Comparisons).

Dependent Variable		Independent Variable		*P Value*
Anxiety	Games-Howell	Lavender Aromatherapy	Benson Relaxation Therapy	0.001
		Lavender Aromatherapy	Combination Therapy	0.872
		Benson Relaxation Therapy	Combination Therapy	0.003
Sleep quality	Bonferroni	Lavender Aromatherapy	Benson Relaxation Therapy	0.153
		Lavender Aromatherapy	Combination Therapy	1.000
		Benson Relaxation Therapy	Combination Therapy	0.668
Blood pressure	Bonferroni	Lavender Aromatherapy	Benson Relaxation Therapy	0.000
		Lavender Aromatherapy	Combination Therapy	0.000
		Benson Relaxation Therapy	Combination Therapy	1.000

Based on Table 6, the homogeneity test result for the anxiety variable is 0.005, indicating that the data variance is not homogeneous. Therefore, the post-hoc test used is the Games-Howell test, with the results as follows:

1) The types of lavender aromatherapy and Benson relaxation therapy have a significance value of 0.001. It can therefore be concluded that there is a significant difference between the intervention of lavender aromatherapy and Benson relaxation therapy based on respondents' anxiety levels.
2) The types of lavender aromatherapy and combination therapy have a significance value of 0.872. It can therefore be concluded that there is no significant difference between the intervention of lavender aromatherapy and combination therapy based on respondents' anxiety levels.
3) The types of Benson relaxation therapy and combination therapy have a significance value of 0.003. It can therefore be concluded that there is a significant difference between the intervention of Benson relaxation therapy and combination therapy based on respondents' anxiety levels.

For the sleep quality variable, the significance value from the homogeneity test was 0.685, indicating that the data variance is homogeneous. Therefore, the post-hoc test used was Bonferroni, with the results as follows:

1) The types of lavender aromatherapy and Benson relaxation therapy have a significance value of 0.153. Therefore, it can be concluded that there is no significant difference between the

interventions of lavender aromatherapy and Benson relaxation therapy in terms of respondents' sleep quality.

2) The types of lavender aromatherapy and combination therapy have a significance value of 1.000. Therefore, it can be concluded that there is no significant difference between the interventions of lavender aromatherapy and combination therapy in terms of respondents' sleep quality.
3) The types of Benson relaxation therapy and combination therapy have a significance value of 0.668. Therefore, it can be concluded that there is no significant difference between the interventions of Benson relaxation therapy and combination therapy in terms of respondents' sleep quality.

For the blood pressure variable, the significance value in the homogeneity test was 0.968, indicating that the data variance is homogeneous. Therefore, the post-hoc test used was Bonferroni, with the following results:

1) The type of lavender aromatherapy and Benson relaxation therapy has a significance value of 0.000. Therefore, it can be concluded that there is a significant difference between the effects of lavender aromatherapy and Benson relaxation therapy interventions based on the respondents' blood pressure.
2) The type of lavender aromatherapy and combination therapy has a significance value of 0.000. Therefore, it can be concluded that there is a significant difference between the effects of lavender aromatherapy and combination therapy interventions based on the respondents' blood pressure.
3) The type of Benson relaxation therapy and combination therapy has a significance value of 1.000. Therefore, it can be concluded that there is no significant difference between the effects of Benson relaxation therapy and combination therapy interventions based on the respondents' blood pressure.

DISCUSSION

Based on the results of the MANOVA test, a p-value of 0.000, indicating that each type of intervention in the study had a significant effect on sleep quality, anxiety, and blood pressure in the elderly. A post-hoc test was then conducted to compare each intervention and determine which was most effective for these three variables.

For anxiety, both Lavender Aromatherapy and Combination Therapy are more effective than Benson Relaxation, though there is no significant difference between the two. Research indicates that lavender has a calming effect on the nervous system, which can help reduce anxiety. Its main components, linalool and linalyl acetate, are known for their anxiety-relieving properties.(15) Generally, combination therapy involves the simultaneous use of several methods to achieve a more comprehensive effect. In contrast, Benson relaxation therapy focuses on deep breathing and concentration.(13)

Sometimes, if not used correctly, its effects may be less optimal compared to other approaches. Regarding the sleep quality variable, the three types of therapy do not show a significant difference. This may be due to similar mechanisms in providing relaxation and inducing better sleep. Although they do not show a significant difference in improving sleep quality, this is because the majority of elderly individuals already have good sleep quality. However, all three therapies still provide similar

benefits in enhancing relaxation and sleep quality.(13).

For blood pressure, lavender aromatherapy shows higher effectiveness compared to the other two methods, likely due to the stronger relaxation effect of the aromatherapy itself. Active compounds found in lavender, such as linalool and linalyl acetate, possess calming and mild sedative properties that can reduce sympathetic nervous system activity.(9) This directly impacts blood pressure reduction, as the sympathetic nervous system is associated with the body's stress response and blood pressure regulation. The stronger relaxation effect of lavender aromatherapy, compared to other therapies, may create a more calming environment that effectively reduces vascular tension and heart rate, both of which are crucial for blood pressure regulation. Some studies also show that lavender aromatherapy is more effective at lowering blood pressure in individuals with hypertension or anxiety,(17-18) possibly because lavender induces a quicker physiological response supporting relaxation compared to pure relaxation techniques like Benson relaxation. Overall, lavender aromatherapy appears superior in reducing anxiety and blood pressure compared to Benson Relaxation and Combination Therapy.(19-20)

CONCLUTION

It was found that Lavender Aromatherapy and Combination Therapy were more effective in reducing anxiety compared to Benson Relaxation, although there was no significant difference between Lavender Aromatherapy and Combination Therapy. Regarding sleep quality, there was no significant difference among the three therapies, suggesting that they all have a similar effect in this aspect. Meanwhile, for the blood pressure variable, Lavender Aromatherapy showed higher effectiveness compared to Benson Relaxation and Combination Therapy, likely due to the stronger relaxation effect of the aromatherapy. Overall, Lavender Aromatherapy is superior in reducing anxiety and blood pressure compared to the other two therapies.

ACKNOWLEDGMENT

Our gratitude goes to the Directorate of Research, Technology, and Community Service. and the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia, who has supported this research. Our gratitude also goes to the Head of the Bekasi City Social Service who has facilitated the data collection process for this research until completion.

REFERENCES

1. Risky, S., Pratiwi, D. S., & Akbar, M. I. (2020). Factors Associated With Elderly's Satisfaction In Integrated Health Service Post In Village Tobimeita District Of Nambo City Of Kendari: Elderly's Satisfaction. *Indonesian Journal Of Health Sciences Research And Development (IJHSRD)*, *2*(2), 13-21.
2. Davari H, Ebrahimian A, Rezayei S, Tourdeh M. (2021). Effect of Lavender Aromatherapy on Sleep Quality and Physiological Indicators in Patients after CABG Surgery: A Clinical Trial Study. Indian J Crit Care Med. 2021 Apr;25(4):429-434. doi: 10.5005/jp-journals-10071-23785.

3. Riset Kesehatan Dasar (Riskesdas) (2018). Badan Penelitian dan Pengembangan Kesehatan Kementerian RI tahun 2018. http://www.depkes.go.id/resources/download/infoterkini/materi_rakorpop_2018/Hasil%20Riskesdas%202018.pdf
4. Andas AM, Sansuwito T, Said FM, Wada FH, Purnamasari A, Prima A, et al. The Influence of Sleep Hygiene on the Sleep Disorders of Elderly at Integrated Long Term Care. Malaysian J Nurs. 2024;15(4):109–17. (3)
5. Mayasari, M., Waluyo, A., Jumaiyah, W., & Azzam, R. (2019). Faktor-Faktor yang Berhubungan dengan Kejadian Hipertensi. Journal of Telenursing (JOTING), 1(2), 344–353. https://doi.org/10.31539/joting.v1i2.849 (10)
6. Andas MA.,Prima A.,Purnamasari A.,Romantika IW. Wada FH. 2024. Tidur Nyenyak Di Usia Senja. Sonpedia. Cetakan Pertama Juni 2024. ISBN: 978-623-8634-74-3
7. Otaghi, M., Borji, M., Bastami, S., & Solymanian, L. (2016). The Effect of Benson's Relaxation on depression, anxiety and stress in patients undergoing hemodialysis. International Journal of Medical Research and Health Sciences, 5, 76-83
8. Nazari, A. M., Zare-Kaseb, A., Arbabi, Z., Gholampour, M. H., Emami Zeydi, A., & Ghazanfari, M. J. (2023). The effect of Benson relaxation technique on cancer patients: a systematic review. Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer, 31(12), 681. https://doi.org/10.1007/s00520-023-08142-2
9. Rambod, M., Pourali-Mohammadi, N., Pasyar, N., Rafii, F., & Sharif, F. (2013). The effect of Benson's relaxation technique on the quality of sleep of Iranian hemodialysis patients: a randomized trial. Complementary therapies in medicine, 21(6), 577–584. https://doi.org/10.1016/j.ctim.2013.08.009
10. Abbaszadeh R, Fariba Tabari, Katayon Taherian, Sedigheh Torabi, (2017), "Lavender Aromatherapy in Pain Management: A review study", Pharmacophore, 8(3), 50-54
11. Mohammadpourhodki, R., Sadeghnezhad, H., Ebrahimi, H., Basirinezhad, M. H., Maleki, M., & Bossola, M. (2021). The Effect of Aromatherapy Massage With Lavender and Citrus Aurantium Essential Oil on Quality of Life of Patients on Chronic Hemodialysis: A Parallel Randomized Clinical Trial Study. Journal of pain and symptom management, 61(3), 456–463.e1. https://doi.org/10.1016/j.jpainsymman.2020.08.032
12. Mousavi N, Imani B, Khazaei S, Shams A. The Effect of Benson Relaxation Technique and Lavender Aromatherapy on Anxiety and Hemodynamic Indices of Patients Undergoing Coronary Artery Bypass Grafting: A Randomized Clinical Trial. JHNM 2024; 34 (2) :167-176 URL: http://hnmj.gums.ac.ir/article-1-2314-en.html

13. Abidah, S.N., Novianti, H., Masruroh, N. 2023. Effectiveness of combination of benson relaxation and lavender aromatherapy relaxation towards changes in anxiety in the third trimester pregnant woman. Bali Medical Journal 12(3): 3382-3386. DOI: 10.15562/bmj.v12i3.4419
14. Karadag, E., & Samancioglu Baglama, S. (2019). The Effect of Aromatherapy on Fatigue and Anxiety in Patients Undergoing Hemodialysis Treatment: A Randomized Controlled Study. Holistic nursing practice, 33(4), 222–229. https://doi.org/10.1097/HNP.0000000000000334
15. Pakpahan AF, Prasetio A, Negara ES, Gurning K, Risanti, Situmorang FR, et al. Scientific Research Methodology. Medan, Indonesia: : Yayasan Kita Menulis; 2021. 176 p.
16. Ebrahimi, H., Mardani, A., Basirinezhad, M. H., Hamidzadeh, A., & Eskandari, F. (2021). The effects of Lavender and Chamomile essential oil inhalation aromatherapy on depression, anxiety and stress in older community-dwelling people: A randomized controlled trial. EXPLORE. doi:10.1016/j.explore.2020.12.012
17. Rahmadhani, DY (2022). Efektivitas Aromaterapi Lavender terhadap Tekanan Darah pada Lansia dengan Hipertensi Esensial. Jurnal Ilmu Keperawatan Palembang, 1 (1), 1–8. https://doi.org/10.55048/jpns.v1i1.8
18. Hidayati DL & Eny P. 2023. Hubungan Antara Dukungan Sosial dengan Kesehatan Mental di Indonesia: Kajian MetaAnalisis. Jurnal Ilmu Pendidikan, Psikologi, Bimbingan dan Konseling. Vol 13, No 1. 270-283. DOI: http://dx.doi.org/10.24127/gdn.v13i1.6536
19. Rahmawati, A., Annisa N., Nova P., Rony S. (2022). The Effect of Lavender Aromatherapy on Reducing Anxiety Levels in Students. KESANS: International Journal Of Health and Science. DOI: https://doi.org/10.54543/kesans.v1i9.91
20. Wing Cheng, P., & Pan Wong, Y. (2024). Common Sleep Problems and Management in Older Adults. IntechOpen. doi:10.5772/intechopen.111656