



Effectiveness of Chamomile Aromatherapy on Sleep Pattern Disturbances in Hypertensive Patients: A Case Study

Alifia Putri Respati¹, Ida Zuhroidah^{2*}, Mokh. Sujarwadi²,
Nadia Rohmatul Laili², Nenny Efrilia Rahmawati³

¹Diploma of Nursing Study Program, Faculty of Nursing, Universitas Jember, Indonesia

²Department of Medical Surgical Nursing, Faculty of Nursing, Universitas Jember, Indonesia

³Dr. R. Soedarsono Regional General Hospital, Pasuruan City, Indonesia

ARTICLE INFO

Article History:

Submitted: 29-06-2026

Revised: 22-06-2026

Accepted: 30-07-2026

Published: 12-08-2026

doi.org/10.58545/jkmi.v5i2.848

Copyright (c) 2026

This is an open-access article under the CC BY-SA license.



ABSTRACT

Background: Hypertension, or persistently high blood pressure, generally leads to a decline in sleep quality due to dizziness and reduced physical comfort. The sedative and anxiolytic properties of apigenin and the flavonoids found in chamomile aromatherapy help relax the body, making it a potential complementary therapy for addressing sleep disturbances in patients with hypertension. **Objective:** To describe the application of nursing care using chamomile aromatherapy for a patient with hypertension experiencing sleep disturbances. **Methods:** This study used a descriptive case study design on a patient with hypertension at Dr. R. Soedarsono Regional General Hospital for 3 days. The intervention was performed using a humidifier with 5-8 drops of chamomile essential oil diluted in 70-100 mL of water for 10-15 minutes. Daily sleep quality was assessed using the Pittsburgh Sleep Quality. **Results:** A significant improvement was observed as indicated by a decrease in the PSQI score from 12 to 5. The patient also appeared much more physically relaxed and to awaken less often at night. **Conclusion:** The study showed that chamomile aromatherapy effectively improved sleep quality in hypertensive patients. This method is worthy of recommendation as a safe complementary intervention to accompany conventional medical therapy.

Keywords: Chamomile aromatherapy, Hypertension, Sleep disturbances, Sleep quality

Corresponding Author:

Ida Zuhroidah,
Faculty of Nursing, Universitas Jember, Pasuruan City Campus,
Jl. KH. Mansyur No. 207, Pasuruan City, East Java, 67118, Indonesia.
Email: ida.akper@unej.ac.id

How to cite:

Respati, A. P., Zuhroidah, I., Sujarwadi, M., Laili, N. R., & Rahmawati, N. E (2026). Effectiveness of Chamomile Aromatherapy on Sleep Pattern Disturbances in Hypertensive Patients: A Case Study. *Jurnal Kegawatdaruratan Medis Indonesia*, 5(2), 182-193. <https://doi.org/10.58545/jkmi.v5i2.848>

1. INTRODUCTION

Hypertension is a condition characterized by persistently elevated

blood pressure, with a systolic pressure of ≥ 140 mmHg and/or a diastolic pressure of ≥ 90 mmHg, which can lead to various

serious complications if not managed properly. Hypertension is often referred to as a “silent killer” because most patients do not exhibit characteristic symptoms in the early stages of the disease. This condition can increase the risk of cardiovascular disease, stroke, kidney failure, and various other health problems that impact patients’ quality of life (WHO, 2025). In addition to physical complications, hypertension can also cause psychological problems and disrupt basic human needs, one of which is sleep disturbances. An estimated 1.4 billion adults aged 30–79 worldwide live with hypertension (WHO, 2025). However, only about 23% of those affected are able to optimally control their blood pressure. In Indonesia, the prevalence of hypertension reaches 30.8%, making it one of the public health issues that still requires serious attention (SKI, 2023). Drawing on the medical records of ward Irna 2 at dr. R. Soedarsono Regional General Hospital spanning February to March 2026 a total of 22 patients with hypertension received treatment during this period.

Sleep disorders are a common problem among patients with hypertension. Headaches, dizziness, and other symptoms associated with hypertension can lead to shorter sleep duration, more frequent nighttime

awakenings, and poorer overall sleep quality. Prolonged sleep disturbances can increase the activity of the sympathetic nervous system, thereby worsening blood pressure control and increasing the risk of complications from hypertension (Budiman, 2025). In addition, poor sleep quality can also lower the body’s resistance, interfere with daily activities, and affect patients’ psychological well-being.

Sleep disorders in patients with hypertension can be managed through both pharmacological and nonpharmacological approaches. Pharmacological therapy using sedatives or hypnotics carries the risk of side effects and dependence when used long-term; therefore, safe nonpharmacological alternatives that are easy to implement independently are needed. One complementary therapy that can be used is chamomile (*Matricaria chamomilla*) aromatherapy. Chamomile contains active compounds such as apigenin, which can bind to benzodiazepine receptors in the brain, thereby producing a relaxing effect, calming the nervous system, and helping to improve sleep quality.

2. CASE PRESENTATION

Assessment

Mr. R is a 67-year-old man who was admitted to Internal Medicine Ward 1 (Alamanda 5) at Dr. R. Soedarsono Regional General Hospital in Pasuruan City. The patient is Muslim, married, has a high school education, and is self-employed. He was admitted to the hospital through the Emergency Department (ED) on April 29, 2026, with the primary complaint of chest pain accompanied by palpitations, which he had been experiencing for the past two weeks and had worsened over the last week.

During the evaluation on April 30, 2026, the patient complained of difficulty sleeping due to recurring chest pain. The patient reported frequently waking up at night, about once every two hours, and was dissatisfied with the quality of his sleep. In addition, the patient also complained of nausea, decreased appetite, and weakness. The patient stated that a quiet environment and the absence of chest pain improved his sleep quality, whereas chest pain and a sensation of heat at night caused him to wake easily.

The patient's medical history for this visit includes a 10-year history of hypertension and heart disease, along with a history of gastroesophageal reflux as a comorbid condition. The patient has been

hospitalized twice for the same symptoms, and none of the other family members have a history of chronic diseases or infections.

Physical examination findings on the first visit. The patient was conscious, well-oriented, and had a Glasgow Coma Scale (GCS) score of 15 (E4V5M6). Vital signs: blood pressure 170/120mmHg, pulse rate 110 beats per minute, respiratory rate 18 breaths per minute, body temperature 36.5°C, and blood oxygen saturation 99%. The patient is 160 cm tall and weighs 58 kg. The patient complained of chest pain and palpitations. Clear alveolar breath sounds were heard, the conjunctiva was pale, and the patient appeared lethargic.

The results of the sleep and rest assessment showed that the patient's sleep pattern had changed since admission at 10:00 p.m., with waking at 4:00 a.m. During their hospital stay, the patient usually went to sleep around 11:00 p.m. and woke up at 4:30 a.m. due to chest pain that occurred approximately every two hours. Sleep quality was assessed using the PSQI index, which yielded a score of 12.

Based on medical records, the patient received oxygen therapy via a nasal cannula at 4 liters per minute, a 0.9% NaCl infusion, and injections of pantoprazole, ondansetron, ceftriaxone, and furosemide, as well as oral medications including Uperio, ISDN, Aspilet, and clopidogrel.

Based on the results of subjective and objective assessments, the patient exhibited signs and symptoms indicative of a nursing problem involving a sleep pattern disturbance related to physical discomfort caused by his hypertension and heart disease.

Nursing Diagnoses

Based on the assessment findings, several nursing diagnoses were identified, including sleep pattern disturbance, acute pain, and decreased appetite. However, this case report focuses on the nursing diagnosis of sleep pattern disturbance (D.0055) related to secondary physical discomfort due to hypertension, as evidenced by the patient's complaints of difficulty falling asleep, frequently waking up every two hours at night, changes in sleep patterns during hospitalization, a feeling of not being well-rested, and poor sleep quality with a Pittsburgh Sleep Quality Index (PSQI) score of 12. The patient had experienced frequent occurrences of chest pains and heart palpitations that interfered with his sleeping habits.

According to the standards for nursing diagnoses set out in SDKI, sleep pattern disturbance is defined as an alteration in the quality or quantity of sleep due to internal or external stimuli that

affect a person's natural sleep-wake pattern. In this instance, the presence of hypertension along with chest pains and palpitations acts as a barrier to the optimal sleeping patterns of the patient. Therefore, the main nursing diagnosis of sleep pattern disturbance (D.0055) formed the foundation for care provided through sleep-facilitation interventions, such as chamomile aromatherapy.

Nursing Intervention

At the outset of this study, the researchers defined the core variables of the nursing program and adherence to the intervention. The researchers referred to the Indonesian Nursing Outcomes Standards (SLKI) to establish four goals for improving sleep quality, including reducing difficulty falling asleep and decreasing the frequency of nighttime awakenings. The researchers used the Pittsburgh Sleep Quality Index (PSQI) to measure sleep quality and, in accordance with applicable requirements, selected sleep support measure No. I. 09265, which meets the Indonesian Nursing Intervention Standards (SIKI). Ethical approval this study has been approved by the Health Research Ethics Committee (KEPK) of the Faculty of Nursing, Universitas Jember (Approval Number: 213/UN25.1.14/KEPK /2026)

This study developed a practically implementable execution framework for clinical sleep nursing interventions, which divides the full set of intervention measures into three core dimensions to be rolled out sequentially: The first is the basic assessment dimension, which includes four specific operations, such as evaluating patients' sleep patterns and identifying physical and psychological triggers that disrupt sleep; the second is the treatment intervention dimension, which covers four practical operations, including helping patients relax before bedtime and introducing chamomile aromatherapy; the third is the health education dimension, which requires explaining to patients the importance of regular sleep and reminding them to avoid all types of sleep-disrupting foods and drinks.

This study proposes clinical operational specifications for chamomile aromatherapy. The protocol is to add 5-8 drops of chamomile essential oil to 70-100 mL of water in a humidifier, run the humidifier for 10-15 minutes every day before bedtime, continue the intervention for 3 consecutive days, and do all procedures in a quiet environment. Following each aromatherapy treatment, watch for adverse reactions, including dizziness, nausea, and difficulty breathing.

Implementation

The nursing care in this case is for a patient with hypertension who is experiencing sleep disturbances, and the intervention is sleep support (I.09265). The main assessments conducted were monitoring and assessment of the patient's sleep patterns (factors affecting sleep and the patient's level of pain), administration of chamomile aromatherapy, patient education on the importance of adequate rest, and explanation of the proper administration of chamomile aromatherapy. Chamomile aromatherapy was performed using a humidifier with 5-8 drops of chamomile essential oil diluted in 70-100 ml of water. The patient was then rested, and the humidifier was placed about 50-100cm from the patient for 10-15 minutes.

On the first day (April 30, 2026), nursing care focused on identifying sleep disturbances, factors interfering with sleep, and pain characteristics. The patient was educated on the importance of maintaining a regular sleep schedule and avoiding factors that could disrupt sleep. Chamomile aromatherapy was administered before bedtime. After the intervention, the patient appeared more relaxed and comfortable, with no signs of allergy or discomfort related to the aromatherapy. However, the patient still

complained of chest pain with a pain score of 4 and nausea occurring four times a day. Collaborative medical therapy, which included ISDN, ondansetron, pantoprazole, and sucralfate, continued.

On the second day (May 1, 2026), nursing care continued, including monitoring sleep quality and pain intensity. The patient underwent the next chamomile aromatherapy session. The patient was informed about the purpose, procedure, and duration of the chamomile aromatherapy therapy. Following the intervention, the patient appeared more relaxed, reported improved sleep quality despite waking once during the night, and

experienced a reduction in chest pain from 4 to 3.

On the third day (May 2, 2026), the patient showed further improvement. Chamomile aromatherapy was continued to maintain comfort and sleep quality. The patient reported being able to sleep through the night without waking up, appeared more refreshed and relaxed, and no longer showed signs of sleep disturbances. Chest pain decreased to a pain level of 2, with no grimacing or restlessness. Overall, the three-day nursing intervention demonstrated a progressive improvement in sleep quality, accompanied by a reduction in pain intensity.

Evaluation

Table 1. Evaluation of Nursing Care Outcomes Based on Pre- and Post-Intervention Sleep Pattern Indicators

Outcome Criteria	Day 1	Day 2	Day 3	Description
Sleep quality (PSQI score)	12	7	5	Improved
Difficulty initiating sleep	Present	Decreased	Absent	Improved
Frequency of Nocturnal awakening	Every 2 hours	Once per night	None	Improved
Sleep satisfaction	Unsatisfied	More satisfied	Satisfied	Improved
General relaxation condition	Weak and fatigued	More relaxed	Relaxed and refreshed	Improved

Overall, this intervention resulted in a progressive improvement in sleep quality, as demonstrated by a decrease in the PSQI score from 12 to 5, a reduction in the frequency of nighttime awakenings, increased sleep satisfaction, and improved

physical relaxation. These results indicate that chamomile aromatherapy is an effective complementary nursing intervention for improving sleep quality in hypertensive patients with sleep-pattern disturbances

3. DISCUSSION

The study results showed that after receiving chamomile aromatherapy for 3 consecutive days, the patients' sleep quality improved, as indicated by a decrease in the Pittsburgh Sleep Quality Index (PSQI) score from 12 to 5. This finding is consistent with previous research indicating that chamomile aromatherapy is effective at improving sleep quality and lowering PSQI scores in patients with sleep disorders (Kazemi et al., 2024). It is also supported by a study conducted by Salamung and Elmiyanti (2023), which revealed that chamomile aromatherapy can significantly improve sleep quality. The sedative and relaxing effects of chamomile essential oil can improve sleep quality, helping patients sleep more soundly.

In addition, it was also found that patients' ability to sleep improved following the chamomile aromatherapy intervention. Initially, patients had difficulty falling asleep, but after receiving chamomile aromatherapy, they fell asleep more easily. These results are supported by findings from a randomized controlled clinical trial by Deepa et al. (2025), which reported that inhaling chamomile aromatherapy before bedtime can shorten sleep latency and facilitate sleep onset.

This is due to the presence of apigenin in chamomile, which acts on benzodiazepine receptors in the brain, thereby producing a sedative effect (Kazemi et al., 2024). Thus, administering chamomile aromatherapy can shorten the time it takes patients to fall asleep, thereby meeting their sleep needs.

The results of this study also show a decrease in the frequency of nighttime awakenings. Before the intervention, patients often woke every 2 hours due to discomfort, but by the third day, they were able to sleep through the night without waking. The results are consistent with the findings of Rafii et al.'s (2020) study, which demonstrated that chamomile aromatherapy could improve sleep continuity and reduce sleep disturbances among hospitalized patients. This is further supported by Sattayakhom et al. (2023), who explained that essential oils affect the autonomic nervous system, thereby helping maintain sleep continuity. Based on this, the reduction in nighttime awakenings in this case is believed to be related to the relaxing effects of chamomile aromatherapy.

In addition, the study results showed an increase in patients' satisfaction with sleep. Initially, patients reported dissatisfaction with their sleep quality; however, after the intervention, they expressed satisfaction with their sleep and

felt more refreshed upon waking. This is consistent with the findings of Salamung and Elmiyanti (2023), which indicate that aromatherapy can improve sleep satisfaction and overall sense of rest. This increase in sleep satisfaction is believed to be related to a reduction in the sleep disturbances experienced by patients as well as better maintenance of sleep continuity.

In addition, the patient also showed improvement in overall relaxation. Before the intervention, the patient appeared weak and fatigued; however, after undergoing three days of chamomile aromatherapy, the patient appeared calmer and more refreshed. This is consistent with previous research showing that chamomile aromatherapy has anxiolytic and calming effects, thereby enhancing the patient's relaxation and emotional well-being (Pourshaikhian et al., 2024). Furthermore, inhalation aromatherapy stimulates the olfactory bulb and limbic system, thereby releasing neurotransmitters associated with relaxation and emotional regulation (Cui et al., 2022). Therefore, the increased relaxation observed in this patient contributed to improved overall sleep quality.

Overall, the findings of this case study suggested that chamomile aromatherapy was beneficial as a

complementary nursing intervention for patients with hypertension experiencing sleep disturbances. Improvements were observed in PSQI scores, sleep initiation, nocturnal awakenings, sleep satisfaction, and general relaxation. These findings support previous evidence that chamomile aromatherapy is a simple, safe, and easily implemented non-pharmacological intervention to improve sleep quality in patients with chronic illnesses (Kazemi et al., 2024; Nogueira, 2024).

Limitations

The study was limited in that it was a descriptive case study with one participant and only three days of observation, which may not have reflected the long-term effects of the intervention. Additionally, possible confounding variables such as the hospital environment, medications, physical activity, dietary intake, and psychological conditions were difficult to control and may have influenced the results. Future studies should be performed with a larger sample size, a randomized controlled clinical trial design, and a longer observation period to strengthen the current evidence and to improve the validity of the study results.

4. CONCLUSION

The results of the research suggest that chamomile aromatherapy for hypertensive patients with sleep disturbances improves sleep quality. An improved sleep pattern was observed after a three-day intervention, with fewer complaints of difficulty falling asleep, a reduced frequency of getting up at night, and increased comfort and relaxation among patients. This was further supported by a reduction in Pittsburgh Sleep Quality Index (PSQI) score from 12 to 5, indicating an overall improvement in sleep quality. Thus, chamomile aromatherapy can be considered a simple, safe, and easily implemented form of nonpharmacological complementary nursing intervention to support improved sleep quality in patients with hypertension.

ACKNOWLEDGEMENT

The author would like to express gratitude to the Faculty of Nursing at the University of Jember for its support of this study. Thanks are also extended to the administrative staff, nursing staff, and patients and their families at Dr. R. Soedarsono Regional General Hospital in Pasuruan City for their assistance, facilities, and cooperation from the data

collection process through to the completion of this manuscript.

AUTHOR CONTRIBUTIONS

APR contributed to the research design, data collection, data analysis, and drafting of the manuscript. IZ served as the advisor, providing supervision and a critical review of the manuscript's methodology and content. MS contributed to the evaluation and validation of data, as well as the critical review of the research findings. NRL was involved in data evaluation and validation, as well as manuscript editing. NER provided on-site research facility support, collected clinical data, and reviewed the hospital context.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest related to the research, writing, and/or publication of this article. No funding was received from any party with a commercial interest in the results of this study.

DATA AVAILABILITY STATEMENT

The data are not publicly available due to privacy or ethical restrictions.

REFERENCES

Budiman. (2025). Hubungan kualitas tidur, obesitas dan stres dengan

- kejadian hipertensi pada usia lansia awal (46-55 Tahun). *Jurnal Keperawatan dan Kesehatan*, 2(5), 717-725. <https://doi.org/10.53801/oajjhs.v2i5.135>
- Cui, J., Li, M., Wei, Y., Li, H., He, X., Yang, Q., Li, Z., Duan, J., Wu, Z., Chen, Q., Chen, B., Li, G., Ming, Deepa, Y., Vijay, A., Nivethitha, L., Nandhakumar, G., Sathiya, S., & Mooventhana, A. (2025). Effects of chamomile oil inhalation on sleep quality in young adults with insomnia: A randomized controlled trial. *International Journal of Psychiatry in Medicine*, 60(5), 533-542. <https://doi.org/10.1177/00912174241301279>
- Ebrahimi, H., Mardani, A., Basirinezhad, M. H., Hamidzadeh, A., & Eskandari, F. (2022). 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*, 18(3), 272-278. <https://doi.org/10.1016/j.explore.2020.12.012>
- Fajriyah, N., Susanti, S., Kristiani, R. B., Pramiasti, H. D., & Tang, L. Y. (2024). The effect of a combination of warm water foot baths and lavender essential oil aromatherapy on sleep quality in adult hypertension. *Adi Husada Nursing Journal*. 10(1),48-58. <https://doi.org/10.37036/ahnj.v10i1.532>
- Kazemi, A., Shojaei-zarghani, S., & Eskandarzadeh, P. (2024). Effects of chamomile (*Matricaria chamomilla* L.) on sleep: A systematic review and meta-analysis of clinical trials. *Complementary Therapies in Medicine*, 84, 103071. <https://doi.org/10.1016/j.ctim.2024.103071>
- Nogueira, C. R. (2024). Enhancing sleep quality through aromatherapy: Updating the therapeutic benefits of essential oils. *Brazilian Journal of Aromatherapy and Essential Oil*, 1-5. <https://doi.org/10.62435/2965-7253.bjhae.2024.bjhae7>
- Oktamianti, P., Kusuma, D., Amir, V., Tjandrarini, D., & Paramita, A. (2022). District-level inequalities in hypertension among adults in Indonesia: A cross-sectional analysis by sex and age group. *International*

- Journal of Environmental Research and Public Health, 19(20), 13268. <https://doi.org/10.3390/ijerph192013268>
- Pourshaikhian, M., Moghadamnia, M. T., Kazemnezhad Leyli, E., & Shafiei Kisomi, Z. (2024). Effects of aromatherapy with *Matricaria chamomile* essential oil on anxiety and hemodynamic indices in patients with acute coronary syndrome, 2021: a randomized controlled trial. *BMC complementary medicine and therapies*, 24(1), 17. <https://doi.org/10.1186/s12906-023-04326-9>
- PPNI. (2017). Standar diagnosis keperawatan Indonesia: Definisi dan indikator diagnostik (Edisi 1 Cetakan III Revisi). Jakarta: PPNI.
- PPNI. (2018). Standar intervensi keperawatan Indonesia: Definisi dan tindakan keperawatan (Edisi 1 Cetakan II). Jakarta: PPNI.
- PPNI. (2019). Standar luaran keperawatan Indonesia: Definisi dan kriteria hasil keperawatan (Edisi 1 Cetakan II). Jakarta: PPNI.
- Rafii, F., Ameri, F., Haghani, H., & Ghobadi, A. (2020). The effect of aromatherapy massage with lavender and chamomile oil on anxiety and sleep quality of patients with burns. *Burns*, 46(1), 164–171. <https://doi.org/10.1016/j.burns.2019.02.017>
- Salamung, N., & Elmiyanti, N. K. (2023). Effect of aromatherapy on sleep quality: A systematic review. *International Journal of Nursing and Health Services (IJNHS)*, 6(5), 292–302. <https://doi.org/10.35654/ijnhs.v6i5.728>
- Sari, M., Fatmawati, Z., Qorahman MM, W., & Sobirin, M. (2025). Pengaruh Kombinasi Relaksasi Otot Progresif Dan Aromaterapi Chamomile Terhadap Kualitas Tidur Pasien Gagal Ginjal Kronik Di Ruang Hemodialisis Rsud Sultan Imanuddin Pangkalan Bun. *Jurnal Borneo Cendekia*, 8(2), 103-120. <https://doi.org/10.54411/jbc.v8i2.611>
- Sari, O. P., Sar, I. Y., & Sudibyo, G. A. (2025). Berkumur air hangat untuk mengurangi rasa haus dan aromatherapy chamomile untuk meningkatkan kualitas tidur pada pasien gagal ginjal kronis: Case report. *SBY Proceedings*, 5(1). <https://jurnal.stikesbethesda.ac.id/index.php/p/article/view/684>

Sattayakhom, A., Wichit, S., & Koomhin, P.

(2023). The effects of essential oils on the nervous system: A scoping review. *Molecules*, 28(9), 3771. <https://doi.org/10.3390/molecules28093771>

SKI. (2023). Prevalensi, dampak, serta upaya pengendalian hipertensi & diabetes di Indonesia. Kementerian Kesehatan RI.

World Health Organization. (2025). Hypertension fact sheet. <https://www.who.int/news-room/fact-sheets/detail/hypertension>