



Case Study on The Implementation of Peppermint Oil Aromatherapy in Patients with Respiratory Tract Infections in Baregbeg District

Asep Andang Permana¹, Andan Firmansyah¹, Dedi Supriadi¹

¹Department Of Nursing, STIKes Muhammadiyah Ciamis, Ciamis, Indonesia

Correspondence author: Andan Firmansyah

Email: asepandangpermana2@gmail.com

Address: Desa Karangampel, Kecamatan Baregbeg, Kabupaten Ciamis, 46274, Provinsi Jawa Barat, 081222084439

DOI: <https://doi.org/10.56359/ijhsc.v1i1.565>



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

ABSTRACT

Introduction: Acute Respiratory Infections (ARIs) are one of the leading causes of morbidity and mortality in children, particularly in developing countries such as Indonesia. ARIs often result in impaired airway clearance, characterized by symptoms such as dyspnea, cough, and excessive sputum production. Non-pharmacological approaches, such as the use of peppermint aromatherapy, are believed to help alleviate these symptoms due to the menthol content, which possesses decongestant, anti-inflammatory, and expectorant properties.

Objektive: This study aims to evaluate the effectiveness of peppermint aromatherapy in enhancing airway clearance in children suffering from Acute Respiratory Infections (ARIs).

Method: This research employs a case study design with a descriptive approach, focusing on a single school-aged respondent experiencing impaired airway clearance due to Acute Respiratory Infections (ARIs). The intervention consisted of inhalation of peppermint oil aromatherapy conducted over three consecutive days. Data were collected through interviews, observations, physical examinations, and daily documentation.

Result: After the three-day intervention, the respiratory rate decreased from 32 breaths per minute to 27 breaths per minute. The respondent exhibited significant improvement, including a reduction in dyspnea, enhanced cough effectiveness, and more optimal secretion clearance.

Conclusion: The use of peppermint oil aromatherapy has proven effective as a complementary intervention for addressing ineffective airway clearance in children with Acute Respiratory Infections (ARIs). This intervention can serve as a safe, affordable, and easily implementable alternative in pediatric nursing practice

Keywords: Children, ineffective airway clearance, peppermint oil aromatherapy.

Introduction

Acute respiratory infections (ARIs) remain a significant public health issue, particularly as they are a leading cause of mortality among children under five years of age in many developing countries, including Indonesia. ARIs are acute infections of the upper and lower

respiratory tracts caused by microorganisms such as bacteria, viruses, or rickettsiae, and can occur with or without inflammation of lung tissue. This disease is highly contagious and can be transmitted from person to person (Entianopa et al., 2023). The common symptoms include runny nose, nasal congestion, sinusitis, toothache, cough, fever, ear pain, muscle aches, hearing disturbances, dizziness, sore throat that may lead to difficulty swallowing, and a general feeling of malaise (Saputri et al., 2025). This condition is characterized by symptoms such as shortness of breath, decreased oxygen saturation in the blood (O₂ saturation), increased carbon dioxide levels (PaCO₂), and the appearance of cyanosis. As a result, patients with acute respiratory infections often experience disturbances such as inadequate airway clearance and suboptimal breathing patterns (Gigih & Sari, 2023).

According to the WHO, respiratory infections are a leading cause of morbidity and mortality worldwide, particularly in developing countries. Each year, approximately 15% to 20% of the population is infected with respiratory infections, contributing to around 13 million deaths among infants (WHO, 2023). In Indonesia, the prevalence of respiratory infections in 2018 was recorded at 9.3 million cases. The infant and under-five mortality rates in Indonesia are also the highest among ASEAN countries. To date, respiratory infections and diarrhea remain two leading causes of morbidity and mortality in children (Qarimah et al., 2025). According to data from the Household Health Survey (SKRT), more than 5 million infants in Indonesia experience Acute Respiratory Infections (ARI) each year. The highest number of cases is found in areas with inadequate environmental conditions, such as homes with poor air circulation, high exposure to indoor air pollution, and densely populated residential areas (Nurhayati et al., 2025).

Complementary therapy is an alternative method for alleviating respiratory issues. One such method is inhaling peppermint oil (Yummi, 2025). The menthol content in peppermint oil has anti-inflammatory properties and can reduce inflammation as well as open obstructed airways. Peppermint oil also possesses antibacterial properties that help combat bacterial infections. Applying this oil can relax the bronchi and facilitate breathing. This therapy is a simple herbal treatment (Mustikawati, 2023).

Aromatherapy is a form of alternative medicine that uses essential oils to support physical and mental health. A popular oil used in this practice is peppermint oil (*Mentha piperita*). This plant has been recognized for its health benefits for thousands of years. The main component of peppermint is menthol, a natural compound that produces a cooling sensation when in contact with the skin or mouth. Menthol helps clear obstructed airways and facilitates breathing. Additionally, this compound has a mild and temporary numbing effect. Peppermint also contains several essential nutrients, such as vitamins A and C, and various minerals (Alysia Nur Azhari, 2024).

In the nursing diagnosis of airway clearance, the author includes a plan for administering peppermint oil aromatherapy in accordance with the SOP (Standard Operating Procedure) to alleviate shortness of breath in patient An.S using peppermint oil. As stated in the words of Allah SWT in QS Yunus (10): 57 as follows:"

وَأَيُّهَا النَّاسُ قَدْ جَاءَتْكُمْ مَوْعِظَةٌ مِّن رَّبِّكُمْ وَشِفَاءٌ لِّمَا فِي الصُّدُورِ وَهُدًى وَرَحْمَةٌ لِّلْمُؤْمِنِينَ

Meaning: O mankind, indeed there has come to you instruction from your Lord and healing for what is in the breasts and guidance and mercy for the believers.

Objective

The objective of this case study is to implement simple inhalation of peppermint oil aromatherapy to help improve airway clearance in children suffering from Acute Respiratory Infections (ARI).

Method

Design and setting

This research employs a case study design with descriptive analysis approach, conducted at the patient's residence in Baregbeg Subdistrict, Ciamis Regency, over three consecutive days.

Population and sampling

The population in this study consists of school-aged children experiencing airway clearance issues due to Acute Respiratory Infections (ARI). The researcher established inclusion criteria, which include school-aged children in stable condition (*compos mentis*), able to communicate verbally, and having parental consent to participate in the study. Meanwhile, the exclusion criteria are children in critical condition or those who have recently experienced shortness of breath.

The sample in this study was selected using convenience sampling with a purposive sampling approach, specifically choosing one respondent (An.S) who met the inclusion criteria. The respondent is a 9-year-old child experiencing airway clearance issues due to ARI. The sampling was conducted based on ease of access and the suitability of the respondent's characteristics with the research focus.

The sampling procedure involved obtaining parental consent and considering the child's health condition and communication ability. The study was conducted over three consecutive days at the respondent's home, with an intervention of peppermint oil aromatherapy to evaluate its effectiveness in improving airway clearance."

Instrument and measurement

The instruments used in this study included interview guides, observation sheets, physical examination records, and daily documentation to assess the effectiveness of peppermint oil aromatherapy. Respiratory rate was the main measurement indicator, recorded over three consecutive days, along with other clinical signs such as dyspnea, cough effectiveness, and secretion clearance.

Data collection and analysis

Data were collected through interviews, observations, physical examinations, and daily documentation. The analysis was conducted qualitatively using a thematic approach based on the responses to changes in the patient's condition following the intervention.

Result

The assessment was conducted from June 3 to June 5, 2025, at the patient's home in Baregbeg, on An.S, a 9-year-old male. During the assessment, An.S's mother reported that her child had been experiencing shortness of breath accompanied by a cough and cold for the past two days. The shortness of breath worsened with activity and improved during rest.

Physical examination revealed that the patient was in normal condition with intact sensorium and a Glasgow Coma Scale (GCS) score of E4V6M5. Vital signs were recorded as follows: Blood Pressure (BP): 110/80 mmHg, Pulse: 89 beats/minute, Respiratory Rate (RR): 32 breaths/minute, Temperature: 36.6 °C. Chest examination results indicated infection: the chest was symmetrical, and auscultation revealed fine wet rhonchi.

Table 1. Analysis Data

Symptom	Etiologi	Problem
Subjective Data: The client's mother reported that the client has been experiencing shortness of breath accompanied by a runny nose and cough for the past two days. Objective Data: <ul style="list-style-type: none">Blood pressure (BP)Pulse (P): 89 beats/minuteRespiratory rate (RR): 32 breaths/minuteTemperature (T): 36.6°CPresence of retained secretions observed	<div><div>virus, bacteria, fungi</div><div>↓</div><div>inhaled and adhered</div><div>↓</div><div>pharynx, larynx, nose</div><div>↓</div><div>attacking cells</div><div>↓</div><div>increased mucus production</div><div>↓</div><div>nassal congestion</div><div>↓</div><div>difficulty breathing</div><div>↓</div><div>ineffective airway clearance</div></div>	Ineffective airway clearance related to retained secretions.

Table 2. Intervention Table

(SLKI)	(SIKI)
Objective:	Observation:
After implementing nursing interventions for 3x24 hours, an improvement in airway clearance is expected, with the following outcome criteria:	a) Identify coughing ability b) Monitor for sputum retention
a) Increased effective coughing	Therapeutic: a) Position the patient in semi-Fowler or Fowler position
b) Decreased sputum production	b) Dispose of secretions in a sputum container
c) Improvement in respiratory rate	c) Administer peppermint oil aromatherapy
d) Improvement in breathing	Education: a) Explain the purpose and procedure of effective coughing b) Encourage the patient to take deep breaths up to 3 times
	Collaboration

Table 3. Implementation Table

Nursing diagnosis	Nursing Implementation		
	03 june 2025	04 june 2025	05 june 2025
Ineffective airway clearance related to retained secretions.	1. Improvement in respiratory rate 2. Provide non-pharmacological therapy with inhalation aromatherapy using peppermint oil.	1. Improvement in respiratory rate 2. Provide non-pharmacological therapy with inhalation aromatherapy using peppermint oil.	1. Improvement in respiratory rate 2. Provide non-pharmacological therapy with inhalation aromatherapy using peppermint oil

Table 4. Evaluation

Nursing diagnosis	Nursing Evaluation		
	03 june 2025	04 june 2025	05 june 2025
Ineffective airway clearance related to retained secretions.	<p>S: The client's mother reported that An.S is experiencing shortness of breath.</p> <p>O: Respiratory rate: 32 breaths/minute.</p> <p>A: Ineffective airway clearance not yet resolved.</p> <p>P: Continue interventions.</p> <p>I: Administer inhalation aromatherapy using peppermint oil.</p> <p>E: After administering inhalation aromatherapy with peppermint oil, the client's respiratory rate is 31 breaths/minute. R: Continue intervention.</p>	<p>S: The client's mother stated that her child was still experiencing shortness of breath.</p> <p>O: Respiratory rate: 30 breaths/minute.</p> <p>A: Ineffective airway clearance not yet resolved.</p> <p>P: Continue interventions.</p> <p>I: Administer inhalation aromatherapy using peppermint oil.</p> <p>E: : After administering inhalation aromatherapy with peppermint oil, the client's respiratory rate is 28 breaths/minute.</p> <p>R: Continue intervention.</p>	<p>S: The client's mother reported that her child has started to recover and no longer experiences shortness of breath.</p> <p>O: Respiratory rate: 27 breaths/minute.</p> <p>A: Ineffective airway clearance has been resolved.</p> <p>P: Interventions are discontinued.</p>

Discussion

The child is experiencing difficulty breathing with a respiratory rate of 32 breaths/minute, exceeding the normal limit. Diagnosed with ineffective airway clearance due to infection, cigarette smoke, pollution, allergies, or decreased immunity. (Lestari et al., 2025).

This issue indicates a disturbance in maintaining airway cleanliness, which can disrupt the breathing process and requires appropriate management to improve the client's respiratory quality (Murnisari & Suyamto, 2020).

Based on the intervention to address the issue of ineffective airway clearance through inhalation aromatherapy with peppermint oil, the goal is to alleviate the client's shortness of breath. The author establishes that after an intervention period of 3x24 hours, it is expected that the client's respiratory rate will improve. The planning of the intervention is adjusted according to the client's condition during the assessment, while still referring to the theory, so that the actions taken are relevant and effective according to the client's needs. (Muntamah et al., 2025).

Based on the implementation, this study was conducted over 3 days in two phases to address ineffective airway clearance in the client. Daily implementation showed progress: on the first day, the respiratory rate decreased from 32 breaths/minute to 31 breaths/minute; on the second day, it decreased further from 30 breaths/minute to 28 breaths/minute; and on the third day, the client no longer experienced shortness of breath. The challenge faced was the limitation of time in recording progress over the 3x24 hour period. (Eny et al., 2025). Based on the evaluation over 3 days, there was a significant improvement in the client who initially experienced ineffective airway clearance with a respiratory rate of 32 breaths/minute. After the administration of inhalation aromatherapy with peppermint oil, the respiratory rate decreased to 30 breaths/minute on the second day and reached a normal rate of 27 breaths/minute on the third day. These findings are consistent with similar case studies on a 9-year-old child with respiratory tract infection, where peppermint oil aromatherapy was shown to be effective in reducing respiratory rate. (Rakhmatika et al., 2025).

Restate the Key Findings

This study found that peppermint oil aromatherapy was effective in improving airway clearance in a 9-year-old child with Acute Respiratory Infection (ARI). Over the course of three days, the child's respiratory rate decreased significantly from 32 to 27 breaths per minute, and symptoms of dyspnea and retained secretions improved.

Interpret the Results

The reduction in respiratory rate and improvement in breathing symptoms indicate that the menthol content in peppermint oil may act as a natural decongestant and bronchodilator, promoting easier airway clearance. These results suggest that peppermint oil inhalation can serve as an effective complementary intervention in pediatric respiratory care.

Compare with Previous Studies

These findings are consistent with previous studies, such as Gigih & Sari (2023) and Rakhmatika et al. (2025), which also demonstrated that peppermint oil aromatherapy can improve respiratory function and reduce symptoms in children with ARI. Similar

improvements in respiratory rate and effectiveness of coughing have been reported in multiple complementary therapy studies involving essential oils.

Highlight the Implications

The study emphasizes the potential of peppermint oil as a safe, affordable, and easily applicable complementary therapy for children with ineffective airway clearance. It also supports the integration of non-pharmacological interventions into nursing practice, particularly in community or home-care settings with limited access to medical treatments.

Discuss the Limitations

This study was limited by its case study design, involving only a single respondent. The absence of a control group and short observation period (3 days) also restrict the generalizability of the findings. Additionally, the outcome relied primarily on observational data, which may be subject to bias.

Suggest Future Research

Future research should involve larger sample sizes, randomized control trials, and longer follow-up periods to assess the long-term effects and safety of peppermint oil aromatherapy. Studies comparing different essential oils or delivery methods (e.g., steam inhalation vs. diffusers) could also help determine the most effective therapeutic practices.

Conclusion

The author has conducted an assessment of the patient, An.S, over a period of 3x24 hours through interviews, observations, physical examinations, and documentation. Interviews were used to gather identity and health history, while the physical examination was conducted thoroughly using a head-to-toe approach. After the nursing interventions were implemented according to the plan, evaluations were conducted daily to assess the client's progress. The evaluation results indicate that the issue of ineffective airway clearance related to retained secretions has been successfully resolved.

Acknowledgement

Thank you to the family of the patient, An.S, and to all parties who have assisted in the implementation of this case study.

Author Contribution

Asep Andang Permana carried out all stages of the research, from assessment, intervention, to article writing. Andan Firmansyah played a role in providing guidance and conducting validation.

Conflict of Interest

There are no conflicts in this research

Ethical Clearance

Ethical approval has been obtained from STIKes Muhammadiyah Ciamis, along with informed consent from the patient's parents.

Funding

This research did not receive external funding and was self-funded by the researcher.

References

- Alysia Nur Azhari. (2024). Implementasi Aromaterapi Peppermint Terhadap Peningkatan Bersihan Jalan Napas Pada Anak Balita Dengan Ispa.
- Entianopa, E., Husaini, A., Parman, P., & Hilal, T. S. (2023). Edukasi Tentang Ispa (Infeksi Saluran Pernafasan Akut) Di Masyarakat Desa Air Hangat Kabupaten Kerinci. *Jurnal Abdi Insani*, 10(2), 671–677.
- Eny, N. A., Ayubbana, S., & Hasanah, U. (2025). Implementasi Batuk Efektif Terhadap Ketidakefektifan Bersihan Jalan Nafas Pada Pasien Penyakit Paru Obstruktif Kronik (Ppok). *Jurnal Cendikia Muda*, 5(3), 462–468.
- Gigih, , & Sari, K. (2023). Effectiveness Of Use Of Peppermint Aromatherapy As A Way To Improve Respiratory Cleaning In Patients With Acute Respiratory Tract Infections (Ari). In *Journal of TSCNers* (Vol. 8, Issue 1). <http://ejournal.annurpurwodadi.ac.id/index.php/TSCNers>
- Lestari, N. N. E., Kep, M., An, S. K., & Piko, S. O. (2025). Buku Asuhan Keperawatan Anak Dengan Gangguan Sistem Respirasi. Mahakarya Citra Utama Group.
- Muntamah, U., Apriyanto, A., & Agil, N. M. (2025). Buku Referensi Panduan Keperawatan Modern: Komprehensif dan Praktis. PT. Sonpedia Publishing Indonesia.
- Murnisari, A., & Suyamto, S. (2020). Manajemen Jalan Napas Clapping dan Vibrasi Terhadap kebersihan Jalan Napas dengan Klien Pneumonia. *Prosiding Diseminasi Hasil Penelitian Dosen Program Studi Keperawatan Dan Farmasi Volume 2 Nomor 1 Bulan Januari Tahun 2020*.
- Mustikawati, A. (2023). Kombinasi Pijat Bayi Dan Aroma Terapi Peppermint Terhadap Lama Penyembuhan Ispa Pada Bayi Usia < 1 Tahun. *Jurnal Delima Harapan*, 10(2), 25–30.
- Nurhayati, I., Yuniarti, T., Hidayat, U., Pramudyono, R. K., Wardhani, A. K., & Shohib, I. A. (2025). Penyelidikan epidemiologi kejadian ISPA pada balita di Puskesmas Tanjungsang Subang Jawa Barat. *Avicenna: Journal of Health Research*, 8(1).
- Qarimah, Y. A., Priono, R. I. P., Surasmaji, L. I., & Ariyanto, S. (2025). Hubungan Asi Eksklusif, Imunisasi Dasar, Orang Tua Perokok Dengan Infeksi Saluran Pernapasan Akut (ISPA) Pada Bayi 0-24 Bulan di PUSKESMAS Bagu Tahun 2024. *Bioscientist: Jurnal Ilmiah Biologi*, 13(1), 374–381.
- Rakhmatika, V., Widiyanto, E. P., & Kusuma, E. (2025). Asuhan Keperawatan Bersihan Jalan Napas Tidak Efektif Pada Anak Dengan Infeksi Saluran Pernapasan Akut Melalui Teknik Fisioterapi Dada: Nursing Care For Ineffective Airway Clearance In Children With Acute

- Respiratory Infections Through Chest Physiotherapy Techniques. *Jurnal Ilmiah Pamenang*, 7(1), 119–125.
- Saputri, J. R., Sholih, M. G., & Dwiputra, R. R. (2025). Identifikasi Faktor Resiko dan Terapi Infeksi Saluran Pernafasan Akut (ISPA) pada Balita: Literature Review: Risk Factor Identification and Treatment of Acute Respiratory Infection (ARI) in Toddlers: a Literature Review. *Jurnal Surya Medika (JSM)*, 11(2), 145–151.
- Yummi, F. L. (2025). Pemanfaatan Aroma Terapi Pappermint Kombinasi Kapulaga Untuk Mengatasi Hyperemesis Gravidarum Pada Ibu Hamil. *Bookchapter Stunting*.