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The Effect of Massage for The Common Cold Using Syzygium Aromaticum on Reducing Cough Symptoms in Toddlers at The Dede Child Health Center in Purwakarta in 2026

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Abstract

Cough and cold symptoms in toddlers, as part of Acute Respiratory Infections (ARI), remain a common health problem with a high incidence rate. Common Cold Massage using Syzygium aromaticum is believed to provide relaxation and anti-inflammatory effects that may help relieve respiratory symptoms. This study aims to evaluate changes in cough and cold symptoms among toddlers following Common Cold Massage using Syzygium aromaticum at TPMB Dede Purwakarta, West Java, Indonesia, in 2026. This quasi-experimental study employed a one-group pretest-posttest design and was conducted at an independent midwifery practice (TPMB Dede Purwakarta) from February to May 2026. A total of 50 toddlers who met the inclusion criteria were recruited using total sampling. Data were collected using a cough and cold symptom observation sheet, a massage standard operating procedure checklist, and a questionnaire. Changes in symptom scores before and after the intervention were analyzed using the Wilcoxon signed-rank test. Cough and cold symptom scores significantly decreased following Common Cold Massage using Syzygium aromaticum ($p = 0.001$). Moderate symptoms decreased from 82% before the intervention to 10% after the intervention, while 16% of toddlers experienced no symptoms after treatment. These findings indicate an association between the intervention and reduced symptom severity. Common Cold Massage using Syzygium aromaticum was associated with a significant reduction in cough and cold symptoms among toddlers at TPMB Dede Purwakarta in 2026. However, the absence of a control group and the use of a single study setting may limit causal inference and the generalizability of the findings.

INTRODUCTION

Acute Respiratory Infection (ARI) remains one of the leading causes of morbidity and mortality among children under five worldwide. Toddlers are particularly vulnerable to respiratory infections because their immune systems are not fully developed (World Health Organization, 2024; UNICEF, 2023; Kliegman et al., 2020; Walker et al., 2023; Murray & Lopez, 2022). Cough and cold symptoms, characterized by cough, rhinorrhea, mild fever, sleep disturbances, and decreased appetite, are commonly caused by viral infections such as respiratory syncytial virus (RSV), influenza virus, and rhinovirus (Cherry et al., 2021; Florin et al., 2023; Jain et al., 2021; WHO, 2024; Troeger et al., 2022). According to the World Health

Organization (WHO), approximately 13 million cases of ARI occur annually worldwide, causing nearly four million child deaths each year, with most deaths occurring in developing countries (WHO, 2024; UNICEF, 2023; World Bank, 2024; GBD, 2023; Murray & Lopez, 2022). ARI remains among the top ten causes of death globally (WHO, 2024; GBD, 2023; Walker et al., 2023; Troeger et al., 2022; UNICEF, 2023).

In Indonesia, ARI continues to be one of the most frequently reported diseases, with approximately 13.37 million cases recorded in 2025 (Ministry of Health Indonesia, 2025; Badan Pusat Statistik, 2025; WHO, 2024; Riskesdas, 2024; UNICEF, 2023). West Java Province ranks second among Indonesian provinces with the highest number of ARI cases, reporting 1,787,725 cases (Dinas Kesehatan Jawa Barat, 2025; Ministry of Health Indonesia, 2025; Badan Pusat Statistik, 2025; WHO, 2024; Riskesdas, 2024). In Purwakarta Regency, non-pneumonia cough cases among children under five increased from 25,229 cases in 2023 to 26,823 cases in 2024 and reached 30,254 cases in 2025 (Dinas Kesehatan Kabupaten Purwakarta, 2025; Ministry of Health Indonesia, 2025; Badan Pusat Statistik Purwakarta, 2025; Riskesdas, 2024; WHO, 2024). Data from the Koncara area showed 902 cases in 2024 and 820 cases in 2025, while at TPMB Dede Purwakarta, the number of toddlers with cough and cold complaints increased from 106 cases in 2024 to 150 cases in 2025 (TPMB Dede Purwakarta, 2025; Dinas Kesehatan Kabupaten Purwakarta, 2025; Ministry of Health Indonesia, 2025; WHO, 2024; Riskesdas, 2024). These findings indicate that cough and cold symptoms among toddlers remain an important public health concern at both regional and local levels (WHO, 2024; UNICEF, 2023; Ministry of Health Indonesia, 2025; Dinas Kesehatan Jawa Barat, 2025; Riskesdas, 2024).

The management of cough and cold symptoms in toddlers includes pharmacological and non-pharmacological approaches (Kliegman et al., 2020; Hockenberry & Wilson, 2021; Perry et al., 2021; WHO, 2024; American Academy of Pediatrics, 2023). Pharmacological therapy requires careful consideration because of potential adverse effects and safety concerns in children (American Academy of Pediatrics, 2023; Hockenberry & Wilson, 2021; Kliegman et al., 2020; WHO, 2024; Perry et al., 2021). Therefore, complementary non-pharmacological interventions are increasingly used to improve comfort and symptom management (Field, 2021; McClure, 2022; Perry et al., 2021; Diego et al., 2020; WHO, 2024). Common Cold Massage is a specific massage technique involving the chest, back, and neck areas that stimulates the parasympathetic nervous system, improves blood circulation, reduces muscle tension, and promotes relaxation (Field, 2021; McClure, 2022; Diego et al., 2020; Hockenberry & Wilson, 2021; Perry et al., 2021). In addition, Clove oil contains eugenol, flavonoids, and tannins, which possess anti-inflammatory, antimicrobial, antiviral, antioxidant, and warming properties (Cortés-Rojas et al., 2014; Chaieb et al., 2007; Mittal et al., 2014; Nassar et al., 2020; Shan et al., 2021). The combination of massage stimulation and the transdermal absorption of eugenol may contribute to reducing respiratory discomfort and alleviating cough and cold symptoms in toddlers (Caballero-Gallardo et al., 2025; Sultan et al., n.d.).

Previous studies have demonstrated the benefits of massage therapy in reducing cough and cold symptoms among children. Pratiwi et al. (2024) reported a decrease in symptom scores from 3.08 (severe category) before treatment to 2.00 (moderate category) after Common Cold Massage ($p = 0.000$). Other studies have highlighted the pharmacological properties of clove oil, particularly its anti-inflammatory and antimicrobial effects. However, previous

studies mainly investigated massage therapy or Syzygium aromaticum separately. Evidence regarding the combination of Common Cold Massage and Syzygium aromaticum for clinical symptom reduction in toddlers remains limited. Furthermore, studies evaluating this intervention in independent midwifery practice settings are scarce.

The novelty of this study lies in integrating Common Cold Massage with Syzygium aromaticum as a complementary therapy for toddlers with cough and cold symptoms in an independent midwifery practice setting. This study combines the mechanical effects of massage and the biological activity of eugenol to provide a practical and potentially beneficial intervention for symptom management. To the best of our knowledge, no previous study has specifically examined this combination among toddlers attending TPMB Dede Purwakarta.

Therefore, this study aimed to evaluate changes in cough and cold symptoms among toddlers following Common Cold Massage using Syzygium aromaticum at TPMB Dede Purwakarta in 2026.

The research hypothesis was that cough and cold symptom scores among toddlers would be significantly lower after receiving Common Cold Massage using Syzygium aromaticum compared with before the intervention.

METHOD

This study employed a quantitative approach with a quasi-experimental one-group pretest-posttest design. The study was conducted at TPMB Dede Purwakarta, Purwakarta Regency, West Java, Indonesia, from February to April 2026. A total of 50 toddlers with cough and cold symptoms constituted the study population. Participants were recruited using a total sampling technique, resulting in 50 respondents.

The inclusion criteria were toddlers aged 6–59 months with mild to severe cough and cold symptoms, body temperature below 37.5°C, no history of allergy to *Syzygium aromaticum*, and parents willing to participate in the intervention. Toddlers with body temperature ≥37.5°C, known allergy to *Syzygium aromaticum*, or a history of chronic diseases were excluded from the study.

The intervention consisted of Common Cold Massage using 1% *Syzygium aromaticum* oil diluted with virgin coconut oil. Massage was applied to the chest and back areas for 10–20 minutes per session and repeated three times over a 14-day period. Baseline assessment of cough and cold symptoms was performed before the intervention, followed by post-intervention assessment after completion of the treatment period.

Data were collected using a cough and cold symptom observation sheet, a massage standard operating procedure checklist, and a structured questionnaire. Data processing included editing, coding, entry, and cleaning procedures. Univariate analysis was performed to describe the characteristics of participants and study variables. Since the symptom score data were not normally distributed, bivariate analysis was conducted using the Wilcoxon signed-rank test to compare symptom scores before and after the intervention. Statistical significance was set at $p < 0.05$. In addition, effect size was calculated using the formula $r = Z/\sqrt{N}$ to determine the magnitude of the intervention effect. Based on the Wilcoxon test result ($Z = -7.000$; $N = 50$), the effect size was 0.99, indicating a large clinical effect.

This study was conducted in accordance with ethical principles for research involving human participants. Ethical approval was obtained from the Health Research Ethics Committee

of Politeknik Bhakti Asih Purwakarta (Approval No. 02/KEPK-PBA/2026). Written informed consent was obtained from the parents or legal guardians of all participating toddlers prior to data collection.

RESULTS AND DISCUSSION

This study involved 50 toddlers who experienced cough and flu and visited TPMB Dede Purwakarta during the period from February to April 2026. Respondents were selected using a total sampling technique based on the inclusion and exclusion criteria that had been set. Data collection was carried out in two stages, namely pretest measurement before intervention and posttest after the administration of Common Cold Massage using Syzygium Aromaticum for 3 meetings for 14 days. The following are the results of the research that has been obtained.

Table 1. Distribution of Pretest and Posttest Frequencies of Cough and Flu Symptoms in Toddlers at TPMB Dede Purwakarta for the Period of February-April 2026

Categories of Flu Cough Symptoms	Pretest f (%)	Posttest f (%)
No flu cough (score 0)	0 (0,0%)	8 (16,0%)
Light (score 1–4)	9 (18,0%)	37 (74,0%)
Medium (score 5–9)	41 (82,0%)	5 (10,0%)
Weight (score 10–15)	0 (0,0%)	0 (0,0%)
Total	50 (100,0%)	50 (100,0%)

The results of the study in Table 1 show that before treatment, most of the respondents (82.0%) were in the moderate category with a symptom score of 5–9, while only 18.0% were in the mild category. None of the respondents were in the severe or asymptomatic category. After the Common Cold Massage intervention using Syzygium Aromaticum, there was a significant change in the distribution of symptom categories. The majority of respondents (74.0%) moved to the mild category, 16.0% experienced complete recovery (no symptoms), and only 10.0% remained in the moderate category. None of the respondents were in the severe category after treatment. These changes show that the intervention given is effective in reducing the severity of flu cough symptoms in toddlers.

Table 2. Average Flu Cough Symptoms Before and After Common Cold Massage Intervention Using Syzygium Aromaticum

Variable	N	Red ± SD	Median
Pretest	50	1.82 ± 0.388	2,00
Posttest	50	0.94 ± 0.512	1,00

The data in Table 2 shows that the mean value of flu cough symptoms in the pretest was 1.82 ± 0.388 with a median of 2.00. A relatively small standard deviation (0.388) indicates that the pretest scores were evenly distributed among respondents. After the Common Cold Massage intervention using Syzygium Aromaticum for 14 days with 3 meetings, the mean

value decreased to 0.94 ± 0.512 with a median of 1.00. This decline indicates a meaningful change in the clinical condition of respondents. The average difference between the pretest and posttest was 0.88 points, which statistically and clinically showed significant improvement. An increase in standard deviation at the posttest (0.512 versus 0.388) suggests that there is variation in response to the intervention, likely due to differences in individual characteristics such as age, nutritional status, and immunization status of toddlers.

Table 3. Environment of Cigarette Exposure in Toddlers with Cough and Flu

Cigarette Exposure Environment	Quantity (N)	Percentage (%)
No smokers in the house	34	68,0
There is a smoker in the house	16	32,0
Total	50	100,0

The results of the environmental analysis of cigarette exposure in Table 3 show that most respondents (68.0%) live in a house without smokers, while 32.0% live in a home with at least one family member who smokes. The majority of respondents were in a relatively healthier environment in terms of exposure to cigarette smoke. Exposure to cigarette smoke is one of the important factors that can affect the health of the respiratory system of toddlers. Cigarette smoke contains more than 4,000 harmful chemicals, including nicotine, tar, and carbon monoxide that can damage the protective mucus lining of the respiratory tract. The presence of smokers in the household can increase the concentration of particulate matter in indoor air, thereby increasing the risk of infection and inhibiting the recovery process of cough flu symptoms in toddlers.

Table 4. Immunization Status in Toddlers with Flu Cough

Immunization Status	Quantity (N)	Percentage (%)
Complete immunization	32	64,0
Incomplete immunization	18	36,0
Total	50	100,0

The data in Table 4 shows that most of the respondents (64.0%) have complete immunization status according to the age schedule, while 36.0% still have incomplete immunization. Complete immunization status means that respondents have received basic vaccines such as BCG, hepatitis B, polio, DPT, Hib, PCV, and measles in accordance with the national immunization schedule. Immunization has an important role in forming a child's immune system against various infectious diseases, including respiratory tract infections. Vaccines such as DPT, Hib, and PCV can help the body form specific antibodies that protect against pathogens that cause respiratory infections. The proportion of respondents with incomplete immunization (36.0%) shows that there is still a gap in immunization coverage in the study area, which can have an impact on susceptibility to infectious diseases.

Table 5. Normality Test of Pretest and Posttest Data for Flu Cough Symptoms

Categories	Sig.	Remarks
Pretest	0,000	Abnormal distribution
Posttest	0,000	Abnormal distribution

The results of the normality test using the Shapiro-Wilk test in Table 5 show that both the pretest and posttest data have a significance value of 0.000, which is much smaller than the alpha value of 0.05. This indicates that both data are not distributed normally. Abnormal data distribution can occur for several reasons, including limited sample sizes, high data variability, or outliers in the data. When the assumption of normality is not met, parametric statistical tests such as paired t-tests cannot be used. Therefore, for bivariate analysis to test the difference between pretest and posttest, the researcher used a more robust nonparametric test, namely the Wilcoxon test (Wilcoxon Signed-Rank Test). This test does not require the assumption of data normality and is more suitable for data with abnormal distributions or for data with ordinal scales.

Table 6. Wilcoxon Test Results of Common Cold Massage Using Syzygium Aromaticum

Variable	N	Red ± SD	p-Value
Pretest	50	1.82 ± 0.388	0,001
Posttest	50	0.94 ± 0.512	

The results of the Wilcoxon Signed-Rank Test in Table 6 show a p-value of 0.001, which is much smaller than the alpha significance level of 0.05. These results indicate that there is a very significant difference between the flu cough symptom scores before and after the administration of the Common Cold Massage intervention using Syzygium Aromaticum. The value of p = 0.001 indicates that the probability of this difference occurring by chance is less than 0.1%, so it can be concluded with great confidence that the intervention given has a significant influence on the reduction of flu cough symptoms. A decrease in the mean value from 1.82 to 0.94 showed a significant clinical improvement in respondents. These results provide strong evidence that Common Cold Massage using Syzygium Aromaticum is an effective nonpharmacological intervention in reducing flu cough symptoms in toddlers.

Table 7. Environmental Relationship of Cigarette Exposure with Reduced Flu Cough

Cigarette Exposure Environment	N	Red ± SD	p-Value
No smokers	34	0.76 ± 0.431	0,000
There are smokers	16	1.31 ± 0.479	

The results of bivariate analysis based on the environmental variables of cigarette exposure in Table 7 showed a p-value of 0.000, indicating a very significant relationship between the environment of cigarette exposure and a decrease in cough flu symptoms in toddlers. The group of toddlers who lived at home without smokers showed a lower mean value

(0.76 ± 0.431) than the group living with smokers (1.31 ± 0.479). Lower mean values in the non-smoking group indicated that their flu cough symptoms decreased better after the intervention. The difference in the mean value of 0.55 points shows that the environment without exposure to cigarettes makes a significant positive contribution to the recovery process. This proves that reducing exposure to cigarette smoke at home is an important factor in supporting the effectiveness of Common Cold Massage therapy.

Table 8. The Relationship between Immunization Status and Decreased Flu Cough

Immunization Status	N	Red ± SD	p-Value
Complete immunization	32	0.78 ± 0.479	0,013
Incomplete immunization	18	1.22 ± 0.428	

The results of bivariate analysis based on the immunization status variables in Table 8 showed a p-value of 0.013, which is significant at the level of 0.05 but not as strong as the p-value of the cigarette exposure variable. The group of toddlers with complete immunization showed a better mean value of symptom reduction (0.78 ± 0.479) compared to the group with incomplete immunization (1.22 ± 0.428). The difference in the mean value of 0.44 points showed that complete immunization status contributed positively to the recovery process of flu cough symptoms after the intervention. The fully immunized group had a stronger immune system and had developed specific antibodies against various pathogens that cause respiratory tract infections, so they could respond to infections more effectively and the recovery process took place faster. These results suggest that immunization status was a significant confounding factor in this study and needs to be considered when interpreting the effectiveness of the Common Cold Massage intervention.

This study aims to prove the effectiveness of Common Cold Massage using Syzygium Aromaticum in reducing flu cough symptoms in toddlers. The results of the study showed that the intervention had a significant and clinically meaningful effect on the reduction of flu cough symptoms in toddlers. The following discussion will analyze the results of the research in depth by linking the findings with relevant theories, physiological mechanisms, and previous studies.

Changes in Cough and Cold Symptoms Following the Intervention

Before the intervention, most toddlers (82.0%) experienced moderate cough and cold symptoms, indicating that respiratory complaints substantially affected their comfort, sleep quality, and daily activities. After receiving Common Cold Massage using *Syzygium aromaticum* for 14 days, symptom severity markedly decreased. Most participants (74.0%) shifted to the mild category, 16.0% became symptom-free, and only 10.0% remained in the moderate category. The Wilcoxon signed-rank test demonstrated a statistically significant reduction in symptom scores (mean pretest = 1.82; mean posttest = 0.94; $p = 0.001$), with a large effect size ($r = 0.99$). These findings indicate that the intervention was associated with a clinically meaningful reduction in symptom severity.

Similar findings were reported by Pratiwi et al. (2024), who observed a decrease in cough and cold symptom severity after Common Cold Massage in toddlers. Kusuma Devi et al. (2024) also found that Common Cold Massage accelerated the recovery of acute respiratory

infection symptoms compared with eucalyptus steam therapy. Consistent with these studies, the present findings support the beneficial role of massage-based interventions in improving respiratory symptoms. However, unlike previous studies, the current study incorporated *Syzygium aromaticum* oil, which may have contributed additional anti-inflammatory and antimicrobial effects.

The reduction in symptoms may be explained by several physiological mechanisms. Massage stimulation on the chest and back promotes parasympathetic activity, improves blood circulation, reduces muscle tension, and enhances relaxation. In addition, eugenol, the major bioactive compound contained in *Syzygium aromaticum*, has anti-inflammatory, analgesic, antimicrobial, and antioxidant properties. Eugenol inhibits the production of prostaglandins and pro-inflammatory cytokines, thereby reducing airway inflammation. The combination of mechanical stimulation from massage and the biological activity of eugenol may have acted synergistically to alleviate cough and cold symptoms. These findings support previous pharmacological studies demonstrating the anti-inflammatory properties of clove oil and suggest that integrating massage with herbal therapy may provide additional benefits.

Influence of Cigarette Smoke Exposure

The present study showed that cigarette smoke exposure was significantly associated with symptom reduction ($p = 0.000$). Toddlers living in smoke-free environments experienced greater improvement compared with those exposed to cigarette smoke. This finding is consistent with previous studies reporting that passive smoking increases susceptibility to respiratory infections and delays recovery among children. Exposure to cigarette smoke impairs mucociliary clearance, promotes excessive mucus production, and induces chronic airway inflammation, which may worsen respiratory symptoms. Therefore, the effectiveness of complementary interventions such as Common Cold Massage may be optimized when accompanied by a smoke-free home environment. These findings emphasize the importance of parental education regarding smoking cessation and environmental health.

Influence of Immunization Status

Immunization status was also significantly associated with symptom improvement ($p = 0.013$). Toddlers with complete immunization exhibited better recovery than those with incomplete immunization. This finding supports previous evidence showing that vaccination enhances adaptive immune responses and reduces the severity of respiratory infections. Vaccines such as DPT, Hib, and pneumococcal conjugate vaccine stimulate the production of specific antibodies and memory cells, enabling faster responses against pathogens. Although Common Cold Massage provides symptomatic relief, adequate immunization remains an important protective factor that contributes to faster recovery. Thus, complementary therapy should not replace routine immunization but rather function as an adjunct to comprehensive child healthcare.

Clinical Implications

The findings suggest that Common Cold Massage using *Syzygium aromaticum* may serve as a safe and accessible complementary intervention for toddlers with cough and cold symptoms. The intervention can be implemented in independent midwifery practices,

community health centers, and primary healthcare facilities. In addition to symptom reduction, improved sleep quality and comfort observed after the intervention may positively affect child well-being and family quality of life. Furthermore, the identification of cigarette smoke exposure and immunization status as important factors highlights the need for comprehensive management involving environmental modification and preventive healthcare. These results support the integration of evidence-based complementary therapies into child healthcare services.

Limitations and Future Directions

Several limitations should be acknowledged. First, the one-group pretest-posttest design without a control group limits causal interpretation because natural recovery and placebo effects cannot be excluded. Second, the relatively small sample size and the use of a single study setting limit the generalizability of the findings. Third, only clinical symptom scores were measured, whereas objective indicators such as oxygen saturation or laboratory parameters were not assessed. Finally, the follow-up period was limited to 14 days, preventing evaluation of long-term outcomes. Future studies employing randomized controlled trial designs with larger sample sizes, control groups, objective measurements, and longer follow-up periods are recommended to provide stronger evidence regarding the effectiveness of Common Cold Massage using *Syzygium aromaticum*.

CONCLUSION

This study proves that Common Cold Massage using Syzygium Aromaticum has a significant influence on reducing flu cough symptoms in toddlers at TPMB Dede Purwakarta in 2026 ($p = 0.001 < 0.05$). The mean value of cough symptoms decreased from 1.82 to 0.94 with clinical improvement seen in 74.0% of respondents. Smoking exposure environment and immunization status also had a significant effect on the recovery process, with toddlers who lived in non-smoking environments and had complete immunizations showing more optimal improvement. This therapy recommends the use of Common Cold Massage with Syzygium Aromaticum as a safe nonpharmacological alternative to treat flu cough in toddlers.

Common Cold Massage using *Syzygium aromaticum* was associated with a significant reduction in cough and cold symptom scores among toddlers at TPMB Dede Purwakarta in 2026. Most participants experienced improvement from moderate to mild symptoms following the intervention, and a large effect size indicated clinically meaningful changes. In addition, cigarette smoke exposure and immunization status were significantly associated with symptom improvement.

However, the absence of a control group, the relatively small sample size, and the use of a single study setting limit causal interpretation and the generalizability of the findings. Therefore, Common Cold Massage using *Syzygium aromaticum* may be considered as a complementary therapy to improve comfort and alleviate cough and cold symptoms in toddlers. Future studies employing randomized controlled trials, larger sample sizes, objective outcome measures, and longer follow-up periods are recommended to provide higher levels of evidence regarding the effectiveness of this intervention.

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