

Effectiveness of Health Education in Improving Mothers' Knowledge of Virgin Coconut Oil (VCO) Massage Therapy to Support Toddlers' Sleep Quality and Health

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Abstract

Introduction: Maternal knowledge is essential for the safe implementation of complementary childcare practices at home. However, many mothers have limited knowledge regarding Virgin Coconut Oil (VCO) massage therapy for toddlers. **Objective:** This study evaluated the effectiveness of health education in improving mothers' knowledge, understanding, and perceptions of VCO massage therapy. **Method:** A quantitative pre-experimental study with a one-group pretest-posttest design was conducted among 30 mothers of toddlers at Cempaka Public Health Center. Participants received structured health education on the benefits and proper techniques of VCO massage therapy. Data were collected using questionnaires before and after the intervention and analyzed descriptively. **Results and Discussion:** The proportion of mothers with good knowledge increased from 40.0% to 86.7%. Understanding of VCO massage benefits for sleep quality improved from 50.0% to 90.0%, knowledge of massage techniques increased from 46.7% to 83.3%, and support for routine implementation rose from 66.7% to 96.7%. Mean scores for knowledge, understanding, and perception also increased after the intervention. **Conclusion:** Health education effectively improved mothers' knowledge, understanding, and positive perceptions regarding VCO massage therapy, supporting its integration into community-based maternal and child health education.

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Introduction

Mothers play a pivotal role in ensuring optimal child health and development through daily caregiving practices. Their knowledge and understanding influence decisions related to nutrition, hygiene, disease prevention, and the adoption of complementary childcare interventions. Adequate maternal knowledge is therefore considered a key determinant of healthy parenting behaviors and an important target of health promotion programs delivered through primary healthcare services. Previous studies have shown that health education can effectively improve caregivers' knowledge, confidence, and willingness to adopt evidence-based childcare practice (Félix & Candeias, 2025; Liguori et al., 2023). Health education is one of the most effective strategies for empowering parents to provide appropriate home-based care for their children. Beyond increasing knowledge, educational interventions help caregivers develop practical skills and positive attitudes that support healthy behaviors. Community Health Centers (*Puskesmas*) and Integrated Health Service Posts (*Posyandu*) in Indonesia routinely deliver maternal and child health education, making them strategic settings for introducing complementary childcare practices that can be safely implemented at home (Bruni et al., 2024; Ogundele & Yemula, 2022; Xavier et al., 2024).

One complementary practice increasingly promoted in maternal and child health services is massage therapy using Virgin Coconut Oil (VCO). VCO is widely used as a massage medium because it is safe, affordable, readily available, and suitable for children's skin. Previous studies have reported that VCO massage may contribute to improved sleep quality, relaxation, and overall well-being among infants and young children when performed appropriately (Aryani et al., 2022; Faizaturrahmi & Aprianti, 2024; Rayhani et al., 2024). However, these benefits can only be achieved if caregivers understand the appropriate indications, techniques, and safety considerations of the therapy. Despite the growing interest in complementary childcare interventions, many mothers still have limited knowledge and confidence regarding the correct application of VCO massage therapy. Insufficient understanding of its benefits and proper techniques may discourage mothers from practicing massage independently or lead to inappropriate implementation. Therefore, strengthening maternal knowledge through structured health education is an essential step toward promoting the safe and effective use of complementary therapies within the home environment (Chen et al., 2024; Kudchadkar et al., 2022; Nia Clarasari Mahalia Putri, 2024; Nunes & El Halal, 2026).

Most previous studies have primarily examined the physiological effects of massage therapy, such as improvements in infant sleep quality, comfort, or growth. Comparatively few studies have investigated whether health education effectively enhances mothers' knowledge, understanding, and perceptions regarding VCO massage therapy, particularly in community-based primary healthcare settings. Since maternal knowledge is a prerequisite for the successful adoption of complementary childcare practices, evaluating educational outcomes is important to support evidence-based health promotion programs. Therefore, this study aimed to evaluate the effectiveness of health education in improving mothers' knowledge, understanding, and perceptions regarding Virgin Coconut Oil (VCO) massage therapy among mothers of toddlers at Cempaka Public Health Center. The findings are expected to provide evidence supporting the integration of structured parental education into routine maternal and child health services to strengthen caregivers' capacity in implementing complementary childcare practices safely and appropriately.

Effectiveness of Health Education in Improving Mothers' Knowledge of Virgin Coconut Oil (VCO) Massage Therapy to Support Toddlers' Sleep Quality and Health

Method

This study employed a quantitative pre-experimental approach using a one-group pretest–posttest design to evaluate changes in mothers' knowledge, understanding, and perceptions regarding Virgin Coconut Oil (VCO) massage therapy for toddlers following a structured health education program. The study compared participants' responses before and after the educational intervention to describe improvements in knowledge-related outcomes. The study was conducted at Cempaka Public Health Center, Banjarbaru City, South Kalimantan, Indonesia, in 2026. The study population consisted of mothers of toddlers who attended Integrated Health Service Posts (*Posyandu*) within the health center's service area. A total sampling technique was employed, whereby all eligible mothers participating in the health education program were recruited. A total of 30 mothers completed both the pretest and posttest questionnaires and were included in the final analysis. The educational intervention consisted of a structured health education session on Virgin Coconut Oil (VCO) massage therapy for toddlers. The educational content included the importance of massage therapy during early childhood, the benefits of VCO massage for improving sleep quality and supporting children's health, indications and contraindications of massage therapy, appropriate massage techniques, recommended frequency of massage, and practical demonstrations of the correct massage procedures. The educational materials were delivered through lectures, PowerPoint presentations, printed leaflets, demonstrations, and interactive discussions facilitated by trained healthcare professionals. Each session lasted approximately 60–90 minutes.

Data were collected using a structured questionnaire developed from relevant literature on complementary therapy and maternal health education. The questionnaire consisted of five assessment domains: (1) knowledge of VCO massage therapy, (2) understanding of the benefits of VCO massage for improving toddlers' sleep quality, (3) understanding of the potential health benefits of VCO massage, (4) knowledge of appropriate massage techniques, and (5) support for the routine implementation of VCO massage therapy. The questionnaire was administered immediately before the educational intervention (pretest) and immediately after the educational session (posttest). The study outcomes were assessed by comparing changes in the proportion of respondents demonstrating good knowledge and understanding as well as changes in the average scores obtained before and after the intervention. Descriptive statistical analysis was performed by calculating frequencies, percentages, and mean scores to describe changes in participants' responses following the educational program. The findings were presented in tables to facilitate comparison between pretest and posttest results. Participation in the study was voluntary. Before data collection, all participants received an explanation regarding the study objectives and procedures and provided informed consent. Participant confidentiality and anonymity were maintained throughout the research process.

Result and Discussion

1. Results

A total of 30 mothers of toddlers participated in the health education program and completed both the pretest and posttest questionnaires. The intervention evaluated changes in mothers' knowledge, understanding, and perceptions regarding Virgin Coconut Oil (VCO) massage therapy for supporting toddlers' sleep quality.

Table 1
Changes in Mothers' Knowledge and Understanding of Virgin Coconut Oil (VCO) Massage Therapy

Indicator	Pretest n (%)	Posttest n (%)	Increase
Mothers with good knowledge regarding VCO massage therapy	12 (40.00%)	26 (86.70%)	46.70%
Understanding of the benefits of VCO massage for toddlers' sleep quality	15 (50.00%)	27 (90.00%)	40.00%
Understanding of the benefits of VCO massage for toddlers' health	18 (60.00%)	28 (93.30%)	33.30%
Knowledge of correct massage techniques	14 (46.70%)	25 (83.30%)	36.60%
Support for routine implementation of VCO massage	20 (66.70%)	29 (96.70%)	30.00%

Source: Primary Data, 2026

Table 1 demonstrates that the health education intervention improved mothers' knowledge and understanding regarding Virgin Coconut Oil (VCO) massage therapy. The proportion of mothers with good knowledge increased from 40.0% before the intervention to 86.7% after the intervention, representing the largest increase (46.7 percentage points). Improvements were also observed in mothers' understanding of the benefits of VCO massage for toddlers' sleep quality (50.0% to 90.0%), understanding of its health benefits (60.0% to 93.3%), knowledge of appropriate massage techniques (46.7% to 83.3%), and support for routine implementation (66.7% to 96.7%). These findings indicate that structured health education effectively improved mothers' awareness and acceptance of VCO massage therapy.

Table 2
Changes in Mean Scores Before and After Health Education

Indicator	Pretest n (%)	Posttest n (%)	Increase
Knowledge score	62.50%	85.40%	22.90%
Understanding score	64.20%	87.80%	23.60%
Positive perception score	68.10%	90.30%	22.20%

Source: Primary Data, 2026

As presented in Table 2, the educational intervention resulted in consistent improvements across all measured domains. The average knowledge score increased by 22.9 points, from 62.5 before the intervention to 85.4 afterward. Similarly, the understanding score increased by 23.6 points, while the positive perception score increased by 22.2 points. These findings suggest that the educational program successfully strengthened mothers' cognitive understanding and positive attitudes toward the implementation of VCO massage therapy for toddlers.

2. Discussion

Health education effectively improved maternal knowledge

The present study demonstrated that structured health education effectively improved mothers' knowledge regarding Virgin Coconut Oil (VCO) massage therapy. The proportion of mothers with good knowledge increased from 40.0% before the intervention to 86.7% afterward, indicating that participants acquired essential information related to the benefits, indications, safety considerations, and proper application of VCO massage. This finding highlights the important role of educational

Effectiveness of Health Education in Improving Mothers' Knowledge of Virgin Coconut Oil (VCO) Massage Therapy to Support Toddlers' Sleep Quality and Health

interventions in strengthening maternal health literacy and supporting informed decision-making in childcare.

The findings are consistent with previous studies reporting that structured health education significantly improves maternal knowledge and promotes evidence-based caregiving practices (Xavier et al., 2024; Yuliani et al., 2022). Knowledge is the initial stage of behavioral change because individuals are more likely to adopt recommended health practices after understanding the underlying information. Therefore, improving maternal knowledge is a fundamental step toward empowering caregivers to implement complementary childcare interventions safely and appropriately.

Health education strengthened mothers' understanding of VCO massage therapy

Besides increasing knowledge, the educational intervention substantially improved mothers' understanding of the objectives and appropriate application of VCO massage therapy. Participants demonstrated better comprehension of the role of massage therapy, its potential benefits, and the importance of using proper massage techniques after receiving the educational session. This suggests that the intervention successfully facilitated not only information acquisition but also deeper cognitive understanding.

Understanding reflects an individual's ability to interpret and explain health information rather than merely recalling facts. The combination of lectures, visual presentations, demonstrations, and interactive discussions likely contributed to these improvements by allowing participants to observe correct massage techniques, ask questions, and clarify misconceptions. Consequently, mothers became better prepared to apply the acquired knowledge appropriately within the home setting.

Positive changes in maternal perception support future adoption of complementary childcare practices

An important outcome of this study was the improvement in mothers' positive perceptions toward VCO massage therapy. Support for routinely performing VCO massage increased from 66.7% before the intervention to 96.7% afterward, indicating greater acceptance of this complementary childcare practice following health education. The Knowledge–Attitude–Practice (KAP) framework suggests that increased knowledge contributes to the development of positive attitudes, which subsequently influence behavioral intentions. Although this study did not evaluate whether mothers routinely performed VCO massage after the intervention, the improvement in positive perceptions indicates greater readiness and confidence to adopt the practice. These findings emphasize that educational interventions have the potential to facilitate future behavioral change by strengthening caregivers' confidence and acceptance of recommended health practices.

Implications for maternal and child health education

The findings of this study highlight the importance of integrating structured health education into routine maternal and child health services at *Puskesmas* and *Posyandu*. Educational programs focusing on complementary childcare practices can strengthen mothers' knowledge, improve their understanding of safe caregiving techniques, and foster positive perceptions toward evidence-informed home care. Since mothers are the primary caregivers during early childhood, improving their health literacy may contribute

Effectiveness of Health Education in Improving Mothers' Knowledge of Virgin Coconut Oil (VCO) Massage Therapy to Support Toddlers' Sleep Quality and Health

to better caregiving decisions and greater utilization of appropriate complementary interventions within the family environment.

Study limitations

Several limitations should be acknowledged. First, this study employed a one-group pretest–posttest design without a control group, limiting the ability to attribute observed improvements solely to the educational intervention. Second, the analysis was limited to descriptive statistics without inferential statistical testing. Third, the study evaluated changes in mothers' knowledge, understanding, and perceptions rather than actual caregiving practices or clinical outcomes among toddlers. Future studies should incorporate controlled study designs, larger sample sizes, and inferential statistical analyses while examining whether improvements in maternal knowledge lead to sustained behavioral changes and measurable child health outcomes.

Conclusion

This study demonstrated that a structured health education program effectively improved mothers' knowledge, understanding, and positive perceptions regarding Virgin Coconut Oil (VCO) massage therapy for toddlers. Following the intervention, the proportion of mothers with good knowledge increased substantially, accompanied by improvements in their understanding of the benefits of VCO massage therapy for supporting toddlers' sleep quality, knowledge of appropriate massage techniques, and willingness to implement the therapy routinely at home.

The findings suggest that health education plays an important role in strengthening caregivers' capacity to adopt evidence-informed complementary childcare practices. Although this study did not directly evaluate changes in toddlers' sleep quality, improving maternal knowledge represents an essential first step toward the appropriate implementation of VCO massage therapy in the home environment. Integrating educational programs on VCO massage therapy into routine maternal and child health services at Community Health Centers (*Puskesmas*) and Integrated Health Service Posts (*Posyandu*) may contribute to improving parental awareness and promoting safe complementary childcare practices. Future studies are recommended to employ larger samples, comparison groups, and direct assessment of toddlers' sleep quality and health outcomes to provide stronger evidence regarding the effectiveness of caregiver education.

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Effectiveness of Health Education in Improving Mothers' Knowledge of Virgin Coconut Oil (VCO) Massage Therapy to Support Toddlers' Sleep Quality and Health

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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Effectiveness of Health Education in Improving Mothers' Knowledge of Virgin Coconut Oil (VCO) Massage Therapy to Support Toddlers' Sleep Quality and Health

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