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The Effect of Infant Massage Using Virgin Coconut Oil (VCO) on Increasing Infant Appetite at the Bongo II Community Health Center Technical Implementation Unit

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Abstract. *Injectable contraception remains one of the most widely used family planning methods among couples of reproductive age. However, the success of this method is strongly influenced by the level of knowledge and attitudes of acceptors, which in practice are often still inadequate. This study aimed to evaluate the effectiveness of injectable contraceptive educational videos in improving the knowledge and attitudes of injectable contraceptive acceptors at TPMB Siti Juhariyah. The study employed a quantitative approach with a quasi-experimental one-group pretest–posttest design. A total of 30 injectable contraceptive acceptors were selected as samples using purposive sampling techniques. The intervention consisted of providing an educational video on injectable contraception, followed by the assessment of participants' knowledge and attitudes before and after the intervention using structured questionnaires. Data were analyzed using statistical tests to determine differences between pretest and posttest scores. The results showed a significant increase in acceptors' knowledge, which shifted from moderate and low categories to a good category after the educational video intervention. In addition, the acceptors' attitudes toward the use of injectable contraception also demonstrated a significant positive change. Based on these findings, it can be concluded that injectable contraceptive educational videos are effective in improving the knowledge and attitudes of acceptors. Therefore, educational videos can be utilized as a supportive counseling medium in family planning services to enhance the quality of contraceptive care in independent midwifery practices.*

Keywords: *Attitudes; Educational Videos; Family Planning; Injectable Contraception; Knowledg*

1. INTRODUCTION

The Infancy is an early stage of life that plays a crucial role in determining the quality of a child's growth and development in later stages. During this period, optimal fulfillment of nutritional needs is essential to ensure that growth and developmental processes occur according to age-appropriate milestones. One important indicator reflecting adequate nutritional intake in infants is a healthy and sufficient appetite (Palupi et al., 2023).

Appetite plays a vital role in ensuring that infants receive adequate nutritional intake, either from breast milk or complementary feeding (CF). Infants with poor appetite are at risk of experiencing growth disorders, such as inadequate weight gain for age, wasting, and, in the long term, may contribute to stunting.

In primary healthcare services, complaints related to feeding difficulties or decreased appetite in infants are still frequently encountered and remain a challenge for healthcare providers. This condition is influenced not only by biological factors but also by psychological aspects, environmental conditions, and the type of stimulation received by infants in their daily lives (Fitri et al., 2024).

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Various non-pharmacological interventions have been developed to help improve infants' appetite, one of which is baby massage. Baby massage is a form of tactile stimulation that has been proven to provide benefits to the nervous system, hormonal regulation, and the emotional well-being of infants (Setiyaningsih & Isro'aini, 2024). Physiologically, baby massage can stimulate the activity of the vagus nerve, which plays a role in enhancing digestive system function, improving intestinal motility, and supporting nutrient absorption. These mechanisms may indirectly increase hunger sensations and improve infants' appetite (Tiwery & others, 2023).

In addition to its physiological benefits, baby massage also contributes to strengthening the emotional bond between mother and infant. Gentle and attentive touch can create a sense of security and comfort in infants, which positively affects feeding responses and sleep quality (Fitri et al., 2024). In baby massage practice, the use of massage oil is an important component to reduce friction and enhance comfort during the massage process. One commonly used oil is Virgin Coconut Oil (VCO), which is known to contain medium-chain triglycerides (MCTs) (Hardian & others, 2022).

Virgin Coconut Oil has good emollient properties, is easily absorbed through the skin, and is relatively safe for infant use. Several studies have shown that topical application of VCO can help maintain skin integrity and increase comfort during massage sessions (Hardian & others, 2022). Several experimental studies have also reported that baby massage using coconut oil is associated with weight gain and improved feeding patterns, particularly in infants and neonates. These findings indicate that VCO has the potential to serve as an effective massage medium in supporting infant growth and development (Arora & others, 2021).

In Indonesia, the practice of baby massage using VCO has increasingly been implemented in community-based midwifery and nursing services. However, scientific evidence from local studies remains limited, particularly research that specifically examines its effect on improving infants' appetite (Setiyaningsih & Isro'aini, 2024). UPTD Puskesmas Bongo II, as one of the primary healthcare facilities, plays a strategic role in promotive and preventive efforts to improve infant health. Based on service data, infants with complaints of poor appetite are still identified, safe, and easily applicable intervention approaches. The implementation of baby massage using VCO at UPTD Puskesmas Bongo II is considered to have great potential due to its relatively simple technique, low cost, and feasibility to be taught to mothers as a form of family empowerment in infant care.

Nevertheless, the implementation of any health intervention must be supported by strong scientific evidence to ensure its broad recommendation in healthcare practice. Therefore, systematic research is needed to evaluate the effectiveness of this intervention. Based on this background, this study aims to analyze the effect of baby massage using Virgin Coconut Oil (VCO) on improving infants' appetite at UPTD Puskesmas Bongo II. The findings of this study are expected to serve as an evidence-based reference for the development of effective interventions to enhance the quality of infant healthcare services at the primary healthcare level.

2. RESEARCH METHODS

This This study employed a quasi-experimental design with a pretest–posttest approach to assess changes occurring after the intervention was administered. The research was conducted at UPTD Puskesmas Bongo II in 2025. The study subjects were infants aged 3–12 months who, based on healthcare providers' assessments, experienced decreased appetite or were identified as having poor appetite.

Sample selection was carried out using a purposive sampling technique, taking into account the predetermined inclusion and exclusion criteria. The intervention consisted of baby massage using Virgin Coconut Oil (VCO), which was performed for 14 consecutive days. Each massage session lasted approximately 15 minutes and was conducted either by trained healthcare personnel or by the infants' mothers who had previously received education and demonstrations on proper massage techniques.

In this study, baby massage using VCO was defined as the independent variable, while infants' appetite served as the dependent variable. Appetite assessment was conducted using an observation checklist that included several indicators, such as feeding frequency, duration of breastfeeding or feeding, and the infant's response during the feeding process. The collected data were then analyzed using statistical tests appropriate to the characteristics and distribution of the data. Statistical testing was performed at a significance level of 0.05 to determine whether there were statistically significant differences between conditions before and after the intervention.

3. RESULTS AND DISCUSSION

Results

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Tabel 1. Characteristics of Infant Respondents at the Bongo II Community Health Center

Karakteristik	**n**	**%**
Usia Bayi		
3–6 bulan	18	45,0
7–12 bulan	22	55,0
Jenis Kelamin		
Laki-laki	21	52,5
Perempuan	19	47,5
Status Pemberian ASI		
ASI eksklusif	24	60,0
ASI + MP-ASI	16	40,0
Total	**40**	**100**

Before administering infant massage using Virgin Coconut Oil (VCO), an assessment of the infants' appetite was conducted to determine the initial condition of each respondent. The results of the assessment can be seen in Table 2. Based on the data obtained, most infants had an appetite in the poor category, namely 65.0%. Meanwhile, 35.0% of infants were in the adequate category, and no infants were in the good appetite category.

Table 2. Infant Appetite Before Intervention

Appetite	Frequency (n)	Percentage (%)
Good	0	0
Moderate	14	35,0
Poor	26	65,0
Total	40	**100**

After the baby massage intervention using Virgin Coconut Oil (VCO) was given for 14 consecutive days, the babies' appetite was reassessed. The results of the assessment are presented in Table 3. The data shows an increase in appetite in most infants. The percentage of infants with poor appetite decreased to 15.0%, while the number of infants with adequate appetite increased to 45.0%, and those with good appetite increased to 40.0%.

Table 3. Infant Appetite After Intervention

Appetite	Frequency (n)	Percentage (%)
Good	16	40,0
Moderate	18	45,0
Poor	6	15,0
Total	40	**100**

To determine whether there was a significant difference between the infants' appetite before and after the intervention, an analysis was performed using the Wilcoxon Signed Rank Test. The results of the analysis shown in Table 4 indicate that the average appetite score increased from 1.35 ± 0.48 before the intervention to 2.25 ± 0.67 after the intervention. The p-value obtained was 0.000 (< 0.05), so it can be concluded that the increase was statistically significant.

Table 4. Differences in Appetite Before and After Intervention

Variabel	Mean	SD	p-value
Before intervention	1,35	0,48	
After intervention	2,25	0,67	**0,000**

An overview of changes in infant appetite indicators after intervention can be seen in Table 5. The table shows that there were improvements in several aspects, including feeding frequency, infant response when fed, and overall appetite category**.**

Table 5. Summary of the Effects of Baby Massage Using VCO

Variabel	Before	After	Description
Appetite	Low–Moderate	Moderate–Good	Increased
Frequency of feeding	Rare	More frequent	Increased
Baby's response	Less active	More active	Increased

Based on the results obtained, it can be tentatively concluded that massaging babies with Virgin Coconut Oil (VCO) has a positive effect on increasing their appetite. This can be seen from both the descriptive analysis and statistical test results. Thus, this intervention has the potential to be used as a non-pharmacological strategy to support infant growth in the Puskesmas service area.

Discussion

The results of this study show that infant massage using Virgin Coconut Oil (VCO) has a significant effect on increasing infants' appetite. This is evident from the clear change in appetite categories before and after the intervention. Prior to massage, most infants were in the low appetite category, whereas after 14 days of intervention, the majority showed an improvement in feeding interest. These findings strengthen the evidence that infant massage is a simple yet effective intervention to support the fulfillment of infants' nutritional needs.

The results are also consistent with previous research reporting that infant massage can improve feeding behavior and nutritional intake through sensory stimulation and relaxation. Physiologically, this effect can be explained through the activation of the parasympathetic nervous system, particularly the vagus nerve, which plays a major role in regulating gastrointestinal function. When infants receive gentle pressure, rhythmic movements, and warm touch during massage, parasympathetic activity increases.

This activation enhances intestinal motility, digestive enzyme secretion, and the body's readiness to process food. As a result, infants become more likely to feel hungry and respond better to feeding (Tiwery & others, 2023). In addition to influencing the nervous system, tactile stimulation during massage has been shown to increase digestive hormones such as gastrin and insulin. These hormones play an important role in metabolism and nutrient absorption, helping the infant's body process food more efficiently. When digestion functions optimally, the body naturally responds by increasing hunger signals. This explains the significant improvement in appetite observed after the intervention period.

The use of Virgin Coconut Oil as a massage medium also contributes positively to the intervention's success. VCO has a soft texture, is easily absorbed into the skin, and carries a low risk of irritation, making it safe for infants. This comfort allows infants to enjoy the massage without distress. In addition, the medium-chain fatty acids in VCO help maintain skin moisture, allowing smoother massage strokes with minimal friction.

A comfortable massage environment is essential, as a more relaxed infant will experience greater therapeutic benefits (Hardian & others, 2022). The state of relaxation produced during massage plays a key role in stress regulation. Reduced stress levels are associated with decreased cortisol and greater parasympathetic activity. Infants in a calm state tend to have better sleep patterns, more regular feeding rhythms, and a more positive feeding response.

These findings are also consistent with other studies reporting that coconut-oil massage can improve infants' body weight, feeding frequency, and overall feeding behavior. This strengthens the argument that infant massage does not only influence appetite but also contributes to overall growth and development. When appetite improves, the likelihood of adequate nutritional intake also increases (Arora & others, 2021).

Beyond physiological benefits, infant massage also has psychological value. During massage, meaningful interaction occurs between mother and infant through touch, eye contact, and nonverbal communication. This interaction promotes stronger emotional bonding. Infants who feel secure and comfortable with their caregiver tend to be more cooperative during feeding. This indicates that emotional wellbeing also plays an important role in shaping appetite (Setiyaningsih & Isro'aini, 2024).

Increased appetite among infants aged 3–12 months is particularly important because this age group is undergoing transition to complementary feeding (MP-ASI). This phase often triggers feeding difficulties such as food refusal or reduced feeding frequency. Infant massage may help prepare the body to better tolerate feeding transitions, allowing adaptation to occur more smoothly.

Within the context of primary healthcare services, this intervention offers several advantages. It is simple, affordable, and does not require special medical equipment. Mothers can be trained through health education sessions at community clinics, enabling the practice to continue at home. Therefore, infant massage is highly applicable in primary healthcare centers such as puskesmas.

This study also supports promotive and preventive health strategies aimed at improving infant nutrition. As a non-pharmacological approach, infant massage is particularly suitable for infants who are highly sensitive to medication-based interventions. Through this natural method, feeding problems may be reduced and optimal growth better supported. However, this study has certain limitations.

The quasi-experimental design limits control over external variables such as household feeding practices, environmental stimulation, and underlying infant health conditions. Therefore, causal interpretation should be approached with caution. The study also did not measure direct physiological indicators such as digestive hormones or biochemical markers, meaning that the biological mechanisms discussed are still theoretical and based on prior literature. Despite these limitations, the findings provide early empirical support that infant massage using VCO is safe and beneficial, particularly for increasing appetite in infants.

Future studies are recommended to use a true experimental design with larger samples and extended intervention duration. Additional outcomes such as weight gain and nutritional status should also be evaluated to provide a more comprehensive understanding of the intervention's long-term impact. Overall, infant massage using Virgin Coconut Oil may be considered a safe, effective, and easily implemented complementary intervention. When performed routinely with appropriate guidance from healthcare providers, this practice has the potential to support infant nutrition programs at the primary healthcare level.

4. CONCLOSION

In Baby massage using Virgin Coconut Oil (VCO) has been shown to have a positive effect on increasing infants' appetite at UPTD Puskesmas Bongo II. This improvement is reflected in the shift of appetite categories from initially low to moderate and good levels, along with an increase in feeding frequency and more enthusiastic feeding responses. Infants appeared more active, responsive, and willing to breastfeed or consume complementary foods. These findings align with the theory that tactile stimulation during massage, combined with the soothing properties of VCO, can influence the parasympathetic nervous system and digestive hormones. As a result, this stimulation supports digestive function and enhances the infant's natural hunger signals.

In addition, baby massage using VCO can be considered a safe, simple, and non-pharmacological intervention that is practical for use in community health settings. The technique is relatively easy to teach and can be performed not only by trained health workers but also by parents after receiving appropriate guidance. When implemented at the level of primary health

care services such as puskesmas, this intervention has the potential to strengthen promotive and preventive programs aimed at improving infant nutritional status. Beyond the physiological benefits, baby massage also contributes to strengthening the emotional bond between mother and child. This stronger attachment may increase a sense of comfort and security in the infant, which in turn supports better feeding behavior and overall developmental outcomes.

The findings of this study also emphasize the importance of non-invasive and family-centered approaches in child health services. Interventions like baby massage empower parents to take an active role in maintaining their child's well-being, while at the same time reducing reliance on medical or pharmacological strategies. This is particularly relevant in resource-limited settings, where low-cost and accessible methods are highly valuable for public health.

However, to strengthen the scientific basis of these findings, future research is recommended to employ more rigorous research designs, such as true experimental studies with larger and more diverse samples. Extending the duration of the intervention and follow-up period would also allow researchers to observe longer-term effects on appetite, growth, and development. It would also be beneficial to include additional objective measures, such as hormonal or biochemical indicators related to appetite regulation, to better explain the biological mechanisms underlying the observed improvements.

Overall, baby massage using VCO can be considered a promising complementary intervention to support infant appetite, feeding success, and nutritional status. With further scientific evidence and structured implementation, this practice has the potential to be integrated into routine maternal and child health programs at the primary care level and possibly adopted as part of broader child health policies at the national level.

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