

COMBINATION OF GIVING BABY MASSAGE WITH CITRONELLA OIL FOR APPETITE DISORDERS IN TODDLERS AGED 12-24 MONTHS

Putu Ayu Eka Sumariati¹, Luh Putu Widiastini^{1*}, Ni Putu Yunita Sri Lestari¹, Ni Made Egar Adhiestiani¹

¹Bachelor's Degree of Midwifery Program And Professional, STIKES Bina Usaha Bali, Indonesia

* Corresponding author:

E-mail: enick.dilaga@gmail.com

ABSTRACT

Background: Appetite disorder was noted as one of the nutritional issue causation in toddlers. Pharmacological or non-pharmacological methods have been developed to overcome this problem. As non-pharmacological method, researchers attempted to solve the problem by using a combination of baby massage and citronella oil.

Objectives: This study aimed to determine the effect of the combination of giving baby massage and citronella oil on appetite disorders in toddlers aged 12-24 months in the area of UPTD. Puskesmas Abiansemal I.

Method: The current study performed by using Quasi-Experimental with Pre-test Post-test Non-equivalent Control Group Design. Approximately 44 toddlers were involved in this study using a purposive sampling method divided into 22 toddlers in each control and experiment group. The CEBQ (Child Eating Behavior Questionnaire) was used to collect the data containing of 35 questions. Wilcoxon and Mann-Whitney tests were used in data analysis.

Result: This research proved that baby massage with citronella oil affect the appetite disorders significantly in toddler aged 12-24 months. Mann-Whitney test reveals that the average score in treatment group was higher than control group with p-value of 0.002 ($p < 0,05$).

Conclusion: It is expected that the findings may provide education about the importance of giving baby massages with a combination of citronella oil in toddlers to increase a toddler's appetite due to the need optimal nutrition.

Keywords: *appetite disorders, baby massage, citronella oil, toddler*

INTRODUCTION

The toddler period, which includes the first thousand days of life, is crucial for a child's growth and development that requires a high nutritional intake^[1]. Weight issues are noticed as the most prevalent nutritional disorders in toddlers. Data from the World Health Organization (WHO) in 2023 states that the number of people suffering from malnutrition in the world reached 713 and 757 million children, and malnutrition is the cause of one-third of all deaths of children under five throughout the world^[2].

The report from the Indonesian Health Profile in 2021 reveals the prevalence of underweight and very underweight in children aged 0-23 months in Indonesia was 6.7% and the prevalence of malnutrition among toddlers aged 0-23 months in Indonesia was 5.3%^[3]. The Indonesian Basic Health Research in 2018 reported that the prevalence of malnutrition status for toddlers in Bali was 21.9%. It is indicated that the nutritional status of toddlers in Bali was noted as a public health burden Based on data from the Health Service in 2022, the prevalence of malnutrition status of toddlers in Badung Regency was 219 toddlers with malnutrition or accounted for 8.7%^[4]. Meanwhile, in Abiansema Village in the Abiansema Community Health Center 1 area, out of 507 toddlers, 18 of them were malnourished. The malnutrition causation among toddlers were economic factors, parental knowledge, and comorbidities in toddlers. The issue of appetite disorders is also an important cause that needs to be addressed.

According to George Town University, there are 6 types of eating disorders in toddlers, namely only wanting to eat liquid or mashed food: 27.3%, difficulty sucking, chewing or swallowing: 24.1%, strange eating habits: 23.4%, no likes a wide variety of foods: 11.1%, delays in eating alone: 8.0%, meal time tantrums: 6.1%. The nutritional status of toddlers is highly impacted by appetite disorders^[5].

Both pharmaceutical and non-pharmacological approaches can be used to overcome toddler appetite issues. One possible option for pharmacological intervention is the administration of micronutrients and multivitamins. An acupuncture massage, acupuncture, herbal beverages/jamu, and the use of essential oil as a kind of therapy to stimulate appetites, such as lemongrass leaves, ginger, *Curcuma aeruginosa*, lemon, jasmine, rosemary, and others^[6].

One of the easiest efforts for the Massage is the gentle, rhythmic stroking of your baby's body using your hands. As part of a massage routine, you might gently manipulate your baby's ankles, wrists and fingers babies as the non-pharmacological therapy for many aims is massage. Massage for babies is beneficial by stimulating the vagus nerve, consequence increasing the intestinal peristaltic consequence in the increase of the gastric emptying process. Thereby, the toddler's appetite is stimulated to eat more heartily sufficient quantities. Research conducted by Novadelaa and Sarib^[7] shows that baby massage was affected by increasing toddlers' appetite.

Using citronella oil is another non-pharmacological method in addition to massaging the babies. According to related studies in complementary method, the use of citronella oil to boost toddler's appetite is now being developed in complementary midwifery care^[8]. Baby massage with a combination of citronella oil is more specific massage technique for treating appetite disorders in toddlers by improving blood circulation in the spleen and digestion, through a modification of acupuncture without needles. Citronella oil, which is known in the trade as Citronella oil, is generally used as an antiseptic, antispasmodic, diuretic. And fever-reducing medicine. Citronella oil is obtained from distilling the leaves of the citronella plant (*Cymbopogon nardus* L.). This type of plant produces the best quality

oil compared to other types because it contains 80% to 97% total geraniol and 30 to 45 percent citronellal. Based on earlier research by Maulani and Siagian^[9], which found that toddlers given citronella oil experienced an increase in appetite. Citronella oil has the highest geraniol and citronella ingredients compared to other

essential oils, which resulted in an easier way to treat appetite disorders in toddlers.

Based on the data above, researchers are interested in conducting research with the title "Combination of Giving Baby Massage and Citronella Oil for Appetite Disorders in Toddlers Aged 12-24 Months in the UPTD Area of Abiansemal 1 Health Center".

METHODS

The research design was Quasi Experimental with Pretest Posttest Nonequivalent Control Group Design. The number of samples involved in this research were toddlers aged 12-24 months counted for 22 in both the experimental and control groups. Researchers and enumerators measured children's appetite before giving baby massage with citronella oil on the first day (pretest) in both treatment and control groups. Respondents registering odd numbers will be the treatment group and even numbers will be the control group in the treatment group, researchers assisted by enumerators provided baby massage therapy by dropping 7 to 10 drops of citronella oil on each part of the baby's body surface. This intervention was applied once a week every

morning for 20 minutes for four weeks, while the control group was not given a baby massage during the study.

When the participants in the experimental group had finished receiving baby massage with citronella oil, the posttest – an evaluation after four weeks of intervention – was administered. To ensure that all toddlers continue to benefit from the current study while preventing it from potentially skewing the results, all toddlers in the control group received the same treatment after the posttest to avoid the research bias.

The data analysis technique in the current study was descriptive and inferential analysis by the Wilcoxon and Mann-Whitney tests in testing the hypothesis.

RESULT

The descriptive analysis reveals the data of subject characteristics of each intervention and control groups, and the result of toddler's appetite before and after being given a baby massage with citronella oil. The descriptive test results are described in Table 1. Table 1 reveals the mean age in the treatment and control groups were 2.14 and 1.82, respectively. which means that the average age of the respondents' mothers in both groups was between 20-35 years old with a p-value of $0.089 > 0.05$ which means there is no difference in average age between the treatment and the control groups.

Table 1. Characteristics of Respondents among Mothers of Toddlers with Appetite Disorders in the UPTD Area of Abiansemal I Community Health Center (n=44)

Group	n	Min	Max	Mean±SD	p-value
Aged					
Experiment	22	1	3	2,14±0,733	0,089
Control	22	1	3	1,82±0,468	
Education					
Experiment	22	2	4	3,14±0,710	0,694
Control	22	2	4	3,23±0,612	
Occupation					
Experiment	22	1	4	3,00±0,816	0,928
Control	22	1	4	2,95±0,844	
Toddler Age					
Experiment	22	1	3	2,00±0,816	0,187
Control	22	1	3	2,32±0,716	
Sex					
Experiment	22	1	2	1,41±0,503	0,760
Control	22	1	2	1,36±0,492	

The average level of education in the treatment and control group were 3.14 and 3.23, respectively. The average education level of the respondents' mothers in both groups is high school with a p-value of $0.694 > 0.05$. This result indicated that no difference in the average level of education between the treatment and control group.

The average of the mother's job category in the treatment group was 3.00 and in the control group 2.95. It means that the average job of the respondent's mother in both groups is self-employed with a p-value of $0.760 > 0.05$. This result indicated that no difference occupation of mothers of toddlers in both groups.

Based on the age of toddlers, it is found that the mean results in the treatment group were 2.00 and 2.32 in the control group, which means that the average age of toddlers in both groups was 17-20 months with a p-value of $0.187 > 0.05$. It is indicated that no difference in average age between the treatment and the control group.

In terms of the toddler's gender, the mean results were 1.41 and 1.36 in the treatment and control group, respectively. The average gender of the toddlers in both groups was male with a p-value of $0.187 > 0.05$. It is indicated that the difference in the average gender of toddlers between the treatment group and the control group.

Table 2. Toddler's Appetite Disorders Before Treatment in Both Groups in the UPTD Area of Abiansemal I Community Health Center (n=44) with Wilcoxon Test

Group	n	Min	Max	Mean±SD	p-value
Treatment	22	50	82	60,18±10,693	0,831
Control	22	50	84	62,18±12,827	

Based on table 2, toddler's appetite disorders before treatment in both groups, the mean result in the treatment group was 60.18 and in the control group, it was 62.18, which means that the average score for toddler's appetite disorders in the

treatment and control groups was included in moderate appetite disorders with p-value $0.831 > 0.05$, which means there is no difference in the average score of toddler appetite disorders between the treatment

group and the control group before being given treatment.

Table 3. Analysis of toddler's appetite before and after being given baby massage with citronella oil in the treatment group and control group in the UPTD area of Abiansemal I Community Health Center

Group	N	Min	Max	Mean±SD	Z	P value
Treatment						
Pretest	22	50	82	60.18±10,693	-4,322	0,00
Posttest	22	44	80	55.64±10,808		
Control						
Pretest	22	50	82	62.18±12.827	-3,713	0,077
Posttest	22	62	86	73.41±6.822		

Based on table 3, the Wilcoxon test demonstrated that toddler's appetite disorders in the treatment group after receiving baby massage with citronella oil decreased from 60.18 to 55.64. Z-score = 4.322 means that the toddler's appetite disorder score is 4.322 SD below the mean with a p-value of 0.00 <0.05, which means there is a difference in the average toddler's appetite disorder score between before and after treatment in the treatment group.

Toddler's appetite disorders in the control group before and after being given

a baby massage with citronella oil where the mean result obtained at the pretest was 62.18 and at the posttest increased to 73.41. This means that there was an increase in the average score of toddler's appetite disorders in the control group with Z-score = -3.713. The toddler's appetite disorder score was found to be 3.713 SD below the mean with a p-value of 0.077 >0.05, which means there was no difference in the average toddler's appetite disorder score between the pretest and posttest in the control group.

Table 4. Analysis of giving a combination of baby massage and citronella oil on appetite disorders in toddlers aged 12-24 months in both groups in the UPTD area of Abiansemal I Community Health Center

Appetite	N	Min	Max	Mean±SD	Z	P value
Treatment	22	44	80	55.64±10,808	-3.138	0,002
Control	22	62	86	73.41±6,822		

Table 4 demonstrates the results of Mann-Whitney test by analyzing the posttest results of both groups. The result of p-value was 0.002 (p <0.05) with a Z value of 3,138 (z table 1.96). It means that the z value is above the critical value or hypothesis rejection value. The p-value from the results of the posttest analysis in both groups were found to be smaller than 0.05.

It is indicated that a significant difference between the experiment and control groups. Ha (alternative hypothesis) was acceptable due to the result of p-value that indicated a significant influence from the combination of giving baby massage with citronella oil for appetite disorders in toddlers aged 12-24 months.



Figure 1. Baby massage procedure with citronella oil.

DISCUSSION

The current study result was similar with previous research conducted by Carolin, Kurniati, and Suadah^[2], which stated that there were differences in the treatment and control groups after receiving baby massage. The results obtained from the independent sample test Sig (2-Tailed) value were $0.029 < 0.05$, indicating that there was a statistically significant increase in weight gain in babies who were massaged. This result indicates that citronella oil aromatherapy is good for toddlers and have proven to beneficially increase appetite. Based on measurements taken from both experimental and control groups, it was found that the experimental group improved more than the control group, which did not receive any citronella oil aromatherapy.

In line with agustin's research^[10], based on statistical analysis using the paired t-test, a p value was $0.000 \leq 0.05$, indicating that there was a difference in picky eaters before and after Tuina massage in toddlers aged 6-59 months in the Simpang Tiga Pekanbaru Health Center Working Area. According to Agustin^[10], digestive dysfunction mostly emerged due to the difficulty of eating in children under five. It is consequence to food stagnation in

the digestive tract while the stomach is undigested immediately. Complaints came from the parents regarding this problem such as frequent vomiting, feeling nauseous when fed, and feeling full in their stomachs. resulting in reduced appetite or even no appetite at all. This massage beneficially improves the blood circulation to the spleen and digestive, consequently, that may increase the toddler's appetite and also having an effect on increasing the toddler's weight.

The researchers further postulated that the stimulation by giving baby massage combined with citronella oil was the reason for the alteration of eating disorders in toddlers. This is consistent with the theory proposed by Rostika, Nikmawati, and Yulia^[11], who said that massaging a baby might stimulate the activity of the vagus nerve (10th brain nerve) that raises the levels of gastrin and insulin absorption enzymes. Moreover, food absorption improves as well as intestinal peristaltic, and increased gastric emptying which can stimulate toddler's appetite^[12].

CONCLUSION

There was a significant effect of giving baby massage and citronella oil on appetite disorders in toddlers aged 12-24 months in the treatment group compared to the control group with a p value of 0.002 ($p < 0.05$). It is hoped that the results of this

research can provide education about the importance of giving baby massage with a combination of citronella oil to toddlers to increase toddler's appetite so that toddler's nutritional needs can be met optimally.

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