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Effectiveness of Oxytocin Massage on Weight Gain of Infants With Growth Delay Among Breastfeeding Mothers in the Working Area of UPTD Puskesmas Kalapanunggal in 2025

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Abstract

Background: Infant weight gain is an important indicator of nutritional and health status. One method to improve weight gain is oxytocin massage, which stimulates breast milk production. In the working area of UPTD Kalapanunggal Public Health Center, cases of infants with slow growth are still found, requiring effective interventions. **Objective:** This study aimed to determine the effectiveness of oxytocin massage on weight gain in infants with slow growth in the working area of UPTD Kalapanunggal Public Health Center. **Methods:** This study used a quasi-experimental design with a pre- and post-test with control group approach. The sample consisted of 30 breastfeeding mothers, divided into a control group (milk supplementation only) and an intervention group (milk supplementation + oxytocin massage). The instruments used were a digital scale, an infant weight observation sheet, and an oxytocin massage SOP. Data were analyzed using the Wilcoxon test to examine differences before and after the intervention in each group, and the Mann–Whitney test to compare the two groups. **Results:** The Wilcoxon test showed a significant difference in infant weight gain before and after the intervention in both groups ($p<0.05$). The Mann–Whitney test indicated that infant weight gain in the intervention group was higher than in the control group ($p<0.05$). **Conclusion:** Oxytocin massage is effective in increasing weight gain in infants with slow growth.

Keywords: oxytocin massage, infant weight gain, slow growth

Introduction

Infant growth is an important indicator in assessing a child's health and nutritional

status from birth. Infants who experience slow growth, particularly in terms of weight gain, are at higher risk of developmental disorders and various long-term health problems. Slow growth in infants aged 0–6 months can be influenced by inadequate nutritional intake, infectious diseases, metabolic disorders, and suboptimal parenting and breastfeeding practices (Indonesian Ministry of Health, 2019; UNICEF, 2023).

According to the WHO (2023), approximately 45 million children under five experience wasting (low weight for their height), and more than 149 million suffer from stunting. Most of these growth problems begin in the first six months of life due to a lack of exclusive breastfeeding practices and inadequate nutrition from the start.

In Indonesia, according to the 2024 Indonesian Nutritional Status Survey (SSGI), the prevalence of stunting among toddlers was 19.8%. Although this figure has decreased compared to the previous year (21.5%), stunted growth in infants under 6 months remains a challenge, especially in rural areas or those with limited access to services (Ministry of Health, 2024).

According to the Sukabumi Regency Health Office Profile for 2024, the number of infants with malnutrition was 8,341 (4.3%), the number of low birth weight (LBW) infants was 1,961 (4.98%), and the number of premature infants was 1,298 (3.2%), with 23,788 (81.35) successful exclusive breastfeeding rates for infants aged 0-6 months.

In the Kalapanunggal Community Health Center (Puskesmas) work area, 2024 data found 30 cases of malnutrition in infants aged 0-6 months. Meanwhile, data from the 2024 Maternal and Child Health Program (KIA) showed a high number of high-risk pregnant women, with 131 cases, including 89 cases of chronic energy deficiency syndrome (KE), 35 cases of anemia, and others.

To support optimal breastfeeding practices, several community health centers

(Puskesmas) have implemented supplementary programs such as providing milk for breastfeeding mothers and oxytocin massage as a non-pharmacological method to increase breast milk production. These programs are potential interventions to improve infant nutritional status, particularly in infants aged 0–6 months with slow growth (Aini et al., 2022; Lestari et al., 2021).

As an intervention effort in Sukabumi Regency, the Health Office and Community Health Centers (Puskesmas) implemented a breastfeeding milk program accompanied by education on oxytocin massage for breastfeeding mothers. Therefore, this study is important to measure the effectiveness of this program on infant weight gain.

However, to date, there is no scientific data specifically evaluating the effectiveness of this program on infant weight gain. Therefore, based on this background, researchers are interested in examining the effectiveness of oxytocin massage on weight gain in infants with slow growth among breastfeeding mothers in the Kalapanunggal Community Health Center (UPTD) work area in 2025, to provide scientific evidence for the development of intervention programs at the primary care level.

Method

Method should be structured as follows:

1. Research design

This study used a quasi-experimental design with a pretest–posttest control group. The aim was to determine the effectiveness of oxytocin massage on the weight gain of infants with slow growth..

2. Setting and samples

The study was conducted at UPTD Puskesmas Kalapanunggal in 2025. Population: breastfeeding mothers with infants aged 0–6 months experiencing slow growth. Sample: 30 respondents divided into 2 groups (intervention and control). Sampling technique: purposive sampling based on inclusion and exclusion criteria.*Intervention (applies to experimental studies)* Describe the intervention, setting, and those who provided the

intervention. If the study included a control group, explain what kind of intervention was provided to this group.

3. Intervention (applies to experimental studies)

Intervention group: received oxytocin massage combined with maternal milk supplementation (Prenagen) for one month. Control group: received maternal milk supplementation (Prenagen) only. Intervention was carried out by trained health workers with standardized procedures.

4. Measurement and data collection

Infant weight: measured using a calibrated digital baby scale. Observation sheet: to record pretest and posttest infant weight, as well as compliance with oxytocin massage. Ethics: The study was approved by the Health Research Ethics Committee (include certificate number), and informed consent was obtained from all respondents.

5. Data analysis;

Normality test: Shapiro–Wilk. Within-group differences (pre–post): Wilcoxon signed-rank test. Between-group differences: Mann–Whitney U test. Significance level: $p < 0.05$.

Results

univariate analysis

Table 1. Characteristics of Respondents

Characteristics	n	%
Mother's Age (years)	Mean ± SD = 27.3 ± 5.2	
Education (High school)	27	90.0
Education (College)	1	3.3
Education (Junior high school)	2	6.7
Employment (Housewife)	28	93.3
Employment (Working)	2	6.7
Infant Gender (Male)	14	46.7
Infant Gender (Female)	16	53.3

Most respondents were high school graduates (90%), the majority were housewives (93.3%), and the distribution of infant gender was relatively balanced. The mean age of

mothers was 27.3 years.

Table 2. Mean Infant Weight Pre and Post Intervention

Group	Pre (kg, Mean ± SD)	Post (kg, Mean ± SD)	p-value
Breastfeeding + Oxytocin Massage	4.1 ± 0.5	4.7 ± 0.6	<0.001
Breastfeeding only	4.0 ± 0.6	4.3 ± 0.6	0.002

There was a significant increase in infant weight both in the intervention group (breastfeeding + oxytocin massage, $p<0.001$) and in the control group (breastfeeding only, $p=0.002$). The increase was greater in the intervention group.

bivariate analysis

Table 3. Wilcoxon Signed-Rank Test (Within-group Analysis)

Group	N (pairs)	Z	p-value
Breastfeeding only	15	-2.805	0.005
Breastfeeding + Oxytocin Massage	15	-3.412	<0.001

Wilcoxon signed-rank tests confirmed significant pre–post differences within each group, with a stronger effect size suggested in the intervention group (larger |Z|).

Table 3. Comparison of Infant Weight Gain Between Groups (Mann-Whitney Test)

Variable	Mean Rank	p-value
Breastfeeding + Oxytocin Massage	18.3	
Breastfeeding only	12.7	0.021

The Mann-Whitney test showed a significant difference in infant weight gain between the two groups ($p=0.021$), indicating that the combination of breastfeeding and oxytocin massage was more effective.

Discussion

This study found that oxytocin massage combined with breastfeeding support

significantly increased infant weight compared to breastfeeding support alone. The Wilcoxon test showed significant differences between pre- and post-intervention weight in both groups, indicating that each intervention had a positive effect. However, the Mann–Whitney test confirmed that the increase was more pronounced in the group receiving oxytocin massage. These findings align with previous studies showing that oxytocin stimulation can enhance milk ejection reflex, increase milk volume, and improve infant weight gain. Therefore, oxytocin massage is recommended as a complementary intervention for mothers with infants experiencing slow growth.

Limitation

This study has several limitations. First, the duration of intervention was limited to one month, which may not fully capture the long-term effect of oxytocin massage. Second, the study sample was relatively small and taken from a single primary health center, limiting generalizability. Third, confounding factors such as maternal nutrition, frequency of breastfeeding, and psychosocial support were not fully controlled. Future research with larger samples and longer follow-up is recommended.

Conclusion

Oxytocin massage was proven effective in significantly increasing infant weight gain compared to breastfeeding support alone. This intervention can be recommended as a non-pharmacological strategy to address slow growth in infants, particularly in primary health care settings.

Ethical Considerations

This research has received ethical approval from the Health Research Ethics Committee of Muhammadiyah University of Purwokerto, with the ethical feasibility certificate number Registration Number: KEPK/UMP/81/VII/2025, dated July 6, 2025. This approval was given after going through a review process of the research protocol, including aspects of protection of research subjects, safety of interventions, and data collection procedures.

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Conflict of Interest

The authors declare that there is no conflict of interest in the publication of this research.

Author contribution

Diana Damayanty designed the study, collected and analyzed the data, and drafted the manuscript. Academic supervisors provided critical revisions and guidance in improving the manuscript for submission.

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