The effect of tummy time and oral massage on infants’ oral motor skills as an effort to receive complementary food

Annif Munjidah1*, Nanik Handayani2, Firdaus3

ABSTRACT

Introduction: Complementary foods (complementary foods) are additional nutrition for babies after the age of 6 months because breastfeeding alone cannot meet the daily needs of calories and nutrients. But it is not uncommon to find children unable to eat because of oral motor skills. This study aimed to determine the effect of oral massage stimulation and tummy time on oral motor skills which were seen from the baby’s response to the first food.

Methods: The design of this research was using True Experimental analysis with a post-test-control group design, the population of babies aged 4-5 months was 210 respondents with probability sampling technique with purposive random sampling for 3 months in the independent practice of Gresik East Java Indonesia midwives. The research instrument was a checklist from The Schedule for Oral Motor Assessment (SOMA). Data analysis with Kruskal-Wallis test, and Mann-Whitney test.

Results: The results showed that in the group of babies who received oral massage treatment almost all (77.1%) had good oral motor skills, and in the group of babies who got tummy time stimulation almost all (78.7%) had good oral motor skills and in the control group almost half (34%) had good oral motor skills. The value of p = 0.001 <=0.05 means that differences in infant oral motor skills in the tummy time stimulation group, oral massage group, and control group. Oral massage has a good impact on the baby’s oral motor skills.

Conclusion: There are other stimulations that have a good impact on the child’s motor development.

Keywords: Oral massage, tummy time, baby oral motor skill.

INTRODUCTION

Complementary foods (complementary foods) are additional nutrition for babies after 6 months of age. Mothers have various reasons to stop exclusive breastfeeding or start weaning before the age of 6 months, or even at the earlier age of 4 months.1 The prevalence of exclusive breastfeeding rises with health education on breastfeeding-related topics. Numerous studies have shown the beneficial impact of breastfeeding support and interventions on maintaining exclusive breastfeeding. However, the survey revealed that there had been no studies on the impact of counseling on self-efficacy and breastfeeding issues in women who had stopped breastfeeding.2 After the baby is 6 months old, breast milk cannot meet the daily caloric and nutritional needs so complementary foods must be given to prevent nutritional problems. On the other hand, it is not uncommon for children to eat. Children’s eating skills are supported by some basic skills. One such basic skill is the oral motor skill.2

Factors affecting a child’s ability to eat are age, history of pregnancy and birth, history of growth and development disorders, gross motor and fine motor abilities, eye coordination, kinesthetic and space perception, vision function, stimulation, and muscle strength.3 Eating skills are also supported by some basic skills. One such basic skill is the oral motor skill. Oral motor skills are skills that involve the strength and flexibility of the muscles of the face and mouth. This movement and coordination of facial and oral muscle structures is needed for the process of swallowing, and consuming various textures of food. In addition, the process of eating is also an activity that requires simultaneous coordination of all sensory systems of the body. Oral motor disorders or impaired coordination of oral movements that interfere with the chewing and swallowing process are experienced by about 25% of normal children and 80% of children with developmental disorders. The impact of these oral motor skills will result in disruption of the development of basic functions. The child becomes a hypersensitive person, lazy to talk, picky eater, oricky eater.4,5 Addressing these issues requires the resilience and role of parents or caregivers in providing stimulation.5

Some of the studies that have been carried out previously include by Jaji et al., (2014) which analyzed that baby lead weaning (BLW) can improve the oral motor skills of babies.4 Adolph Karen E. (2018) found that simultaneous muscle movement can improve a child’s motor development.6 Gany Abdul, (2021) conducted a literature review and concluded that motor mouth stimulation improves the function of
METHODS

Study Design
The design of this study used true experimental analysis with a post-test-control group design. The independent variable of this study was tummy time stimulation and oral massage and the dependent variable was oral motor skills. The population of babies aged 4-5 months was 210 respondents with probability sampling technique with purposive random sampling for 3 months in the independent practice of midwives Madam Nanik Cholid Sidoarjo, Ika Mardiyanti Sidoarjo, and Nurul Fatwamati Gresik East Java Indonesia. The research instrument was a checklist from The Schedule for Oral Motor Assessment (SOMA). Data analysis with Kruskal-Wallis test, and Mann-Whitney test.

Data collection procedures
The study began by dividing respondents into 3 (three) groups, the tummy time stimulation group, the oral massage treatment group, and the control treatment group. In the treatment group, the parent gave tummy time stimulation and oral massage for 2 months. Parents have a tummy time treatment for 10-20 minutes one day a day, as much as three times a day, carried out daily for 2 months. While in the oral massage treatment, parents give it every day for two months. In the control group, parents gave the baby massage without a schedule. Parents or caregivers report the treatment given daily through the Google form that the researcher has provided.

Data collection was carried out by an enumerator with a midwife background when the child was 6 months old and had received complementary food for 1 week using a checklist The Schedule for Oral Motor Assessment (SOMA).

Data analysis
Data were collected and analyzed using univariate and bivariate analysis after being directly obtained as primary data. The Mann-Whitney test was used for data analysis using the Kruskal-Wallis test and Post Hoc analysis. The recognized level of significance was p=0.05. Using SPSS version 20, all data were examined.

RESULTS

Baseline characteristics
Table 1 shows that the majority of the respondents are female (58,1%), with a history of exclusive breastfeeding (73,3%), aterm birth age (89,5%)

Based on the results of the analysis test above, it showed that in the group of babies who received oral massage treatment almost all (77,1%) had good oral motor skills, and in the group of babies who got tummy time stimulation most (65,7%) had good oral motor skills and in the control group almost half (34%) had good oral motor skills. The results of the Kruskal-Wallis test showed that there was a significant difference (p=0.001) in the stimulation of oral motor skills.

DISCUSSION
The division of treatment and control groups is carried out randomly, regardless of medical history and gender. This is based on previous research. Numerous studies in children show the effect of early feeding (breastfeeding) on development. The research using EMG (electromyography), getting meaningful differences in the picture of muscle activity masseter in babies breastfed with babies who get bottled milk with nipples of the usual type, will but this difference is not meaningful in nursing babies with babies who get bottled milk with nipples chewable type. There was no meaningful difference between the groups of babies who get exclusive breastfeeding ≥4 months and babies who do not get breast milk exclusive to the development of eating skills.

Table 1. Characteristics of respondents based on gender, history of breastfeeding and history of gestation (n = 210)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>88</td>
<td>41,9</td>
</tr>
<tr>
<td>Female</td>
<td>122</td>
<td>58,1</td>
</tr>
<tr>
<td>History of breastfeeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exclusive breastfeeding</td>
<td>154</td>
<td>73,3</td>
</tr>
<tr>
<td>Not exclusive breastfeeding</td>
<td>56</td>
<td>26,7</td>
</tr>
<tr>
<td>Birth age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preterm</td>
<td>13</td>
<td>6,2</td>
</tr>
<tr>
<td>Aterm</td>
<td>188</td>
<td>89,5</td>
</tr>
<tr>
<td>Postterm</td>
<td>9</td>
<td>4,3</td>
</tr>
</tbody>
</table>

Table 2. Cross-tabulation of Group stimulation and oral motor skills

<table>
<thead>
<tr>
<th>Group stimulation</th>
<th>Oral motor skills</th>
<th>Total n (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal n (%)</td>
<td>Disfunction n (%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>70 (100)</td>
<td>70 (100)</td>
<td></td>
</tr>
<tr>
<td>Tummy time</td>
<td>46 (65,7%)</td>
<td>24 (34,3%)</td>
<td>0.001*</td>
</tr>
<tr>
<td>Oral massage</td>
<td>54 (77,1%)</td>
<td>16 (22,9%)</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>34 (48,6%)</td>
<td>36 (51,4%)</td>
<td></td>
</tr>
</tbody>
</table>

*pAnalysis was carried out using a chi-square test. The result was considered significant if the p-values<0.05.

Table 3. Test Results of treatment group analysis with the control group

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>Normality Test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tummy time</td>
<td>103.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral massage</td>
<td>85.5</td>
<td>0.001*</td>
<td>0.001*</td>
</tr>
<tr>
<td>Control</td>
<td>127.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*pAnalysis was carried out using Kolmogorov-Smirnov for the normality test; Levene's test for the homogeneity test; and the Kruskal-Wallis test. Results were considered significant if the p-value ≤0.05.
Based on the results of the analysis test above, showed that there were differences in children's oral motor skills in the tummy time treatment group with the oral massage group and with the control group. Oral motor skills are mouth movement that includes the muscles of the face, lips, palate, pharyngeal child, esophagus, vocal cords, gums, teeth, and tongue. The oral motor is the basis of eating skills, covering all activities that use the muscular motion system of the oral cavity, such as the jaw, teeth, tongue, palate, lips, and cheeks, as well as the coordination of movements between the organs of the oral cavity. In this study, oral motor skills were assessed using the checklist from The Schedule for Oral Motor Assessment (SOMA) with puree category. By observing reaction, sequence, lip, tongue, and jaw. The indicator becomes the determinant of the child's oral motor skills score, if less than 3 is normal, and more or equal to 3 is dysfunctional oral motor skills. The children who are identified as having bad oral motor skills by using the SOMA oral motor skills assessment sheet, generally experience impaired coordination of the tongue, namely protrusion (movement of the tongue in and out of the mouth).

Based on Table 3 statistical test that the mean values in the oral massage treatment group showed that some children who received oral massage treatment had normal oral motor skills. This is in accordance with the theory that oral massage can significantly improve the coordination of sucking, swallowing, and breathing in premature infants who have sucking and swallowing dysfunction and ultimately play a significant role in improving feeding performance. This justifies clinical application and promotion. This is in accordance with the theory that oral motor intervention was an effective way to improve oral feeding.

Based on Table 3 statistical test that the mean of the tummy time treatment group is greater than the oral massage group, this shows that tummy time does not support oral motor skills compared to oral massage stimulation, this is in accordance with the theory that tummy time can develop body muscles, especially the muscles of the neck, chest, shoulders, arms and train the balance of the baby's body so that it can immediately roll, crawl, sit, and walk. The capacity to move when prone, supine, crawling, and rolling were all favorably related with tummy time, as were gross motor and overall development, a lower BMI-z score, the avoidance of brachycephaly, and these abilities. For the social and cognitive domains, plagiocephaly, walking, standing, and sitting, an uncertain connection was discovered. Communication and the development of fine motor skills are unrelated.

Oral motor skills cannot be obtained instantly but rather must be trained and learned gradually. This is in line with the research of Embarek Miriam et al. that multisensory stimulation may improve feeding behavior, psychomotor development, and visual function. Some diagnoses that tend to be experienced by children who do not receive good oral motor stimulation, namely being a picky eater, producing excess saliva, having difficulty sucking, chewing, and swallowing, and being late in speaking. This study still has a number of limitations, including the absence of any design- or analysis-based variable control and any other compounding factors that may have an influence on the results.

CONCLUSION

There were differences in infant oral motor skills in the tummy time stimulation group, oral massage group, and control group. Oral massage has a good impact on the baby's oral motor skills. There are other stimulations that have a good impact on the child's motor development. Further studies are needed to validate these findings with more comprehensive design.

FUNDING

The authors declare no funding in this study.

CONFICT OF Interest

The authors declare no conflict of interest in this study.

ETHICAL STATEMENT

The Ethical Committee of Nursing and Midwifery Faculty, Universitas Nahdlatul Ulama, Indonesia, has certified that this research is ethical. The ethical certification number is 006/007/IV/EC/KEP/Lemb. Candle/2022.

AUTHOR CONTRIBUTION

All authors contributed equally to this study.

REFERENCES

5. Susilowati E, Irawan H. Penerapan model family centered care untuk meningkatkan peran keluarga dalam menyediakan makanan


