Enhancing Maternal Baby Massage Behavior through AH Baby Massage-Based Training

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Abstract

Introduction: The current baby massage intervention has been proven effective in enhancing infant growth, making it crucial to popularize baby massage to improve parental behavior for independent infant massage. The aim of this research is to assess the effectiveness of AH Baby Massage application-based infant massage training in increasing maternal intention, maternal knowledge, maternal attitudes, and maternal skills in performing infant massage.

Methods: This study employs a quantitative method with a Quasi-Experimental design of the one-group pretest-posttest type. The study was conducted with 35 mothers who have infants in the practice area of the Independent Midwife in Biringkanaya Subdistrict, Makassar City.

Results: The research findings indicate differences in maternal intention, maternal knowledge, maternal attitudes, and maternal skills in performing infant massage before and after the AH Baby Massage application-based infant massage training intervention (p-value < 0.05).

Conclusion: AH Baby Massage application-based infant massage training has been proven effective in enhancing maternal intention, maternal knowledge, maternal attitudes, and maternal skills in performing infant massage. Therefore, the involvement of Community Health Centers, healthcare professionals, and cadres is essential to promote baby massage in the community.

Keywords: baby massage, baby massage applications, intentions, skills

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INTRODUCTION

Infant growth is highly expected to align with anthropometric measurements; however, contemporary issues in child growth vary widely, with elevated rates of underweight and stunting. According to the Riskesdas data from 2018, the prevalence of stunting among children aged 0-59 months in 2018 was 30.8%. In South Sulawesi Province, it was 35.74%, and in Makassar City, it was 25.19% [1]. In 2020, the prevalence of stunting in Biringkanaya District reached 42.2%. These statistics indicate that the prevalence of stunting has exceeded the target public health indicator of less than 20% [2].

In addition to addressing nutritional concerns in infants, early stimulation and affection are crucial for aiding infants in improving their growth and developmental potential by providing age-appropriate experiences [3]. One method to achieve this is through infant massage. Infant massage is an ancient therapeutic technique used worldwide [4] and has been shown to have positive effects on both infants and parents. It is a cost-effective, easy, and effective intervention [5]. Various studies have shown that infant massage can improve infant weight, length, arm circumference, visual development, infant sleep quality, bilirubin reduction, lower maternal stress levels in childcare, foster stronger parent-infant bonds, and improve maternal mood [6]-[10].

Currently, the practice of infant massage is predominantly carried out by healthcare professionals, as mothers tend to entrust their infants to competent medical practitioners for this task. However, based on the results of a literature review [11], it is important for parents, especially mothers, to be actively involved in infant massage. When parents, particularly mothers, perform infant massage, it helps foster a strong parent-infant attachment [12]. Nonetheless, one of the factors hindering mothers from practicing infant massage is their lack of knowledge, attitudes, and skills in this area [13]-[18]. Thus, based on these observations, the researchers have developed an infant massage application called "AH Baby Massage." This Android-based application was created through focus group discussions with parents and experts, including media professionals, IT experts, and subject matter experts. It has also been tested by mothers with infants.

The AH Baby Massage application offers six features, including registration, infant massage video guides, practical instructions for infant massage, information on the benefits of infant massage, consultations with midwives, recording features for parents and midwives, and a reminder for the timing of infant massages. Parents can access this application via their smartphones [19].

Based on this background, the research question can be formulated as follows: "Can AH Baby Massage application-based infant massage training improve maternal knowledge, attitudes, intentions, and skills in performing infant massage?"

METHODS

Study Design

In this study, a quantitative method was
employed using a Quasi-Experimental design of the one-group pretest-posttest type to assess the enhancement of mothers' knowledge, attitudes, intentions, and skills in baby massage before and after receiving training based on the AH Baby Massage Application.

**Sampling Technique**

Based on sample size calculations using the Lemeshow formula, 33 mothers were determined as the initial sample size, with an additional 15% dropout allowance, resulting in a final sample size of 38 mothers. Meanwhile, 40 mothers met the inclusion criteria at the research site, and a random sampling technique was applied to select 38 mothers who had infants in the Biringkanaya District of Makassar City.

**Research Procedure**

The research procedure involved several stages:

1. Selection of samples meeting inclusion criteria, i.e., mothers with infants aged 0-12 months, willing to be respondents, and possessing an Android smartphone.
2. Pre-test implementation through questionnaire completion, which had undergone validity and reliability testing for maternal intention, maternal knowledge, maternal attitudes toward baby massage, followed by observation by a midwife to assess maternal skills in infant massage.
3. Baby massage training was provided by a competent midwife to the mothers. At the end of the training session, mothers were informed about how to use the AH Baby Massage application for independent learning of baby massage at home.
4. After one month, a post-test was conducted to assess the improvement in maternal intention, maternal knowledge, maternal attitudes, and maternal skills in baby massage by a competent midwife.

**Data Analysis**

Data processing and analysis were conducted quantitatively after collecting data from maternal intention, maternal knowledge, maternal attitudes, and observation sheets of maternal skills using the questionnaire. The collected data from 38 mothers were analyzed, and three mothers were excluded due to non-participation in the post-test, resulting in a final sample size of 35 mothers. For bivariate analysis, where the scores of variables such as maternal intention, maternal knowledge, maternal attitudes, and maternal skills were not normally distributed according to the Kolmogorov-Smirnov test, the Wilcoxon test was employed.

**Ethical**

This study has obtained ethical clearance with the number: Ethic/034/LPPM/V/2023.

**RESULTS**

Based on the results of data analysis, the distribution of characteristics among respondents was observed. Table 1 reveals that the majority of mothers, 21 (60%), fall within the age range of 26 to 35 years.
Furthermore, 15 mothers (42.9%) had completed high school as their highest education level. A significant number of mothers, 33 (94.3%), were housewives (IRT), and the majority, 23 (65.7%), had a multi-category parity.

The mothers' intention to perform baby massage showed significant improvement after undergoing a baby massage training intervention based on the AH Baby Massage application, scoring 9.03 points, with a p-value of 0.000 < 0.05. This indicates a notable difference in mothers' knowledge of baby massage before and after receiving training through the AH Baby Massage application. Similarly, mothers' attitudes towards conducting baby massage significantly increased after undergoing an intervention based on AH Baby Massage, with a score increase of 7.66 points and a p-value < 0.05. This suggests a noticeable shift in maternal attitudes before and after participating in massage training with the AH Baby Massage application.

Moreover, the mothers' proficiency in performing baby massages in the control group exhibited notable improvement, signifying enhanced skills after participating in AH Baby Massage-based training, scoring 45.5 points, with a p-value of 0.000 < 0.05. This demonstrates a significant difference in maternal skills in performing baby massage before and after the AH Baby Massage training.

<p>| Table 1 |
| Distribution of respondents by mother age, mother education, mother work, and parity. |</p>
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Group</th>
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<tbody>
<tr>
<td></td>
<td>n</td>
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<tr>
<td>Mother's age (years)</td>
<td></td>
</tr>
<tr>
<td>17 – 25</td>
<td>8</td>
</tr>
<tr>
<td>26 – 35</td>
<td>21</td>
</tr>
<tr>
<td>36 – 45</td>
<td>6</td>
</tr>
<tr>
<td>Mother's education</td>
<td></td>
</tr>
<tr>
<td>Elementary School</td>
<td>5</td>
</tr>
<tr>
<td>Junior High School</td>
<td>8</td>
</tr>
<tr>
<td>Senior High School</td>
<td>15</td>
</tr>
<tr>
<td>Higher Education</td>
<td>7</td>
</tr>
<tr>
<td>Mother's job</td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>33</td>
</tr>
<tr>
<td>Civil servants</td>
<td>2</td>
</tr>
<tr>
<td>Parity</td>
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</tr>
<tr>
<td>Primipara</td>
<td>10</td>
</tr>
<tr>
<td>Multiparous</td>
<td>23</td>
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<tr>
<td>Grande multiparous</td>
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<tr>
<td>Total</td>
<td>35</td>
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Table 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Mean ± SD</th>
<th>∆ (Mean ± SD)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother’s intention</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre – Test</td>
<td>35</td>
<td>14.54 ± 2.45</td>
<td>9.03 ± 2.90</td>
<td>0.00</td>
</tr>
<tr>
<td>Post – Test</td>
<td>35</td>
<td>23.57 ± 1.61</td>
<td></td>
<td></td>
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<tr>
<td>Mother’s knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre – Test</td>
<td>35</td>
<td>5.35 ± 0.79</td>
<td>2.49 ± 0.95</td>
<td>0.00</td>
</tr>
<tr>
<td>Post – Test</td>
<td>35</td>
<td>7.84 ± 5.01</td>
<td></td>
<td></td>
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<tr>
<td>Mother’s attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre – Test</td>
<td>35</td>
<td>48.49 ± 2.30</td>
<td>7.66 ± 3.88</td>
<td>0.00</td>
</tr>
<tr>
<td>Post – Test</td>
<td>35</td>
<td>60.00 ± 2.54</td>
<td></td>
<td></td>
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<tr>
<td>Skill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre – Test</td>
<td>35</td>
<td>35.00 ± 0.00</td>
<td>45.5 ± 8.07</td>
<td>0.00</td>
</tr>
<tr>
<td>Post – Test</td>
<td>35</td>
<td>80.48 ± 8.07</td>
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</tbody>
</table>

DISCUSSION

Based on the research findings, there was an increase in maternal intention after receiving training in baby massage through the AH Baby Massage application. This proves that one of the factors contributing to the increased intention of mothers is the role of midwives providing training in baby massage through the AH Baby Massage application. The midwives not only teach mothers how to correctly perform baby massage but also provide direct education on the benefits of baby massage. Mothers can independently review this information through the AH Baby Massage application. The benefits include improving the baby's weight and length, enhancing the baby's immune system, promoting better sleep, maintaining a healthy digestive system, and fostering the bond between parents and the baby [6]-[10].

The research results also indicate that maternal intention increases after participating in the baby massage program, showing the program's effectiveness in enhancing mothers' intention to engage in baby massage. The Theory of Planned Behavior suggests that intention is assumed to be a precursor to behavior. This is supported by other studies, such as Jelhooni, Kashfi, and Harsini (2019), which found that health education interventions for mothers increased the intention to breastfeed. Therefore, continuous improvement of intention variables in various studies is recommended to assess individual behavior change in health more effectively [20].

Furthermore, the research demonstrates an increase in mothers' knowledge after receiving baby massage training, validating the effectiveness of Android application-based baby massage training in enhancing maternal knowledge. The improvement in maternal knowledge during the training, facilitated by midwives, emphasizes the importance of baby massage for infant growth. The training process involves direct communication by midwives, emphasizing the significance of baby massage. In addition to direct communication, mothers are equipped with the AH Baby Massage application, allowing them to access
information independently through their smartphones at any time.

Effective baby massage training for parents leads to increased knowledge, with individual variations in knowledge levels. Knowledge is categorized into three levels: knowing, understanding, and application [21]. After one month of training, parents demonstrated improved knowledge through questionnaires and discussions, showing that the material presented by midwives was well-observed and understood. Moreover, parents understood the significance of being the ones to massage their babies, reinforcing the parent-child bond [22][23].

The increase in maternal knowledge regarding baby massage is not limited to training sessions but extends to independent learning through the Android-based AH Baby Massage application. The role of learning media has proven effective in enhancing knowledge, and the success of media usage depends on message content, explanation methods, and message reception characteristics. Accessibility is a crucial consideration in choosing learning media, with internet access being a primary concern. In this study, the use of internet-dependent applications was streamlined to a one-time requirement during the initial download, ensuring subsequent offline access to information within the application. This approach proved effective in increasing maternal knowledge of baby massage, aligning with other research findings [13][14][16][25][26].

Similarly, attitude, like knowledge, has different intensity levels: receiving, responding, valuing, and being responsible [21]. The research results show that parents met all four levels of attitude. They were receptive, responding actively to training sessions, valuing the importance of baby massage, and being responsible by actively participating in the entire process, even sacrificing time and adjusting their schedules. The positive responses during home visits further affirmed the effectiveness of the intervention.

The research assessed an improvement in attitude scores among mothers, indicating their acceptance of the importance of baby massage for the well-being and development of their infants. This acceptance was evident in questionnaire responses, demonstrating that mothers recognized the significance of baby massage and agreed with midwives' education. They understood the optimal timing for baby massage, the preparation needed, and the importance of creating a soothing environment for the baby during the massage. Some mothers even suggested alternatives like reciting verses from the Quran during the massage, a practice endorsed by midwives due to its calming effects.

The attitude levels progressed to valuing, where mothers actively shared information about baby massage with family and neighbors. The involvement of grandparents in the training sessions and their subsequent support highlighted the positive impact of the intervention. Additionally, mothers shared their experiences with neighbors, leading to increased interest in the baby massage program.

At the highest level of attitude, being responsible, mothers demonstrated a
commitment to the baby massage routine. They invested time and effort, attending training sessions, filling out questionnaires, and following midwives’ instructions for daily massage. Their consistent participation throughout the intervention month underscored their responsibility towards the baby massage program.

Changing attitudes, especially concerning baby massage, requires continuous and coherent information delivery. The role of healthcare professionals, particularly midwives, is crucial in reshaping parental attitudes. The training sessions included education on the importance of baby massage, emphasizing that it is beneficial not only for sick infants but also for healthy ones. This approach aims to prevent growth-related issues such as underweight and stunting.

Positive changes in maternal attitudes, achieved through health education interventions, such as counseling, training, community support, and the use of Android-based applications, can steer parental attitudes in a positive direction. The improvement in mothers’ acceptance of baby massage was influenced by the involvement of healthcare professionals who provided education and training through the AH Baby Massage application, aligning with previous research findings [13][15][29].

The baby massage training, aside from increasing maternal knowledge and attitudes, also aimed to enhance mothers’ skills in performing baby massage. The research results indicated that mothers initially struggled with the practical aspects of baby massage but significantly improved their skills after training by competent midwives and the use of the AH Baby Massage application.

The training method involved demonstration by midwives using dolls or phantom babies to illustrate the massage steps. Mothers were then given the opportunity to simulate or practice the massage techniques. This combination of lecture, demonstration, and simulation proved effective in enhancing maternal skills. The assessment of maternal skills was based on observation and midwife evaluations, indicating that mothers progressed from needing improvement to being capable and skilled after the one-month intervention. The training, coupled with the AH Baby Massage application, effectively elevated mothers’ proficiency in baby massage.

In conclusion, the research findings support the effectiveness of baby massage training conducted by competent midwives, with the additional benefit of the AH Baby Massage application in enhancing maternal knowledge, attitudes, and skills. The holistic approach of combining direct training sessions with the convenience of an accessible mobile application proved successful in achieving positive outcomes for mothers in the study. These results align with previous research demonstrating the positive impact of baby massage training on parental knowledge and skills [31]-[36].

NURSING IMPLICATION

The implication of this research is to enhance nurses’ competence in providing baby spa services. The AH Baby Massage application-based system facilitates nurses in improving
CONFLICT OF INTEREST

The authors declare that they have no conflict of interest to disclose in this study.

REFERENCES


