

## The Impact of LATCH Score-Based Education on Latch Accuracy in Primigravida Mothers

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### KEYWORDS

Audible Swallowing;  
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### ABSTRACT

**Introduction:** Improper infant positioning and attachment during breastfeeding is a common problem among mothers, mainly due to a lack of knowledge about breastfeeding techniques. This lack of understanding regarding correct breastfeeding technique contributes to nipple fissures and breast engorgement, ultimately impacting infant nutrition. This study aimed to assess how LATCH-based education method influences the proper latching of breastfeeding mothers in Magelang City

**Methods:** This study employed a quasi-experimental pre-post design conducted in Magelang City. The participants were breastfeeding mothers who were doing it for the first time. A total of 44 participants were enrolled as samples through purposive sampling. The tools used included a questionnaire and an evaluation observation sheet to gauge the effectiveness of breastfeeding techniques. The data analysis was performed using the Wilcoxon Signed-Rank Test.

**Results:** The results showed that three respondents had good attachment accuracy (6.8%), 38 mothers had sufficient latch (86.6%), and 3 had inadequate latch (6.8%). After receiving education, 32 respondents (72.7%) had a good latch, while 12 respondents (27.3%) had a sufficient latch. Respondents who achieved LATCH-Score indicators increased, including LATCH-on, audible swallowing comfort, and hold with a total increase of respondents of 5 (12%), 24 (76%), 20 (46%), and 15 (34%), respectively. There was a significant relationship between latch accuracy before and after being given education about breastfeeding techniques in primigravida breastfeeding mothers in the Magelang City area (P value= 0.000).

**Conclusion:** Latch score-based breastfeeding education on breastfeeding techniques affects how well new mothers attach their infants during breastfeeding. It is potentially used to support successful breastfeeding.

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## **INTRODUCTION**

Breastfeeding is one of the best ways to provide nutrition to babies, especially during the initial half year of life. Breast milk is an invaluable food source because it provides essential nutrients and antibodies crucial for infant growth and development (1). The coverage of breastfeeding in Indonesia in 2022 was 67.96%, down from 69.7% in 2021 (2). Magelang City ranked first with the lowest exclusive breastfeeding coverage, 35.5% (3). The percentage of infants starting breastfeeding shortly after birth dropped from 58,2% in 2019 to 48,6% in 2021.

Increasing the worldwide rate of breastfeeding among mothers could save the lives of over 820,000 babies and toddlers, as well as avoid an extra 20,000 cases of breast cancer in women each year. Even though the WHO target is 90%, still, just 42% mothers are breastfeeding their babies exclusively. One reason exclusive breastfeeding may fail is due to the basic information that mothers require to understand, knowledge of the correct way to breastfeed, and proper breastfeeding, which has an impact on reducing the incidence of blisters. Visible skin damage close to the nipple and areola is known as nipple trauma. It might appear as scratches, damage, painful skin, or noticeable symptoms like redness, swelling, wounds, and discoloration in white, yellow, or dark spots, as well as bruising. Breastfeeding mothers frequently experience breast pain brought on by improper attachment position, which can cause nipple trauma and be a significant barrier to effective breastfeeding (4).

Numerous studies have demonstrated that incorrect breastfeeding technique, particularly related to positioning and latch, are strongly associated with common lactation problem such as nipple pain, poormilk transfer, and early cessation of breastfeeding (5) (6) (7). A meta-analysis involving 12 studies and 1,936 postpartum women found that correct latch significantly reduced nipple pain (RR = 0.47; 95% CI 0.29-0.75,  $p < 0.002$ ) and improved breastfeeding outcomes (RR = 1.22; 95% CI 1.11-1.33,  $p < 0.0001$ ) (5).

While these foundational practices are well-documented, many mothers, especially primigravidas, continue to face difficulties due to the lack of individualized support and real-time feedback. Most existing interventions focus on general education without integrating standardized, measurable tools. Although the importance of breastfeeding technique has been emphasized for both primiparous and multiparous women (8) (9), there remains a critical gap in research exploring the use of structured assessment tools, such as LATCH-Score, not only for evaluation tools but as a direct, real-time educational intervention tailored to the needs of first-time mothers.

The LATCH Score (latch-on, audible, swallowing, type of nipple, comfort, and hold) is a widely used assessment tool due to its simplicity and practicality (10) (11). It evaluates the appropriateness of breastfeeding and identifies breastfeeding problems so that appropriate interventions can be provided to improve breastfeeding success (12). In Indonesia, many mothers face breastfeeding difficulties, often due to limited knowledge about proper breastfeeding techniques and latch, highlighting the need for enhanced education and training on correct breastfeeding practices. This study aims to address the knowledge gap in this field and demonstrate the importance of health education on proper breastfeeding techniques to improve latch accuracy, ultimately enhancing maternal and infant health outcomes. This research is critical for providing data and insights to develop more effective breastfeeding education methods, thereby supporting the success of exclusive breastfeeding initiatives.

## **METHOD**

### **Research Type**

This study used a quantitative approach with a quasi-experimental design that involved a single group assessed before and after an intervention. The participants were mothers who were breastfeeding for the first time. A total of 44 participants were chosen through purposive sampling. On days 0-30, breastfeeding mothers were individually visited from house to house. These interventions provided education and practice on how to breastfeed and attach the baby correctly, which was given in 45-minute session.

### **Population and Sample/Informants**

The population in this study was all first-time breastfeeding mothers who gave birth to babies aged 0-30 days in Magelang City. A purposive sampling was used to recruit participants with the criteria of primigravida mothers willing to be respondents. The sample involved in this study was primigravida breastfeeding mothers who gave birth to babies aged 0-30 days, with as many as 44 respondents from 8 health centres in Magelang City, with the lowest exclusive breastfeeding rate. This study involved two selected enumerators, both midwives working in Magelang. The recruitment and selection process ensured their competence and capability to deliver education effectively. In

preparation, the enumerators received in-depth training on all teaching materials, including mastery of correct latch practices, offered directly by lactation experts who had attended ongoing and up-to-date lactation management training.

### Research Location

The study took place in Magelang City, an area with semi-urban populations which had unique environment to study the breastfeeding practice.

### Instrumentation or Tools

The tools used consisted of a questionnaire and an evaluation observation sheet to gauge the effectiveness of breastfeeding methods.

### Data Collection Procedures

The data collection tool was a knowledge questionnaire and LATCH score assessment, including sucking sound, nipple type, maternal comfort, and baby position. This score was used to assess breastfeeding success. Each item was scored 0, 1, 2, and the highest score was 10, which indicated better breastfeeding success. This latch was first published in 1994 and is used to identify the need for intervention due to breastfeeding (10) (13).

### Data Analysis

This study's data was analyzed using univariate analysis with frequency distribution and bivariate analysis using a non-parametric *Wilcoxon Paired Test* because the data is normally distributed (14). According to Hollander, M., & Wolfe (1991), this test is appropriate for paired data for pre- and post-intervention measurements (15).

### Ethical Approval

This research has received a certificate of ethical feasibility with No. 364/KEPK/FK/KLE/2024 issued by the research ethics health commission of Universitas Negeri Semarang. All participants were provided informed consent prior to participating in the study. The confidentiality of all participants was strictly maintained throughout the research process. The research procedure began with a detailed explanation of the purpose, benefits, risks, and respondents' rights, including assurances of confidentiality of personal of concern, respondents signed an informed consent form before receiving the intervention. To maintain anonymity and confidentiality throughout the research process, all participants were assigned unique codes instead of using names or personal identifiers. Data were stored securely in password-protected files accessible only to the research team, and any published findings were presented in aggregate form, ensuring that individual participants could not be identified.

## RESULTS

**Table 1.** Respondent Characteristics Based on Age and Education (n=44)

Category	N	Percentage (%)
<b>Age</b>		
<20->35	17	42,5
20-35	27	67,5
<b>Education</b>		
Elementary	7	17,5
High school	25	62,5
Higher Education	12	30
Total	44	100

Based on the results in Table 1, most breastfeeding mothers were 20-35 years old, which is the healthy reproductive age of as many as 27 respondents (67.5%). The respondents' most common level of education was high school, with 25 respondents (67.5%).

**Table 2.** Pre-intervention latch accuracy among primigravida mothers (n=44)

Accuracy Of latch	Mothers (N)	Percentage (%)
Good	3	6,8
Sufficient	38	86,0
Lack	3	6,8
Total	44	100

Based on Table 2, the accuracy of latch before being given education on breastfeeding techniques of most respondents was in the sufficient category of 38 respondents (86%).

**Table 3.** Post-intervention latch accuracy among primigravida mothers (n=44)

Accuracy of Latch	Mothers (N)	Percentage (%)
Good	32	72,7
Sufficient	12	27,3
Total	44	100

Based on Table 3, the accuracy of latch of most respondents after education increased to the good category of 32 respondents (72.7%) and the adequate category of 12 respondents (27.3%).

**Table 4.** Pre-post intervention latch accuracy based on LATCH score assessment (n=44)

Indicators	Pretest		Posttest	
	N	%	N	%
LATCH-on	39	88%	44	100%
Audible Swallowing	17	38%	41	93%
Type of nipple	40	90%	40	90%
Comfort	24	54%	44	100%
Hold	23	52%	38	86%

Based on Table 4, after being given breastfeeding technique education, it was seen that respondents who achieved latch accuracy base on LATCH-Score assessment increased, including LATCH-on, audible swallowing, comfort, and hold, with a total increase of respondents of 5 (12%, 24 (76%), 20 (46%), and 15 (34%), respectively (RR= 2.44, 95% CI 7.55-8.27). It means that education on correct breastfeeding success by 2.44 times compared to before education, and the chance of succes of correct breastfeeding technique after education is around 7.55-8.27 times greater than before education, so it is statistically significant.

**Table 5.** The effect of breastfeeding techniques education based on LACH-Score

Latch	N	Mean Rank	Sum Of Ranks	P-value	Z
Before	44	0,00	741.00	0,000	5.415 <sup>b</sup>
After	44	19,50			

Table 5 showed that *the mean rank* or average increased after education, with a mean rank of 19.50, while the number of positive rankings or the *Sum of Ranks* is 741.00. There was a significant relationship between latch accuracy before and after being given education about breastfeeding techniques in primigravida breastfeeding mothers in the Magelang City area (P value= 0.000).

## DISCUSSION

In this study, the respondents selected were mothers who gave birth for the first time and were between 20 and 35 years old, at a healthy reproductive age. In this age range, women's physical and reproductive conditions are

optimal to support a healthy pregnancy and childbirth process (16). According to Steyn (2024), the level of higher education affects a person's knowledge, the higher a person's level of education, the more knowledge they have, so that one's education has an effect by Green's theory which states that one of the factors that affect behavior is predisposing factors that include education (17) (18). On the contrary, low or insufficient education will cause the development of a person's attitude towards the new values introduced, so knowledge is also lacking (19) (20).

The most of respondents had sufficient accuracy of latch before being given education. Nurses and midwives are essential in improving mothers' self-efficacy in breastfeeding their babies and educating them on proper breastfeeding latch (21) (22) (23). According to Alyousefi (2021) and Omer et al. (2020), the cessation rate of breastfeeding is highest during the first month, which is the most critical period for health workers to diagnose problems during breastfeeding (24) (25). Nipple blisters, mastitis, swollen breasts, and improper adhesion cause this failure to breastfeed (26). Therefore, those require emergency intervention from a health professional to support successful breastfeeding and to ensure the continuation of exclusive breastfeeding. Studies have reported long duration of breastfeeding and improved breastfeeding ability as a result of interventions and approaches (information and education) that have been provided (27).

After being given education, the accuracy of latch in breastfeeding mothers were increased. Based on the research conducted, it was found that the majority of mothers are enthusiastic about breastfeeding their babies because they want to try their best to provide the best exclusive breast milk for their babies. Efforts to increase *breastfeeding self-efficacy* in mothers with their first breastfeeding experience must be made so that mothers can breastfeed effectively and ultimately succeed in providing exclusive breastfeeding. This is accordance with the Health Belief Model theory, which states that changes in health behavior are related to individual beliefs, benefits, and self-confidence in providing exclusive breastfeeding. These efforts can be made by providing education on correct breastfeeding techniques, followed by demonstrations of breastfeeding techniques that function to create a direct breastfeeding experience, so that they can form an understanding in mothers that successful breastfeeding requires effort and a willingness to learn (29).

According to latch score-assessment before and after education, respondents who achieved latch accuracy were increased. An accurate latch is the key to successful breastfeeding. The study results showed a significant improvement in latch accuracy after the intervention, as evidenced by improved LATCH scores for LATCH-on, audible, swallowing, comfort, and hold. This increase reflects improvements in maternal knowledge and skills and demonstrates the effectiveness of education in changing breastfeeding behavior. Many first-time mothers experience difficulty in latching-on correctly, which often leads to inefficient breastfeeding. After education, the proportion of mothers who successfully achieve a correct latch-on increases, which aligns with findings that education on breastfeeding techniques can improve maternal self-efficacy and confidence. These findings have direct implications for clinical practice, as incorrect latch position often leads to nipple trauma and engorgement, which can progress to mastitis. Previous study shows that early education can reduce these incidences by up to 50% (30). A correctly latched-on ensures audible swallowing, which indicates effective milk transfer. This prevents fussiness due to hunger due to insufficient milk supply, thus reducing the risk of dehydration and neonatal illness. Clinically, exclusive breastfeeding can reduce the risk of respiratory infections and diarrhoea (30). Regulating the baby's position in the breastfeeding process will make the baby breastfeed comfortably and get optimal breast milk. If the breastfeeding position is uncomfortable, it will make the baby fussy, cause blisters, and the breasts will become swollen (31) (32).

This study also found there was a significant difference between latch accuracy before and after education. The findings of this study support the goal of health counselling or education, which is to use the learning process to intentionally help individuals, groups, and communities change their behaviour toward positive things. The results demonstrate that breastfeeding mothers' confidence is influenced by positive attitudes, breastfeeding family support, and social support (29). The results of this study are in line with the theory that the purpose of health counselling or education is to change the behaviour of individuals, groups, and communities towards positive things in a planned manner through the learning process (33). However, this study has limitations, including the pre- and post-intervention design without a control group, making it difficult to distinguish whether the increase in latch accuracy was due to the intervention or other factors. The small sample size of 44 respondents lacked statistical power to detect minor effects or subgroup variations, and the sample's non-randomization could have introduced bias.

Breastfeeding technique education also affects the ability of postpartum mothers to breastfeed. Breastfeeding education nurses give can increase breastmilk knowledge, breastfeeding success, and breastfeeding self-efficacy (34). According to (35) this "ability" is the energy (power) to do an act. Ability can be an innate ability from birth, or it can be the result of practice or practice. According to Lau et al. (2015), although breastfeeding is a natural phenomenon, successful breastfeeding can be a complex task for both mother and baby. Several factors can be used to measure the effectiveness of breastfeeding, including the way the mother positions the baby on her breast, the mother's comfort level, the type of breastfeeding of the mother, the baby's breastfeeding techniques such as the rooting reflex, the baby's attachment, the baby's activeness in sucking, and the baby's swallowing sound, which in this study is a predictor objective for breastfeeding success (36).

Breastfeeding techniques measured using *the LATCH score instrument* included five areas (attachment, swallowing, nipple type, comfort level, and position) that affected the initiation of exclusive breastfeeding (36). Research by Fadiloglu et al. (2021) and Nancy et al. (2022) supports this, explaining that mothers with a higher *LATCH* score will be more likely to continue breastfeeding their babies (7) (37), which explains that mothers who have a higher *LATCH* score will be more likely to continue breastfeeding their babies.

The scores obtained from the assessment results using *the LATCH* score can also help hospitals increase the availability of health workers to provide breastfeeding education to mothers and infants with a priority level of breastfeeding assistance (38). The *LATCH* score is a systematic documentation and standard communication tool that health professionals use. It can help health workers to assess the knowledge and skills of postpartum mothers in breastfeeding (10) (36). This instrument is relevant for pre-post educational design because it measures audible swallowing and comfort. This instrument is easy and practical because it does not use expensive equipment so that it can be implemented in community health centers in Indonesia. It is in accordance with study by Fadilaglu et al. (2021), which showed high reliability (Cronbach's  $\alpha > 0.80$ ) and a positive correlation with breastfeeding duration ( $r = 0.65$ ) in post-cesarean mothers. The *LATCH* score predicted the success of early breastfeeding initiation with 78% accuracy, which aligns with WHO guidelines, where correct latch reduces the risk of sore nipples by up to 40%.

This study lies in the dual application of the *LATCH*-Score assessment, not only as an evaluation tool but also as a proactive educational intervention tailored for primigravida mothers. While previous studies have primarily utilized *LATCH* for breastfeeding evaluation (40) (41), this study integrate it as a real-time feedback mechanism that guides mothers in improving latch technique and overcoming early breastfeeding difficulties, as first-time mothers often face more challenges due to a lack of experience. It thus contributes valuable evidence-based strategies to maternal and neonatal health promotion.

## CONCLUSION

The results of this study demonstrate that *LATCH*-score-based education significantly improves the accuracy of infant attachment during breastfeeding among primigravida mothers in Magelang City, with post-intervention latch accuracy increasing. These findings highlight the effectiveness and feasibility of implementing *LATCH*-score based education in maternal health services. Given its structured format and adaptability, this approach holds strong potential for scalability across similar urban and rural settings. While these results are promising, future research should consider comparative analyses with models such as the tri-core breastfeeding model to further validate and refine educational strategies.

## AUTHOR'S CONTRIBUTION STATEMENT

The study was co-designed and co-analyzed by the authors using concepts we came up with together. The research leader offered advice on how to conduct the research along with writing the article. Other team members contributed to the preparing the article, data analysis, and representation. In order to ensure that the study was suitable to examine latching accuracy in nursing moms, all authors took part in the evaluation and approval of the final paper.

## CONFLICTS OF INTEREST

All authors declare that there is no conflict of interest.

## DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

Authors declare that AI-assisted technologies, especially Grammarly and Quillbot, were used to enhance grammar, spelling, language clarity, and to paraphrase several sentences during the manuscript preparation process. No AI tools were used to generate content, analyze data, or draw conclusions. All scientific contributions are the authors's original work.

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