

Original Research

Effect of Leaflet-Based Education on Knowledge and Exclusive Breastfeeding Compliance Among Mothers in North Sumatera

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ABSTRACT

Background: Exclusive breastfeeding is the practice of providing only breast milk without any additional food or drink for the first six months of an infant's life. The coverage of exclusive breastfeeding in Indonesia has not yet reached the target, partly due to the low level of knowledge and compliance among breastfeeding mothers. One effort to improve this condition is through health education using leaflet media. This study aimed to determine the effect of leaflet media on the knowledge and compliance of breastfeeding mothers in providing exclusive breastfeeding at Ulumahuam Public Health Center, South Labuhan Batu Regency, in 2025. **Methods:** This research used a quasi-experimental design with a one-group pretest-posttest approach. The population consisted of 72 breastfeeding mothers, with a sample of 42 respondents selected using a simple random sampling technique. Data were collected using questionnaires and analyzed using the paired t-test and chi-square test. **Results:** The results showed a significant increase in mothers' knowledge after they were given education through leaflet media, with a p-value = 0.000 (<0.05). In addition, there was a significant effect of leaflet media on mothers' compliance in providing exclusive breastfeeding, with a p-value = 0.002 (<0.05). This indicates that leaflet media is effective in improving knowledge and compliance among breastfeeding mothers. **Conclusion:** Leaflet media has a significant effect on increasing the knowledge and compliance of mothers in providing exclusive breastfeeding. It is recommended that health workers utilize leaflet media as an educational tool in promoting exclusive breastfeeding programs.

Keywords: Exclusive breastfeeding; leaflet; knowledge; compliance; breastfeeding mothers

1. INTRODUCTION

Exclusive breastfeeding (ASI) is the provision of only breast milk without any additional food or drink to infants from birth to 6 months of age. The WHO and the Indonesian Ministry of Health recommend exclusive breastfeeding due to its significant benefits for infant growth, immunity, and development. However, exclusive breastfeeding coverage in Indonesia remains suboptimal. Various factors contribute to the low coverage of exclusive breastfeeding, including a lack of knowledge about breastfeeding and low compliance with exclusive breastfeeding practices. Health education using appropriate media is essential to increase awareness and compliance among breastfeeding mothers, one example of which is informative and easy-to-understand leaflets.^(1,2)

Globally, exclusive breastfeeding rates have increased, but remain below targets. The WHO reports that by 2023, approximately 48% of babies worldwide will be exclusively breastfed for six months, still below the global target of 50%

by 2025. In Indonesia, according to the 2023 Indonesian Health Profile, exclusive breastfeeding coverage reached 55.5%, a slight increase from 52% in 2017. However, this figure still falls short of the national target of 80%.⁽³⁾

In North Sumatra Province, data from the North Sumatra Health Office in 2022 showed that exclusive breastfeeding coverage was 54.8%, indicating the continued need for consistent interventions to improve breastfeeding practices. Unfortunately, specific data on exclusive breastfeeding coverage in South Labuhan Batu Regency, particularly at the Ulumahuam.⁽⁴⁾ Community Health Center, is limited. However, reports from the Community Health Center's work program and evaluations of integrated health post (Posyandu) activities revealed that many breastfeeding mothers still do not fully understand the importance of exclusive breastfeeding and providing complementary foods before six months of age.⁽⁴⁾

Breast milk, hereinafter referred to as ASI, is a fluid produced by the secretion of the mother's mammary glands and serves as the primary source of nutrition for infants. Exclusive breastfeeding refers to the practice of providing only breast milk to infants from birth until the age of 6 months without adding or replacing it with any other food or drink. An infant is defined as a child from birth up to 12 months of age. Family includes the husband, children, and blood relatives in a direct lineage up to the third degree. Meanwhile, infant formula is specially formulated milk intended as a substitute for breast milk for infants up to 6 months of age.⁽⁵⁾

Various factors influence the success of exclusive breastfeeding, including maternal knowledge, family support, local culture, and the practice of introducing complementary foods before 6 months of age.⁽⁶⁾ Appropriate education can improve maternal knowledge and compliance with exclusive breastfeeding. Lack of knowledge and accurate information regarding exclusive breastfeeding is one of the causes of low maternal compliance with this recommendation. Many breastfeeding mothers are still influenced by myths, culture, and lack of access to accurate information. Therefore, health education is an important strategy for changing behavior.⁽⁷⁾

Leaflets as an educational medium have the potential to increase knowledge because they can be read repeatedly, contain important information concisely, and are easy to disseminate.⁽⁸⁾ However, the effectiveness of leaflets on changing breastfeeding behavior and compliance requires further study, particularly in the

Ulumahuam Community Health Center (Puskesmas) area in South Labuhan Batu Regency, which currently lacks optimal data on exclusive breastfeeding coverage and educational interventions. Leaflets are an effective, affordable, and easily accessible educational medium. Leaflets are printed media that contain concise yet concise information and can be read repeatedly. Research by Riska et al. (2022) stated that the use of leaflets can significantly increase breastfeeding mothers' knowledge about exclusive breastfeeding.⁽⁹⁾ Furthermore, education through leaflets can also improve maternal compliance because the information provided is practical and directly related to mothers' daily experiences.⁽⁴⁾

In line with the research of Manurung and Sigalingging (2019), from the Shapiro-Wilk test, the p-values obtained were 0.078 and 0.060, respectively ($p > 0.05$). Since both p-values exceeded 0.05, then according to the Shapiro-Wilk normality test criteria, it can be concluded that the data on the smoothness of breast milk in the experimental and control groups were normally distributed. Oskitosin massage affected the smoothness of exclusive breast milk.⁽¹⁰⁾

According to research by Zahara et al. (2025),⁽¹¹⁾ the results of the Fisher Exact test showed a p value of 0.003 (< 0.05), so it can be concluded that there is a relationship between family knowledge and exclusive breastfeeding at the Batugana Community Health Center in 2020. Exclusive breastfeeding in infants is influenced by the level of knowledge about the benefits of exclusive breastfeeding, because knowledge will shape a person's behavior. Mothers with good knowledge tend to provide exclusive breastfeeding to their babies, while mothers with less knowledge are more likely to not provide exclusive breastfeeding.^(11,12)

However, in the Ulumahuam Community Health Center (Puskesmas Ulumahuam), the use of leaflets as an educational medium has not been optimally utilized. So far, education for breastfeeding mothers is still mostly delivered verbally during integrated health post (Posyandu) visits or routine check-ups, which sometimes does not have a long-term impact. Based on a preliminary survey conducted among breastfeeding mothers at the Ulumahuam Community Health Center in South Labuhan Batu Regency, North Sumatra Province, in 2025, nine out of 15 mothers did not exclusively breastfeed for various reasons, such as insufficient breast milk, fear of not having enough food for their children, and working mothers.

2. METHODS

2.1 Study Design

This research employed a quasi-experimental design using a One Group Pretest-Posttest approach. This design was selected to evaluate the impact of an educational intervention by comparing the knowledge and compliance levels of participants before and after the distribution of educational leaflets regarding exclusive breastfeeding.

2.2 Population and Sample Size

The target population for this study consisted of all breastfeeding mothers registered at the Ulumahum Community Health Center, South Labuhan Batu Regency, North Sumatra Province, in 2025, totaling 72 individuals. The sample size was determined using the Slovin formula with a margin of error (e) of 10% (0.1).

$$n = \frac{N}{(1+Ne^2)}$$

$$n = \frac{72}{(1+72(0.1)^2)}$$

$$n = 41.86 \approx 42 \text{ respondents}$$

The method used a lottery, where all members of the population had the opportunity to be sampled up to the specified sample size of 42.⁽¹³⁾

2.3 Sampling Technique

Participants were selected using a simple random sampling technique. To ensure every member of the population had an equal opportunity to be included, a lottery method was implemented. Numbers were assigned to each member of the population, and 42 numbers were drawn until the required sample size was fulfilled. Inclusion Criteria: Breastfeeding mothers registered at the Ulumahum Community Health Center who are willing to participate in the full duration of the study. Exclusion Criteria: Mothers who moved out of the area during the study period or those who were unable to communicate clearly.

2.4 Study Instrument

The primary instrument used for data collection was a structured questionnaire designed to assess the knowledge and compliance of breastfeeding mothers. Additionally, the intervention utilized educational leaflets as the media for delivering information on exclusive breastfeeding.

2.5 Data Collection

Data collection was conducted in two phases. First, a pretest was administered to measure baseline

knowledge and compliance. Following the pretest, the respondents received educational intervention via leaflets. After a designated period, a posttest was conducted using the same instrument to evaluate changes in the measured variables.

2.6 Statistical Analysis

Data were processed through editing, coding, entry, and tabulation using SPSS software. Univariate analysis was presented in the form of frequency distributions and percentages. Normality was tested using the Shapiro-Wilk test. Bivariate analysis was performed using the Paired Sample t-Test to assess differences in knowledge before and after the intervention, and the Chi-Square test to examine the relationship between leaflet provision and maternal compliance with exclusive breastfeeding. Statistical significance was set at $p < 0.05$.

2.7 Ethical Practices

The study was conducted in accordance with ethical standards for research involving human subjects. Participants provided informed consent before joining the study, with guarantees of anonymity and data confidentiality. This research has received formal ethical approval from the Health Research Ethics Committee (KEPK) at STIKes Mitra Husada Medan with Ethical Clearance Number: 1469/KEP-MHM/I.2/IV/2025.

3. RESULTS

Based on the results of the study conducted by the author, the following results were obtained. This study involved 42 breastfeeding mothers at the Ulumahum Community Health Center, South Labuhan Batu Regency in 2025 (Table 1). Based on the results of univariate analysis, the majority of respondents were in the age group of 21–35 years as many as 27 people (64.3%), followed by ages >35 years as many as 10 people (23.8%), and <20 years as many as 5 people (11.9%). Based on occupation, most respondents were housewives as many as 22 people (52.4%), followed by self-employed as many as 18 people (42.9%), and civil servants as many as 2 people (4.8%). Meanwhile, based on education level, the majority of respondents had high school education as many as 31 people (73.8%), followed by college as many as 6 people (14.3%), and junior high school as many as 5 people (11.9%).

Table 1. Frequency distribution of breastfeeding mothers at the Ulumahum Community Health Center, South Labuhan Batu Regency, North Sumatra Province, 2025

| Characteristics | Frequency | % |
|------------------------|-----------|------|
| Age | | |
| 1. < 20 year | 5 | 11.9 |
| 2. 21-35 year | 27 | 64.3 |
| 3. >35 year | 10 | 23.8 |
| Total | 42 | 100 |
| Words | | |
| 1. Housewife | 22 | 52.4 |
| 2. Self-employed | 18 | 42.9 |
| 3. Government employee | 2 | 4.8 |
| Total | 55 | 100 |
| Education | | |
| 1. Junior high school | 5 | 11.9 |
| 2. Senior high school | 31 | 73.8 |
| 3. College | 6 | 14.3 |
| Total | 55 | 100 |

The results of the Paired Samples t-Test showed a significant difference between the average knowledge before and after the leaflet intervention. The mean difference was -68.524, indicating a significant increase in knowledge after the leaflet intervention. A p-value of 0.000 (<0.05) indicates that the difference is statistically significant

Based on the statistical test results, a p value of 0.002 was obtained, which means there is a statistically significant relationship between the provision of leaflets and the incidence of anemia in respondents (p < 0.05). The

Table 2. The influence of leaflet media on mothers' knowledge in providing exclusive breastfeeding at the Ulumahum Community Health Center, South Labuhan Batu Regency, North Sumatra Province in 2025

| Paired samples test | | Paired differences | | | | | t | df | Sig. |
|---------------------|-------------------|--------------------|----------------|-----------------|---|---------|---------|----|-------|
| | | Mean | Std. deviation | Std. error mean | 95% confidence interval of the difference | | | | |
| | | | | | Lower | Upper | | | |
| Pair 1 | Group – knowledge | -68.524 | 11.413 | 1.761 | -72.080 | -64.967 | -38.911 | 41 | 0.000 |

Table 3. The Influence of leaflet media on mothers' compliance in providing exclusive breastfeeding at the Ulumahum Community Health Center, South Labuhan Batu Regency, North Sumatra Province in 2025

| Variables | Providing Exclusive Breas | | | | Total | OR | 95% CI | p-value |
|----------------------|---------------------------|------|----|------|-------|------|-----------------|---------|
| | Yes | | No | | | | | |
| | N | % | N | % | | | | |
| Leaflet Media | | | | | | | | |
| 1. Given | 14 | 33.3 | 4 | 9.5 | 18 | 42.9 | 2.667 | |
| 2. Not Given | 7 | 16.7 | 17 | 40.5 | 24 | 57.1 | (1.364 – 5.214) | 0.002 |
| Total | | 50.0 | 21 | 50.0 | 33 | 100 | | |

odds ratio value of 2.667 indicates that respondents who were not given leaflets had a 2.6 times greater chance of experiencing anemia compared to respondents who received leaflets.

4. DISCUSSION

The results of the study showed that education using leaflets significantly increased breastfeeding mothers' knowledge about exclusive breastfeeding (p-value = 0.000). This indicates that leaflets are an effective educational medium for improving mothers' understanding. Leaflets present information concisely, clearly, and can be read repeatedly, making the process of information absorption easier. In accordance with Notoatmodjo's (2020) theory, knowledge is influenced by sensory processes, particularly through visual media, which can enhance information absorption.⁽¹³⁾

This finding aligns with research by Utami et al. (2019) which found that the use of leaflets significantly increased mothers' knowledge about exclusive breastfeeding compared to no media. Printed media, such as leaflets, were also considered more effective because they reinforced information provided verbally.⁽¹⁴⁾ Furthermore, the results also showed a significant effect of leaflets on maternal compliance with exclusive breastfeeding (p-value = 0.002; OR = 2.667). The study results showed that the intervention group experienced a significant increase in knowledge, from 0% to 38.9%, and

a positive attitude improvement from 44.4% to 50% after receiving education through leaflet media. In contrast, the control group showed a lower level of improvement.⁽¹⁵⁾

In line with the study conducted by Mandati et al. (2023), the results of the statistical analysis using the Wilcoxon test showed a significance value of $p = 0.001$, which was lower than $\alpha (0.05)$. Therefore, H_0 was rejected and H_a was accepted, indicating that health promotion through leaflet media and lecture methods was effective in improving breastfeeding mothers' knowledge about exclusive breastfeeding in Talaga Ratu Hamlet, Kairatu Village.⁽¹⁶⁾

Results showed that most respondents had moderate behavior, totaling 52 respondents (91.2%), while the remaining 5 respondents (8.8%) were categorized as having poor behavior. All respondents (100%) were categorized as having moderate attitudes. This study has several limitations. First, the use of a one-group pretest–posttest design without a control group limits the ability to control for external factors that may influence the outcomes. Second, the sample size was relatively small and limited to one public health center, which may affect the generalizability of the findings.

5. CONCLUSION

The implementation of leaflet-based educational interventions at the Ulumaham Community Health Center demonstrated a transformative impact on both maternal cognitive understanding and practical adherence to exclusive breastfeeding protocols. Initial observations revealed suboptimal baseline levels of knowledge and a prevalent tendency toward premature complementary feeding; however, the systematic delivery of information through leaflets successfully bridged these gaps. Statistical evidence ($p < 0.05$) confirms that this medium acts as a potent catalyst for behavioral change, significantly elevating average knowledge scores and fostering stricter compliance with the six-month exclusive breastfeeding mandate. Beyond mere information delivery, the leaflets functioned as a persistent psychological reinforcement and practical guide, effectively transitioning mothers from traditional feeding misconceptions to evidence-based health practices. These findings underscore the efficacy of accessible print media in enhancing community health outcomes within maternal and child health frameworks.

Ethical Approval

Ethical approval was granted by the Ethics Committee of STIKes Mitra Husada Medan (Ethical Clearance Number: 1469/KEP-MHM/1.2/IV/2025).

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Competing Interests

All the authors declare that there are no conflicts of interest.

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Underlying Data

Derived data supporting the findings of this study are available from the corresponding author on request.

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