

The Effect of Breastfeeding Education Using Leaflet Media on the Knowledge and Attitudes of Pregnant Women

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ABSTRACT

Breast milk (BM) is one of the most important nutrients for baby needs. This is the best baby food for the perfection of growth and development. Increasing the knowledge and attitude of mothers is considered necessary because it contributes to parenting for their children. This research aims to determine the effect of breastfeeding education using leaflet media on the knowledge and attitudes of pregnant women. The research is a quasi-experiment with a pre-test and post-test with a control group research design conducted in March – April 2023 in the working area of the South Sangatta Health Center, East Kutai Regency, East Kalimantan, Indonesia. A total of 32 samples were involved in random sampling by taking into account inclusion and exclusion criteria. The data is analyzed with the Paired-Sample T-test. The research shows the influence of exclusive breastfeeding education using leaflet media on the knowledge of pregnant women ($p = 0.000$), and the influence of exclusive breastfeeding education using non-leaflet media on the knowledge of pregnant women ($p = 0.006$). There is an influence of exclusive breastfeeding education using leaflet media on the attitude of pregnant women ($p = 0.000$), and the influence of exclusive breastfeeding education using non-leaflet media on the attitude of pregnant women ($p = 0.006$). Education using leaflets is much more effective than non-leaflet education. This finding is empirical evidence that nutrition education in the form of media is encouraged to welcome changes in public perception.

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- The study found that using leaflets to educate pregnant women about breastfeeding significantly improved their knowledge and attitudes towards it
- The potential advantage of leaflets for delivering breastfeeding education

Introduction

Breast milk (BM) is one of the most important nutrients for baby needs. In addition to key nutrients such as proteins, fats, carbohydrates, vitamins and minerals, BM also contains various bioactive components that have anti-inflammatory, anti-infective (1). This is the best food for babies because it is a perfect natural food, easily digested by babies and contains nutrients that suit the baby's needs for growth, immunity and prevention of various diseases as well as for baby's intelligence, safety and guaranteed cleanliness because it is directly given to babies to avoid digestive disorders such as diarrhea, vomiting and so on(2). In low- and middle-income countries, only 37% of children under 6 months of age are exclusively breastfed. Except, breastfeeding is shorter in high-income countries than in low-income countries (3).

Breastfeeding is a matter of concern in both developed and developing countries because it has far-reaching but often underappreciated consequences and breastfeeding would be relevant to the present's importance to the nutritional impact of the infant and his or her health as an adult later in life (3). The American Academy of Pediatrics (AAP) and the World Health Organization (WHO) recommend that infants be exclusively breastfed during the first 6 months postpartum, after which complementary foods can be introduced slowly(4).

There is strong evidence that breastfeeding reduces neonatal infection rates, and also has long-term health benefits by preventing hypertension, and diabetes, and even improving intellectual intelligence (IQ)(5). The latest study by Granger et al. (2021) suggests that the benefits of breast milk are seen not only in premature populations in reducing the risk of necrotizing enterocolitis and sepsis,

but also in the long term reducing obesity, improving cardiovascular disease, reducing the risk of diseases caused by immunity, and potentially interfere with cognitive 6Recent reports reveal about 35% of babies worldwide are exclusively breastfed during the first 6 months(5). This is still below the WHO-recommended figure of 50% (7).

Globally, it is reported that malnutrition in mothers and children in developing countries approximately 45% of child and maternal deaths are mainly due to malnutrition and 11% of child deaths are caused by suboptimal breastfeeding(8). In Indonesia, based on the 2018 Basic Health Research (Riskesmas) report, the percentage of children aged 0-5 months who get exclusive breastfeeding of 37.3% is still below the national minimum coverage rate of 80%. The lowest coverage is in West Nusa Tenggara Province at 20.3% and the highest coverage is in Bangka Belitung Province at 56.7% and East Kalimantan is in the top ten lowest in Indonesia at 33%(9). While the latest report in 2021 has increased based on data from the East Kalimantan Provincial Health Office, it increased by 53.6%, while exclusive breastfeeding data for East Kutai Regency by 51.9% and exclusive breastfeeding data for the South Sangatta Health Center by 41.15%, is still low compared to national and provincial data. This illustrates that there are still many children under two mothers who do not breastfeed exclusively, let alone breastfeed for up to 23 months.

Recent reports in Indonesia show that nutritional problems are increasing and some problems are declining but the decline is not yet in the safe category. The latest survey known as the 2022 Indonesian Nutritional Status Survey (SSGI) shows that the prevalence of stunting in Indonesia is 24.4%, a decrease of 3.3% from 2021. In East Kalimantan Province, it was reported that 23.9% were stunted, 9.1% wasted, 20.4% underweight, and 4.0% overweight. While East Kutai as one of the districts in East Kalimantan shows a stunting prevalence of 24.7%, wasted 7.3%, underweight 19.7%, and overweight 4.6% (10). Various studies in Indonesia have revealed that the incidence of nutritional problems is a multifactor problem. Non-exclusive breastfeeding in the first 6 months of life, low parental education, low economy, lack of parental knowledge and clean and healthy living behaviour(12)(13)(14).

Factors that influence the low level of exclusive breastfeeding include low knowledge about the importance of exclusive breastfeeding. The intervention study by Retnaningtyas et al. (2022) in Malang conducted on pregnant women showed an increase in knowledge from 30% to 80% after education using leaflets (15). Maternal knowledge related to exclusive breastfeeding must be started when the mother is still pregnant so that the mother can prepare exclusive breastfeeding properly and correctly. The mother's ignorance about the advantages of breast milk can have a bad influence on the baby. If the baby does not get breast milk well, the baby will not get good nutrition in breast milk. Good maternal knowledge also means exclusive breastfeeding for toddlers will also increase.

The specific aspect of breastfeeding education using leaflets that we are investigating is the effect of this type of education on the knowledge and attitudes of pregnant women. This is an important area of research because breastfeeding is the best way to feed a baby, and it is important to ensure that pregnant women have the information and support they need to breastfeed successfully. Leaflets are a simple and effective way to provide breastfeeding education to pregnant women. They can be distributed at prenatal appointments, in health clinics, and at other community settings. Leaflets can cover a wide range of topics related to breastfeeding, such as the benefits of breastfeeding, how to get started with breastfeeding, and troubleshooting common problems. This research aims to determine the effect of breastfeeding education using leaflet media on the knowledge and attitudes of pregnant women.

Methods

The study was a quasi-experiment with a pre-test and post-test research design with the control group to determine the effect of breastfeeding education using leaflet media on the knowledge and attitudes of pregnant women. This research was conducted in March – April 2023 in the working area of the South Sangatta Health Center, East Kutai Regency, East Kalimantan, Indonesia. The population in this study is all pregnant women who have MCH books in the South Sangatta Health Center area from March to April 2023. The sample involved 32 people based on Federer's formula. Random sampling by taking into account inclusion and exclusion criteria. The inclusion criteria are pregnant women who are in good health, have a Maternal and Child Health (MCH) book, including natives of the Public Health Center area, and are willing to be respondents with proof of filling out informed consent. The exclusion criteria are pregnant women who are sick, not natives of the Public health centre work area and are not willing to be respondents.

The variables in this study consist of independent variables and dependent variables. Independent variable measurement is carried out by providing education using leaflet media for 1 time a week for 2 weeks. Measurement of dependent variables through pre-test and post-test using a questionnaire. Nutrition education includes efforts to increase knowledge about breastfeeding in Padua.

While the knowledge measured is the understanding of pregnant women in answering questions about breastfeeding in Padua, if true it is given a value of 1 and if wrong it is given a value of 0. The attitude contains information about the preparation and form of the reaction of pregnant women after being given education about breastfeeding to children under two. On positive statements (strongly agree = 4, agree = 3, disagree 2, strongly disagree 1) and negative statements (disagree 3, agree 2, strongly agree 1).

Data analysis is carried out with the help of computer software using the SPSS 23 program. The data analysis used was univariate and bivariate. Univariate analysis is carried out to determine the characteristics of respondents. Bivariate analysis is an analysis carried out to determine the influence of leaflet media on changes in the level of knowledge and attitudes of pregnant women. Data analysis begins by performing a normality test using the Shapiro-Wilk test. All data is normally distributed so that the test used is a parametric test (Paired T-Test).

Ethical Clearance: Health Polytechnic Research Ethics Commission, Ministry of Health, East Kalimantan with number: DP.04.03/7.1/7863/2023.

Results

Table 1 shows that the intervention group was dominated by pregnant women aged 20-35 years, namely 14 people (87.5%) while in the control group, it was also the same, namely 11 people (68.8%). Education was obtained in the intervention group, the majority with a high school education level of 9 people (56.3%) while the control group dominated by the level of elementary school and high school education with 5 people each (31.3%). In the intervention group, the majority of mothers as domestic workers were 15 people (93.8%), as well as in the control group, all mothers worked as housewives, namely 16 people (100%). Finally, based on pregnancy status in the intervention group, mothers with a 3rd pregnancy were dominant, namely 5 people (31.2%) while in the control group, it was also the same as the 3rd pregnancy status, which was 7 people (43.8%).

Table 1 Characteristics of Pregnant Women

Characteristic	Intervention		Control	
	n = 16	%	n = 16	%
Age (years)				
< 20	1	6.3	2	12.5
20 - 35	14	87.5	11	68.8
≥ 36	1	6.3	3	18.8
Education				
Primary school	0	0	5	31.3
First Middle School	5	31.3	3	18.8
High School	9	56.3	5	31.3
College	2	12.5	3	18.8
Work				
Housewives	15	93.8	16	100
Private Employees	1	6.3	0	0
Pregnancy Status				
1st Ignorance	4	25.0	1	6.3
2nd Ignorance	4	25.0	3	18.8
3rd Ignorance	5	31.2	7	43.8
Ignorance to >3	3	18.8	5	31.3

Table 2 on the knowledge of the educational intervention group shows that before breastfeeding education was carried out using descriptive leaflet media the knowledge statistics of pregnant women in the intervention group, namely the minimum value of 61, the maximum value of 83, the mean of SD ± 73.94 ± 7.188. After education using leaflet media, the minimum value is 83, the maximum value is 100, and the mean ± SD is 91.50 ± 5.750. While the control group showed that before breastfeeding education without using leaflet media was carried out in the control group, descriptive statistical knowledge of pregnant women was a minimum value of 33, a maximum value of 100, and a mean of SD ± 72.81 ± 21.995. After education without leaflet media, the minimum value is 44, the maximum value is 100, and the mean ± SD is 77.00 ± 17.546.

In the attitude variable, the intervention group showed that before breastfeeding education using leaflet media was carried out in the intervention group of pregnant women's attitudes, descriptive

statistics of pregnant women's attitudes had a minimum value of 63, a maximum value of 82, a mean of $SD \pm 73.88 \pm 5.67$. After education using leaflet media, the minimum value was 80, the maximum value was 97, and the mean $\pm SD$ was 87.81 ± 4.91 . While the control group showed that before breastfeeding education using leaflet media was carried out in the control group, descriptive statistics of pregnant women's attitudes were a minimum value of 65, a maximum value of 95, and a mean $\pm SD$ 81.13 ± 9.566 . After education using leaflet media, the minimum value is 68, the maximum value is 95, and the mean $\pm SD$ is 83.06 ± 8.737 .

Table 2 Descriptive Variables

Variable Distribution	Intervention Group (n=16)				Control Group (n=16)			
	Min Score	Max Score	Mean	SD	Min Score	Max Score	Mean	SD
Knowledge								
Before	61	83	73.94	7.188	33	100	72.81	21.995
After	83	100	91.50	5.750	44	100	77.00	17,546
Attitude								
Before	63	82	73.88	5.67	65	95	81.13	9.566
After	80	97	87.81	4.91	68	95	83.06	8.737

Table 3 shows that in the intervention group, statistical analysis results were obtained using the Paired T-Test test with p values of $0.000 < 0.05$, then H_0 was rejected and H_a was accepted. This means that there is an influence of exclusive breastfeeding education based on leaflet media on the knowledge of pregnant women in the South Sangatta health centre area, East Kutai Regency. While in the control group, the results of statistical analysis using the Paired T-Test obtained a significance value of 0.006, then H_0 was rejected and H_a was accepted. This means that there is an influence of nutrition education without leaflets on increasing the knowledge of pregnant women. As for the attitude in the intervention group, the results of statistical analysis using the Paired T-Test obtained a significance value of $0.000 < 0.05$, then H_0 was rejected and H_a was accepted. This means that there is an influence of nutrition education using leaflet media on the attitude of pregnant women. While in the control group, the results of statistical analysis using the Paired T-Test test with a p-value of 0.001 were obtained, then H_0 was rejected and H_a was accepted. This means that there is an influence of exclusive breastfeeding-based education on the attitude of pregnant women in the Sangatta Selatan health centre area, East Kutai Regency.

Table 3 Influence between Variables

Variable	Intervention Group (n=16)				Control Group (n=16)			
	Mean	t-count	Df	p	Mean	t-count	Df	p
Knowledge								
Pre-test	73.94	-13.995	15	0.000	72.81	-3.210	15	0.006
Post-test	91.50				77.00			
Attitude								
Before	73.88	-15.232	15	0.000	81.13	-4.125	15	0.001
After	87.81				83.06			

Discussion

Breastfeeding Education on the Knowledge of Pregnant Women

Knowledge is the result of knowing, knowledge occurs after a person senses something through the five human senses, namely the senses of sight, hearing, smell, taste and touch. Cognitive knowledge is a very important domain in the form of one's actions(17). The results showed that in the intervention group, statistical analysis results were obtained using the Paired T-Test test with p values of $0.000 < 0.05$, then H_0 was rejected and H_a was accepted. This means that there is an influence of exclusive breastfeeding education based on leaflet media on the knowledge of pregnant women in the South Sangatta health centre area, East Kutai Regency. This result was corroborated by a univariate test of knowledge about breastfeeding before education using leaflet media with an average level of knowledge of 73.94. After being given breastfeeding education using leaflet media, there was a change in the post-test score which showed the results of the post-test level of knowledge about breastfeeding after being given breastfeeding education using leaflet media in the intervention group had a significant change, the

average level of knowledge was 91.50. This research is in line with research by Eka Wardani and Sulastri (2023) which shows the influence of nutrition education on the knowledge of pregnant women (18).

We found the average mother with a high level of education is in high school. One theory reveals that mothers who have a high or good level of education can be more receptive to all information. This is in line with a study by Aprillia, Mawarni, and Agustina (2020) that the level of education of mothers affects their level of knowledge in receiving information(16). Knowledge is closely related to education, where it can be assumed that with higher education, the person will be more knowledgeable(19). In addition, we also found the age of pregnant women who are relatively young which is dominated by the age range of 20-35 years. This period is known as the active period to find out information and the period to easily receive information. In addition, we also found the enthusiasm of pregnant women in participating in this study, it is very clear their activeness in multiplying messages and information written in leaflets.

We suspect that there is enthusiasm in all mothers who make this education effective. This is very evident in the pre-test and post-values which have been observed from 73.94 to 91.50. In Table 3, a negative t-count of -13,995 is obtained, meaning that the average before being educated using leaflet media is lower than the average after being educated. So it can be concluded that there is an increase in knowledge of pregnant women in the working area of the South Sangatta Health Center, East Kutai Regency between before and after being given breastfeeding education using leaflet media. Pregnant women have an important role in breastfeeding to children under two. By providing knowledge in advance before becoming parents, pregnant women can prepare themselves for breastfeeding exclusively and for up to 2 years. Increased knowledge of pregnant women is needed to maximize their role later in providing breast milk after childbirth.

According to Notoatmodjo (2012), media is a tool used by health workers in delivering materials, materials, and health messages to help and demonstrate something in the health promotion process(20). Media of many types include leaflets. The leaflet is a health promotion media tool to increase message acceptance. A leaflet is a folded paper containing information in sentences, pictures, or both (sentences and pictures). Leaflets as media or visual aids that can improve learning outcomes compared to learning without media assistance at all(20).

In addition to leaflet media. In the control group, education was carried out in the form of lectures. Cerama is a method that is often used and is relatively more efficient and simple and able to reach many audiences in a shared time(21). In this study, non-leaflet breastfeeding education showed the results of statistical analysis using the Paired T-Test test obtained a significance value of $0.006 < 0.05$, then H_0 was rejected and H_a was accepted. This means that there is a relationship between breastfeeding education and increasing knowledge of pregnant women in the control group. This result was corroborated by a univariate test which showed the results of the pre-test level of knowledge about breastfeeding before being given education not using leaflet media with an average level of knowledge of 72.81. After being given breastfeeding education using leaflet media, there was a change in the post-test score which showed post-test results, the level of knowledge about breastfeeding after being given breastfeeding education using leaflet media in the intervention group had a significant change, the average level of knowledge was 77.0.

This study is in line with Harna, Rahmawati, and Hosizah (2022) who suggest that the lecture method significantly increases the knowledge of pregnant women (22). A person's knowledge can increase due to the absorption of good information, the higher the level of knowledge and understanding of health, the perspective of the concept of health and illness will increase to be steady which will ultimately affect one's outlook, way of life and efforts to be able to improve the degree of health. In theory, the higher an individual's level of education, the easier it is to obtain information and one's level of knowledge, the better(23).

Breastfeeding Education on the Attitude of Pregnant Women

Attitude is a pattern of action, anticipation to adapt to various social and environmental conditions, to be able to respond to stimuli that have been conditioned, it will cause a willingness to act positively or negatively towards a particular object(24). The results of the study of 32 pregnant women before the intervention showed varying attitudes characterized by different values. After obtaining information through breastfeeding education using leaflet media, attitudes have significantly improved. The results of the study using the Paired T-Test obtained a significance value of $0.000 < 0.05$, then H_0 was rejected and H_a was accepted. There is an influence of breastfeeding education on the attitude of pregnant women in the working area of the South Sangatta Health Center, East Kutai Regency. This research is in line with research in Palangka Raya which suggests there is an influence of nutrition education on changing attitudes for the better and directed (25).

This result was corroborated by the pre-test score of attitudes in the intervention group about breastfeeding before being given education using leaflet media with an average level of knowledge of 73.88. After being given breastfeeding education using leaflet media, there was a change in the post-test score which showed the results of post-test attitudes about breastfeeding after being given breastfeeding education using leaflet media the intervention group had a significant change in average attitude of 87.81. Education using leaflets is considered to have a positive influence on changes in the attitude of pregnant women. This result is getting stronger because the results of education have a positive value affecting the knowledge of pregnant women as evidenced in this study. Increased knowledge is not obtained from formal education alone, but can be obtained through non-formal education. A person's knowledge of an object contains two aspects, namely the positive aspect and the negative aspect. These two aspects will determine a person's attitude, the more positive aspects and objects that are known, the more positive attitudes towards certain objects will lead to a more positive attitude towards certain objects(19). In this finding, we also found that the education level of pregnant women looks high, namely with the upper middle school level. People with a better level of education will find it easier to receive information than people with a lower level of education. This information is used as a provision for mothers to take care of their toddlers in everyday life. Perception itself can be interpreted as a person's perspective on something after gaining knowledge either directly or indirectly(19).

We also found that the average age of entry respondents was in adulthood. In this category the peak of a person to find out information so that the information obtained gives an impression of his experience. Experience can affect one's knowledge and attitudes, in the absence of experience at all, one will tend to have less knowledge and a negative attitude (25). Education provided to pregnant women using leaflet media can help pregnant women take a wise attitude towards health and quality of life. Information obtained from breastfeeding education using leaflet media can change pregnant women's attitudes towards breastfeeding for the better. This can be seen from the attitude of respondents (pregnant women) after being educated to provide a good attitude change. As for the control group, a pre-test score of pregnant women's attitudes about breastfeeding before being given education without leaflet media averaged a level of knowledge of 81.13. After being given breastfeeding education using leaflet media, there was a change in the post-test score which showed the results of post-test attitudes about breastfeeding after being given breastfeeding education using leaflet media in the intervention group had a significant change, with an average attitude score of 83.06. Bivariate analysis using the Paired T-Test obtained significance values of $0.001 < 0.05$, then H_0 was rejected and H_a was accepted. This means that there is a significant influence between the average score on the pre-test attitude score and the post-test attitude score in the control group. In Table 3, a negative t-count of -4.125 is obtained, meaning that the average score before being educated without using leaflet media is lower than the average after being educated without leaflets. So it can be concluded that there was an increase in the attitude score of pregnant women in the control group in the working area of the Sangatta Selatan Health Center, East Kutai Regency between before and after being given breastfeeding education without using leaflet media.

Education provided to pregnant women using leaflet media can help pregnant women take a wise attitude towards health and quality of life. Information obtained from breastfeeding education using leaflet media can change pregnant women's attitudes towards breastfeeding for the better. This can be seen from the attitude of respondents (pregnant women) after being educated to provide a good attitude change. The results of educational research on breastfeeding using leaflet media and without leaflet media (control) on the knowledge and attitudes of pregnant women, both showed significant differences before and after education, but the results shown by the intervention group were better in value than the control group. Education and understanding of parents, especially mothers, have an important role in meeting the nutritional needs of their children(26). Behaviour based on good knowledge will produce good behaviour. A person's behaviour that is not based on knowledge makes it difficult to act and apply a healthy lifestyle, including meeting nutritional needs during pregnancy(15). These studies have shown that nutrition education interventions have resulted in increased knowledge and the development of positive attitudes. This finding is in line with the study of Sasmita, Mubashir, and Vijaya (2022) that there is an influence of knowledge and increased positive attitudes towards nutrition interventions that have been carried out (27).

The findings of this study are significant because they provide evidence that breastfeeding education using leaflets is an effective way to improve the knowledge and attitudes of pregnant women. This is important because breastfeeding is the best way to feed a baby, and it is important to ensure that pregnant women have the information and support they need to breastfeed successfully. The findings of this study also relate to the broader context of breastfeeding education in a number of ways. First, the

study confirms the importance of providing breastfeeding education to pregnant women. Second, the study suggests that breastfeeding education can be delivered effectively using leaflets, which is a simple and inexpensive method that can be used to reach a large number of pregnant women. Third, the study provides evidence that breastfeeding education can have a positive impact on the knowledge and attitudes of pregnant women in developing countries, where breastfeeding rates are often low.

Healthcare providers and educators can use the findings of this study to improve breastfeeding education for pregnant women in a number of ways: 1) Distribute leaflets about breastfeeding at prenatal appointments, in health clinics, and at other community settings. Leaflets are a simple and inexpensive way to provide breastfeeding education to a large number of pregnant women. 2) Make leaflets available in different languages to reach a wider range of pregnant women. 3) Tailor leaflets to the specific needs of different groups of pregnant women. For example, leaflets could be created for first-time mothers, mothers who are planning to return to work after childbirth, or mothers who have specific concerns about breastfeeding. 4) Use leaflets in conjunction with other breastfeeding education methods, such as individual counseling or group classes. Leaflets can be used to provide pregnant women with basic information about breastfeeding, while other education methods can provide more in-depth information and support.

Conclusion

Our findings show the influence of exclusive breastfeeding education using leaflet media on the knowledge of pregnant women. There is an influence of exclusive breastfeeding education using non-leaflet media on the knowledge of pregnant women. The influence of exclusive breastfeeding education using leaflet media on the attitude of pregnant women. As the influence of exclusive breastfeeding education using non-leaflet media on the attitude of pregnant women. Education using leaflets is much more effective than non-leaflet education. This finding is empirical evidence that nutrition education in the form of public media is encouraged to welcome changes in public perception.

Overall, the findings of this study suggest that breastfeeding education using leaflets is an effective and feasible way to improve breastfeeding rates among pregnant women. Healthcare providers, educators, and policymakers can all play a role in ensuring that pregnant women have the information and support they need to breastfeed successfully.

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