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Education for working mothers uses leaflet and electronic media to increase exclusive breastfeeding

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Abstract:

BACKGROUND: The decrease in coverage of exclusive breastfeeding for mothers who work in Pontianak has an impact on the decline of the baby's immune system. Prevention efforts can be done by increasing knowledge about exclusive breastfeeding tips for mothers who work by providing health education. This study aims to examine the effectiveness of the use of health education media in increasing maternal knowledge about exclusive breastfeeding tips for working mothers.

MATERIALS AND METHODS: This is a quasi-experiment study with a nonrandomized design pretest and posttest control group design. The population of nursing mothers who have children aged 0–6 months. The number of samples is 140, which is divided into four groups. Data collection use direct interviews. Respondents filled out the pretest questionnaire to measure knowledge before being given health education. Then, the first group was given treatment in the form of lectures, the second group using leaflets, and the third group was given lectures first then given leaflets. After that, his knowledge was measured again through a posttest. Data analysis were used to determine the increase in the score of knowledge about exclusive breastfeeding tips for mothers who worked on each media used repeated ANOVA and Kruskal–Wallis test, while one-way ANOVA continued with *post hoc* Bonferroni and Friedman followed by Mann–Whitney test used to compare score differences knowledge on all three media.

RESULTS: there were significant differences in knowledge, before and after being given good health education without media, with leaflets, electronic media, and electronic leaflets before. statistical tests before and after used leaflets and electronic media without media 19.85 ($P \leq 0.001$), leaflets without media 8.42 ($P \leq 0.001$). Electronic without media at 8.14 ($P \leq 0.001$). In the pre- and post-test study, the experimental study was pseudo, 140 individuals with each group 35 individuals.

CONCLUSION: The most effective method in providing health education to increase the knowledge of breastfeeding mothers about tips on exclusive breastfeeding for working mothers is electronic leaflet media.

Keywords:

Breastfeeding, electronic media, exclusive breastfeeding, knowledge, leaflets, working mothers

Introduction

A healthy baby is born with enough fluids in his body. This condition will stay awake if the baby is breastfed exclusively day and night, even in hot weather. Exclusive breastfeeding for the first 6 months is based on scientific evidence about the benefits of

breast milk for the survival of the baby, its growth, and development.^[1,2]

Giving breast milk in the first 6 months of life needs to be given because breast milk is not contaminated and contains a lot of nutrients needed by children at that age.^[2] Early recognition of foods that are low in energy and nutrition or that are prepared in unhygienic conditions can cause children

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to experience malnutrition, be infected with foreign organisms so that they have a low body resistance to disease.^[2,3]

The presence of suitable protective and nutrient factors in breast milk guarantees the good nutritional status of the baby and reduces the risk of child morbidity and mortality.^[4] Several epidemiological studies state that breast milk protects infants and children from infectious diseases such as diarrhea, otitis media, and lower acute respiratory tract infections.^[2,5] Colostrum contains immune substances 10–17 times more than mature milk. Immune substances contained in breast milk include protecting babies from diarrheal diseases and reducing the chances of babies getting ear infections, coughs, colds, and allergic diseases.^[5] Other benefits obtained from breastfeeding are frugal and easy to administer and can improve children's intellectual and emotional intelligence.^[6]

Some of the factors that influence breastfeeding are sociocultural-economic factors (knowledge, mother, formal education of mother, family income, and working status of mother), psychological factors (fear of losing attractiveness as a woman, mental stress), and physical factors of mother (sick mother, for example, breast inflammation); a factor in the lack of information from health workers so that the community gets less information or encouragement about the benefits of exclusive breastfeeding.^[7-9] Many mothers do not exclusively breastfeed their babies because breast milk is not enough, fear of being left by their husbands, not being breastfed children are still successful people, babies will grow independent and spoiled, formula milk is more practical than breast milk, and afraid to stay fat due to breastfeeding.^[8]

Work is an activity that must be carried out mainly to support his life and family life. Work is often used as an excuse by mothers not to give exclusive breastfeeding to babies because mothers leave home so that the time of breastfeeding is reduced.^[10] But now, there are many ways to store breast milk so that even though working mothers can still give breast milk exclusion to their babies.^[3]

One effort to increase knowledge about tips for exclusive breastfeeding is to provide health education to nursing mothers.^[11] There are various types of media that can be used in providing health education, namely print, electronic, and board media. Each media has different effectiveness in increasing one's knowledge.^[12-16] With so much media used to increase knowledge, it is necessary to know the effectiveness of the media to increase the knowledge of breastfeeding mothers in the city of Pontianak, so that it can be used as a government

program in increasing awareness of mothers in exclusive breastfeeding, especially working mothers. This study aims to test the effectiveness of the use of health education media in increasing maternal knowledge about tips for exclusive breastfeeding for working mothers.

Materials and Methods

The study design was used quasi-experiment, nonrandomized pretest and posttest control group. Knowledge improvement is done through pretest and posttest activities. In the experimental group, study divided into four groups: the first group was given health education with the lecture method without media, the second group used the lecture method with electronic media (PowerPoint slides), the third group used leaflet media, and the fourth group using the method lectures using electronic media (PowerPoint slides) and leaflets. Research conducted from February to August 2017.

Study population, sample, and sampling criteria

The population of this study was mothers who had infants aged 0–6 months in the Puskesmas in the Pontianak City Health Office working area, 140 individuals were considered with each group of 35 individuals. According to the criteria, participants are considered based, all participants who work can write and read and are willing to become respondents.

Data collection

Data collection techniques used by researchers are indirect interviews. Respondents filled out the pretest questionnaire to measure knowledge before being given health education. Then, the first group was given treatment in the form of lectures, the second group using leaflets, the third group was given lectures first then given leaflets, and the fourth group using the method lectures using electronic media (PowerPoint slides) and leaflets. After that, his knowledge was measured again through a posttest. For the similarity of treatment, the lecture was conducted by the researcher. In the leaflet group, the respondent was given the chance to read in advance for 30 min. Each lecture treatment was carried out for 45 min. The lecture was conducted in two sessions, and each session was measured.

Data collection instruments

The instrument used in this study was a questionnaire. The questionnaire was prepared by the researchers themselves who have tested its validity and reliability. The correct answer is given a score of 1, and the wrong answer is given a score of 0. Questionnaire to assess the knowledge of breastfeeding mothers about tips on exclusive breastfeeding includes understanding, benefits, how to milk breast milk, how to store breast milk, endurance of breastfeeding, and how to breastfeed.

Official permission, ethical clearance, and informed consent

The research protocol has been reviewed by the Health Education Ethics Committee and given ethical permission. Official permission is obtained from the Ethics Committee of the Poltekkes Kemenkes Makassar, South Sulawesi, with the numbers: 289/KEPK-PTKMKS/VI/2017. Written approval was obtained from all the respondents who were used as research individuals.

Data analysis

The analysis was carried out with two methods, namely univariate analysis presented in the form of frequency distribution and percentage. The analysis in this study included knowledge of breastfeeding mothers before being given health education about exclusive breastfeeding and knowledge data of nursing mothers after being given health education about exclusive breastfeeding. The next analysis is a bivariate analysis which is used to test the effectiveness of health education without media, with electronic media, leaflets, and both on the knowledge of nursing mothers about tips for exclusive breastfeeding for working mothers. Statistical tests to determine the increase in the score of knowledge about exclusive breastfeeding tips for mothers working on each medium were used repeated ANOVA and Kruskal–Wallis test, while one-way ANOVA continued with *post hoc* Bonferroni and Friedman continued with Mann–Whitney test used to compare differences in knowledge scores on all three media.

Results

Based on Table 1 characteristics of the respondents above, the age of the most dominant respondents was

in the age category of 20–35 years with a percentage of 82.14%, and there were 7.14% of mothers aged <20 years and there were 10.72% of mothers aged >35 years. In this age variable, there is a homogeneity of respondents between each group ($P = 0.315$). Characteristics of respondents based on education indicate that mothers who take senior secondary education as much as 50% while those who take basic education as much as 45.71%, and the remaining 4.29% of universities. In this variable, there is no homogeneity ($P = 0.000$). Characteristics of respondents based on work showed that 62.86% of respondents worked, and the remaining 37.14% did not work. In this group also did not show any homogeneity ($P = 0.000$). Based on the parity of 71.43%, it showed 2–4 parity, the remaining 27.14% parity 1 and 1.43% parity > 4. In the parity group, there was homogeneity ($P = 0.758$). Most mothers gave exclusive breastfeeding as much as 90.71%. In this group also showed homogeneity ($P = 0.818$). In general, from the five characteristics of respondents, three characteristics (60%) showed the presence of homogeneity between each group, while 40% (education and employment) did not show any homogeneity.

Knowledge of respondents

Electronic media and leaflets

The average value of the pretest knowledge of respondents who received counseling with leaflet and electronic media was 80. The posttest average value rose to 88.85. When viewed from the median value, the median in the pretest 80, posttest 90, and posttest 2 remains 90 so that an average increase of 8.85 points. While the posttest 2 average value was 91, and there was an increase of 2.85 points. Since the pretest, posttest,

Table 1: Characteristics of respondents

Characteristics	Media				Sum, n (%)	P
	Leaflets and electronics, n (%)	Leaflets, n (%)	Electronics, n (%)	Without media, n (%)		
Age (years)						
<20	3 (8,57)	3 (8,57)	1 (2,86)	3 (8,57)	10 (7,14)	0,315
20-35	31 (88,57)	28 (80)	31 (88,57)	25 (71,43)	115 (82,14)	
>35	1 (2,86)	4 (11,43)	3 (8,57)	7 (20)	15 (10,72)	
Education						
Basic education	1 (2,86)	17 (48,57)	21 (60)	25 (71,43)	64 (45,71)	0.000*
Secondary education	30 (85,71)	17 (48,57)	14 (40)	9 (25,7)	70 (50)	
Higher education	4 (11,43)	1 (2,86)	0	1 (2,86)	6 (4,29)	
Work						
Working	12 (88,57)	27 (77,14)	18 (51,43)	31 (88,57)	88 (62,86)	0.000*
Not working	23 (11,43)	8 (22,86)	17 (4,57)	4 (11,43)	52 (37,14)	
Parity						
1 child	11 (31,43)	11 (31,43)	11 (31,43)	9 (25,71)	38 (27,14)	0,758
2-4 child	24 (68,57)	24 (68,57)	24 (68,57)	25 (71,43)	100 (71,43)	
>4 child	0	0	0	1 (2,86)	1 (1,43)	
Exclusive breastfeeding						
Yes	31 (88,57)	32 (91,43)	31 (88,57)	33 (94,29)	127 (90,71)	0,818
No	4 (11,43)	3 (8,57)	4 (11,43)	2 (5,71)	13 (9,29)	

and posttest 2 data show normal distribution, to see whether the increase in knowledge score is normal, the repeated-ANOVA test is used. The results of the analysis showed that there were significant differences between the pretest, posttest, and posttest 2 ($P \leq 0.001$).

Media leaflets

The median value of the pretest knowledge of respondents who received counseling with leaflet media was 65. The median value of the posttest rose to 85.00 so that there was an average increase of 20. While the median value of posttest 2 was 75, a decrease from the previous posttest value of 10. Since the pretest data showed an abnormal distribution, and posttest and posttest 2 showed a normal distribution, then to see whether the increase in knowledge score is meaningful, then the Friedman test is used. The results of the analysis show that there are significant differences between the pretest, posttest, and posttest 2 ($P \leq 0.001$).

Electronic media

The median value of the pretest knowledge of respondents who received counseling with electronic media was 75. The median value of the posttest rose to 80 so that there was an average increase of 5. While the median value of posttest 2 remains 80. As in leaflet media, electronic media also had abnormal distribution so to see the significance of differences in knowledge scores used the Friedman test. The results of the analysis showed a significant difference between the pretest, posttest, and posttest 2 ($P \leq 0.001$).

Without media

The median value of the pretest knowledge of respondents who received nonmedia counseling was 55. The average posttest score rose to 70 so that there was a median increase of 15. While the posttest 2 average value of 65 decreased from the previous posttest value of 5. The

results of the analysis using the Friedman test showed a significant difference ($P = 0.000$) [Table 2].

In Figure 1, it can be seen that leaflet and electronic media show consistent increases starting from pretest, posttest, and posttest 2. If we look at the mean value, leaflets, and electronic media are pretest 80, posttest 88.5, and posttest 2 91 (normal distribution). Likewise, on electronic media also shows a consistent tendency, even though the posttest 2 does not increase or remain constant. Whereas in the leaflet and without media showed an increase in the pretest and posttest but decreased in the 2nd posttest. Based on differences in scores, the highest was electronic and leaflets and the lowest was without media.

The results of the analysis in Table 3 show that for the pretest, there were at least differences in knowledge in the two groups. Different groups can be seen in Table 3. Based on the data in Table 3, there is a significant difference in the median knowledge between leaflets and electronics, leaflets, and electronics with no media. There are also significant differences between leaflets,

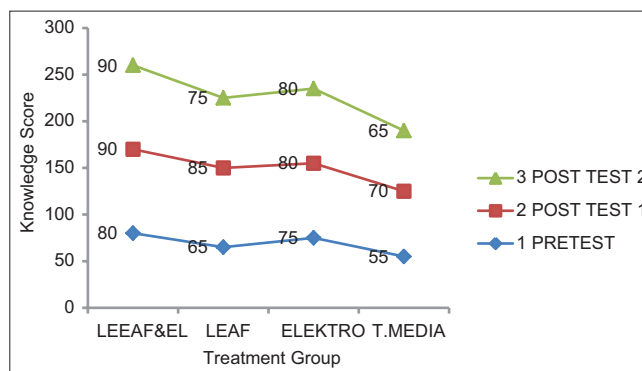


Figure 1: Graph comparison of the median score of the pretest, posttest, and posttest 2 scores based on the learning media used

Table 2: Comparison of median increase in knowledge value pretest, posttest, and posttest 2 based on learning media

Treatment group	Median (minimum-maximum)			P
	Pretest	Posttest	Posttest 2	
Leaflets and electronics	80 (70-90)	90 (75-100)	90 (80-100)	$\leq 0,001^*$
Leaflets	65 (45-90)	85 (55-95)	75 (80-100)	$\leq 0,001^{**}$
Electronics	75 (40-85)	80 (65-95)	80 (70-100)	$\leq 0,001^{**}$
Without media (reference)	55 (45-80)	70 (55-90)	65 (55-95)	$\leq 0,001^{**}$

*Repeated-ANOVA test, **Friedman test

Table 3: Comparison of media effectiveness on increasing knowledge of breastfeeding mothers about giving tips exclusive breastfeeding

Test	Media (minimum-maximum)				P
	Leaflets and electronics	Leaflets	Electronics	Without media	
Pretest	80 (70-90)	65 (45-90)	75 (40-95)	55 (45-80)	0,0001*
Posttest	90 (75-100)	85 (55-95)	80 (65-95)	70 (55-90)	0,0001*
Posttest 2	90 (80-100)	75 (60-100)	80 (70-90)	65 (55-95)	$\leq 0,0001^{**}$

*Kruskal-Wallis test, **One-way ANOVA test

electronics, and leaflets and electronics. There was no significant difference between leaflets and Elektronik.

The pretest data show that there are at least two different groups. The different groups can be seen in Table 4. In Table 4, it can be seen that there are significant differences between leaflets and electronics, leaflets, electronics with no media. Whereas, when viewed the strength of the differences, leaflets and electronics show the strongest relationship. Besides this, there are also significant differences between leaflets, electronics and leaflets, and electronics. Whereas between leaflets and electronics did not show any significant differences.

Based on the results of data analysis in the posttest 2, there were at least two different groups. The details of the different groups can be seen in Table 5. The results of the analysis in Table 5 show that leaflets and electronics, leaflets, and electronics have significant differences with those without media. In addition to the above, there are also significant differences between leaflets, electronics and leaflets, and electronics. As in the pretest and posttest, the posttest 2 also showed that there were no significant differences between leaflets and electronics.

Based on the results of the pretest, posttest, and posttest analysis [Table 6], it shows that leaflet and electronic media, leaflets, and electronics are media that have a significant effect on the increase in breastfeeding mothers' knowledge about exclusive breastfeeding tips for mothers who work compared to those without media. Leaflet and electronic media also have significant differences with the leaflet and electronic media. There is no significant difference in the increase in mother's knowledge about tips on breastfeeding exclusively for

mothers who work between leaflet media and electronic media. Hence, leaflet and electronic media show the most effective media compared to other media. This is based on the fact that between the pretest, posttest, and posttest 2, there was a consistent increase in the mean score of pretest 80, posttest 88.85, and posttest 91 so that from the pretest to posttest 2, there were differences in mean values of 11 points.

Discussion

The tools used by educators to convey educational materials are prepared based on the principle that the knowledge which exists in every human being is received or captured through the five senses. The more senses used to receive something, the more knowledge, and knowledge that is gained. Educational aids/props are used to mobilize the senses as much as possible to an object, thus facilitating perception.^[17] Health education needs to be done for pregnant women and breastfeeding as the government's attention to increasing exclusive breastfeeding so that the baby's health can increase.^[18]

The initial stage of education with lectures. The results of the study showed that in posttest 2, the score decreased compared to the posttest score. After people finish learning, it will soon be followed by a process of forgetting. The forgotten proportion first accelerates, then slows down and finally remains and can be stored for a long time. To reach the proportion that is remembered so that it is sufficient, it must be repeated in a short period of time.^[19] In this method, the repetition process may be difficult, because the lecture is only given a lecture (words) so that the knowledge score decreases in the posttest 2.

Table 4: Differences in knowledge of breastfeeding mothers about tips for exclusive breastfeeding for mothers who work in the pretest

Media	Without media, Z (P)	Leaflets and electronics, Z (P)	Leaflets, Z (P)
Leaflets and electronics	-6,363 (0,0000)	-	-
Leaflets	-2,371 (0,0178)	3,834 (0,001)	-
Electronics	-4,825 (0,0000)	4,544 (0,000)	-1,130 (0,258)

Table 5: Differences in media effectiveness on increasing knowledge of nursing mothers about tips for exclusive breastfeeding for mothers who work on the posttest

Media	Without media, Z (P)	Leaflets and electronics, Z (P)	Leaflets, Z (P)
Leaflets and electronics	-5,956 (0,0000)	-	-
Leaflets	-3,483 (0,0005)	3,363 (0,008)	-
Electronics	-3,576 (0,0003)	5,199 (0,000)	1,036 (0,3001)

Table 6: Differences in media effectiveness on increasing knowledge of breastfeeding mothers about tips for exclusive breastfeeding for mothers working on the posttest 2

Media	Without media, mean (P)	Leaflets and electronics, mean (P)	Leaflets, mean (P)
Leaflets and electronics	19,85 (0,000)		
Leaflets	8,42 (0,001)	-11,42 (0,000)	
Electronics	8,14 (0,001)	-11,71 (0,000)	-0,285 (1,000)

The median knowledge score in the pretest showed a higher rating than those without the media. After being given health education, the posttest showed an increase. The increase in the knowledge score is lower than that of the media. But in posttest 2, there was no decrease in the score (survived) in the posttest. The use of media has an impact on retention that is better than health education without media.^[20]

Based on Edgar Dale's cone criteria, electronic media (slides) have moderate availability/intensity. The knowledge that is in someone is accepted through the senses. Some studies say that approximately 75%–87% of human knowledge is obtained/channeled through the eyes. Whereas, the other 13%–25% is channeled through other senses.^[11,13]

The leaflet in the study was a piece of paper containing printed text about tips for exclusive breastfeeding for working mothers. The use of leaflets is usually given to the target after finishing the lesson/lecture. Leaflets are intended to remind you of things that have been taught or discussed.^[21] Leaflets have several advantages including being able to be stored for a long time, can be seen again if forgotten, can be used as reading material or references, and content can be trusted because it is issued by the agency official. Its reach is far and can help reach other media, can be reprinted, and can be used as material for discussion on different occasions.^[16,22]

Leaflets also have drawbacks, among others, if the mold does not attract people; they are reluctant to store it. Most people are reluctant to read it, especially if the letters are too small, and the arrangement is not attractive. Leaflets cannot be used by individuals who are not fluent in reading or illiterate.^[21] Related to these losses, to overcome these problems, the inclusion criteria of this study are literacy. In this study, leaflet groups were not given lectures first but were given the opportunity/time to study 30 min. After that measurement is carried out.

The median value of the pretest was higher compared with the group without the media but lower than the electronic group. This might be due to the presence of individual modalities in each group. The median value of the posttest showed an increase. This is possible because, at the time of the posttest, respondents can look back on the messages in the leaflet.

The combination of electronic media and leaflets is possible to improve knowledge and retention better than without single media and media.^[23] As explained above, leaflets should ideally be given after education or health education is provided with lectures that use other media. Leaflets have several advantages, including being stored

for a long time if you forget you can see them again, can be used as a reading or reference material.

Conclusion

The most effective method of providing health education to improve breastfeeding mothers' knowledge of exclusive breastfeeding tips for working mothers is electronic leaflet media. Hence, it is necessary to equate media standards in efforts to promote programs for health services in Indonesia, especially Pontianak, so that government's target efforts in exclusive breastfeeding programs can be achieved. Besides the right media, the communication skills of the officers also need to be taken into account so that the goals of health education can be achieved.^[24]

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Conflicts of interest

There are no conflicts of interest.

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