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Effectiveness of Audio-Visual Media on the Four Aspects of Complementary Feeding Education in Pregnant Women to Prevent Stunting

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ABSTRACT

Background: Indonesia has the third-highest stunting rate in Southeast Asia, with inadequate of complementary feeding contributing to the issue. Enhancing pregnant women's knowledge and attitudes about proper complementary feeding is crucial, and research shows that audio-visual media is more effective for education than other formats. This study aimed to compare the effectiveness of audio-visual educational media and leaflets in educating pregnant women about the four conditions (namely timely, adequate, safe, and properly fed) for giving complementary feeding. **Methods**: This study utilized a quasi-experimental design with a post-test-only control group. Data was collected from 40 Biromaru Community Health Center pregnant women from August to September 2023. The analysis utilized frequency distribution and the Mann-Whitney test. **Results**: The average knowledge (24.58) and attitude (25.88) of the audio-visual media group was higher than the knowledge (16.43) and attitude (15.13) of the leaflet media group. P value=0.02(<0.05) for the knowledge variable and p=0.01(<0.05) for the attitude variable **Conclusion**: Audio-visual media is more effective than leaflets in improving knowledge and attitudes about the four complementary feeding requirements to prevent stunting in pregnant women. It can serve as an alternative educational tool for health workers during pregnant women's classes.

INTRODUCTION

Malnutrition is a major public health problem in many countries and causes almost half of child deaths (Black et al., 2013). One of them is stunting, which is a sign of chronic malnutrition and results from a lack of energy and nutrient absorption in children. Stunting seriously affects future physical and mental development (Quamme & Iversen, 2022). The long-term impacts include increasing the incidence of morbidity and death, motor and verbal disorders, and the risk of developing digenerative diseases, resulting in lower educational attainment and economic productivity (Thurstans et al., 2022; Kemenkes RI, 2018).

In 2018 stunted toddlers aged 0-59 months reached 22.2% (150.8 million) worldwide. Indonesia ranks third among countries in Southeast Asia (IEG, 2018). The percentage of stunting in Indonesia starting in 2007, 2010, 2013, 2018, and 2019 is 36.8%; 34.6%; 37%; 30.8% and 27.67%. Even though this number has decreased, it is still far from the standards set by WHO. In 2019, the prevalence of stunting in Central

Sulawesi was still quite high, namely 31.26% (Kemenkes RI, 2021). Sigi Regency is the area with the highest stunting prevalence in Central Sulawesi. Data from the Sigi District Health Service in 2021, the number of stunted toddlers was 2,656 toddlers with the highest incidence at the Biromaru Community Health Center at 377 toddlers (20.9%).

Inappropriate breastfeeding and complementary feeding practices are linked to stunting, with a lack of maternal knowledge on children's nutrition contributing to its incidence (Kismul et al., 2017; Walters et al., 2019; Mukhopadhyay et al., 2014; Akombi et al., 2017; Windasari, Syam and Kamal, 2020). Incorrect complementary feeding practices increase the risk of stunting by 5.15 times (Ariani, 2020; Nirmalasari, 2020; Quamme and Iversen, 2022; Udoh & Amodu, 2016). Interventions should focus on ensuring optimal nutrition during the complementary feeding period, as malnutrition often occurs when transitioning from breast milk to solid foods (Martinez et al., 2018; Uwiringiyimana et al., 2019; Tesfaye and Egata, 2021;IDAI, 2015). Increasing pregnant women's knowledge about infant nutrition is essential to prevent stunting (Zogara, Loaloka, & Pantaleon, 2021). According to WHO, complementary feeding must meet four criteria: timely, adequate, safe, and responsive (WHO, 2021).

Although data shows that the right complementary feeding can prevent stunting, the reality is that many pregnant women still lack adequate education about the importance of balanced nutrition during the food transition period, so the risk of stunting in children remains high. Audio-visual educational media has been proven to be effective compared to other media such as booklets or leaflets. Audio-visual media can convey information more interactively and interestingly, combining sound and visual elements that make it easier to understand, especially for audiences with low literacy levels, while leaflets tend to be less attention-grabbing and often overlooked (Andriani, Anggarini, & Valencia, 2022; Lestari, 2021; Tuong, Larsen, & Amstrong, 2014). Referring to the description above, researchers are interested in researching the use of audiovisual educational media for pregnant women regarding the four conditions for providing complementary feeding.

This research aims to determine the effectiveness of audio-visual media compared to leaflets on the knowledge and attitudes of pregnant women regarding the four conditions for providing complementary feeding at the Biromaru Health Center, Sigi Regency, Central Sulawesi Province.

METHODS

This study uses a quasi-experimental research design with a posttest-only control group design. The research will take place in the working area of the Biromaru Community Health Center from August to September 2023. The accessible population is all pregnant women, and the sample size is 40 respondents. These respondents will be divided into an intervention group of 20 and a control group of 20 using a purposive sampling technique. The selection of this technique allows researchers to specifically select respondent criteria so that it can provide more in-depth data related to educational interventions. Inclusion criteria are in the form of pregnant women in the 1st, 2nd and 3rd trimesters; and pregnant women who can read. The exclusion criteria are pregnant women who are not willing to be respondents and have physical and mental limitations such as blindness, deafness, and dementia.

This research involved two groups: the intervention group, which received education through audio-visuals, and the control group, which received education through leaflets. The education was about the four conditions required for providing complementary feeding to prevent stunting in pregnant women. Education using audio-visual was given with a duration of 10 minutes, while education using elevators,

respondents gave leaflets and provided reading opportunities for 10 minutes. Both audio-visual media education and leaflets are given the same, namely 1 intervention. After receiving the education, knowledge, and attitudes were assessed using a questionnaire with 12 statement items for each category. The questionnaire can be accessed through the following link https://drive.google.com/file/d/1JnYJfHaDP8vyiHYApnriK6Pv8WvuxALx/view?usp=sharing. Knowledge assessments are divided into three criteria: high (score 76-100), moderate (score 56-75), and low (score <56). Meanwhile, attitudes are divided into two criteria: positive (> mean score) and negative (< mean score).

Data analysis was carried out using the computerized program SPSS version 26. A data assumption test was carried out, namely a normality test using the Shapiro-Wilk test, showing that the data was not normally distributed ($p<0.05$). Univariate analysis uses a frequency distribution table in the form of age, education, employment, number of pregnancies, and exposure to information about complementary feeding . Bivariate analysis on knowledge and attitude variables regarding the four conditions for providing complementary feeding using the Mann-Whitney statistical test. This research complies with the health research ethics number 0087/KEPK-KPK/VI/2023 which has been issued by the research ethics committee of the Palu Ministry of Health Polytechnic.

RESULT

The research results are presented in table form as follows:

Table 1. Characteristics of Respondents

Characteristics	Intervention Group		Control Group	
	Frequency n=20	Percentage (%)	Frequency n=20	Percentage (%)
Age (years)				
<20	5	25.0	2	10.0
20 – 35	14	70.0	18	90.0
>35	1	5.0	0	0.0
Education				
Primary education	5	25.0	7	35.0
Secondary education	12	60.0	11	55.0
Tertiary education	3	15.0	2	10.0
Occupation				
Employed	2	10.0	3	15.0
Unemployed	18	90.0	17	85.0
Gravida				
Primigravida	7	35.0	8	40.0
Multigravida	13	65.0	12	60.0
Complementary Feeding Information				
Yes	20	100.0	20	100.0
No	0	0.0	0	0.0
Resources				
Health workers	15	75.0	12	75.0
Electronic	5	25.0	5	25.0

According to Table 1, the intervention group consisted mostly of respondents

between the ages of 20 and 35 (70.0%). Additionally, the majority of mothers in this group had a secondary education (60.0%), did Unemployed (90.0%), and were multigravida during pregnancy (65.0%). All pregnant women in this group received information about complementary feeding (100.0%), with most receiving it from healthcare workers (75.0%).

In the control group, most respondents were also between the ages of 20 and 35 (90.0%). The majority of mothers in this group also had a secondary education (55.0%), did unemployed (85.0%), and were multigravida (60.0%). Like the intervention group, all pregnant women in the control group received information about complementary feeding (100.0%), with most also receiving it from healthcare workers (75.0%).

Table 2. Distribution of Respondents' Answers **Based on Questions about Complementary Feeding**

No	Question	Group			
		Intervention		Control	
		n	%	n	%
	Knowledge				
1	Providing proper complementary feeding can prevent stunting.	20	100.0	20	100.0
2	Complementary feeding can be given to babies starting from 4 months of age	20	100.0	20	100.0
3	The purpose of providing complementary feeding is to meet nutritional needs when breast milk alone is not sufficient for the baby's nutrition.	20	100.0	20	100.0
4	Breastfeeding should be stopped immediately when the baby starts receiving solid food.	20	100.0	14	70.0
5	Complementary feeding aims to replace breast milk.	20	100.0	15	75.0
6	Complementary feeding must contain carbohydrates, vegetables, vegetable protein and animal protein.	20	100.0	19	95.0
7	Mothers need to wash their hands before preparing and giving complementary food to their babies.	15	75.0	18	90.0
8	Giving complementary foods too early can cause babies to be overweight	13	65.0	13	65.0
9	Complementary feeding is given by paying attention to the baby's hunger and satiety signals.	20	100.0	12	60.0
10	Late provision of complementary feeding can cause growth disorders in babies	20	100.0	20	100.0
11	It is recommended to give complementary feeding to babies by carrying them and walking around.	20	100.0	20	100.0
12	Diarrhea in babies can occur due to giving unhygienic complementary foods.	17	85.0	20	100.0
	Attitude				
1	I will prevent stunting by only giving breast milk until the age of 6 months.	13	65.0	13	65.0
2	I will give my child complementary feeding when he is exactly 4 months old.	20	100.0	20	100.0
3	I will only give complementary feeding without giving breast milk to the baby anymore	20	100.0	18	90.0
4	I will pay attention to the diversity of food types when providing complementary feeding.	18	90.0	16	80.0
5	I will maintain the cleanliness of eating utensils to provide complementary feeding	20	100.0	20	100.0

No	Question	Group			
		Intervention		Control	
6	I will always wash my hands before preparing and giving complementary feeding	20	100.0	18	90.0
7	I will give complementary feeding while watching television or YouTube so that the child will eat heartily.	17	85.0	19	95.0
8	I will give complementary feeding until one portion is finished even though the child refuses to eat.	11	55.0	7	35.0
9	I will start giving complementary feeding when the child is 6 months old to prevent stunting.	20	100	19	95.0
10	I will store complementary feeding in a clean and closed container	20	100	20	100
11	I will provide complementary foods while continuing to breastfeed my child until the age of 2 years.	20	100	20	100
12	I will give complementary feeding to my child by holding him and taking him for a walk so that it will finish quickly.	12	60.0	9	45.0

Table 2 shows a comparison between the intervention and control groups regarding maternal knowledge and attitudes regarding complementary feeding . The intervention group consistently had better knowledge, with 100% of respondents understanding that proper complementary feeding can prevent stunting, that complementary foods should include all nutritional groups, and the importance of hygiene in preparing food. Meanwhile, in the control group, knowledge varied, with some respondents less understanding that breastfeeding should be continued during complementary feeding. The attitude of the intervention group was also more positive in terms of maintaining hygiene and following the correct practice of feeding complementary foods, such as paying attention to the diversity of food and the cleanliness of cutlery. However, in some aspects, such as washing hands, the control group was slightly better.

Table 3. Distribution of Respondents Based on Respondents' Knowledge and Attitudes After being given education

Variable	Dependent variable			
	Intervention Group		Control Group	
	n=20	%	n=20	%
Knowledge				
High	20	100.0	19	95.0
Moderate	0	0.0	1	5.0
Attitude				
Positive	20	100.0	18	90.0
Negative	0	0.0	2	10.0

Source: Primary Data, 2023

The data in Table 3 indicates that in the intervention group, pregnant women who received audio-visual education all demonstrated high knowledge (100.0%). In contrast, in the control group, those who received education via leaflets mostly had high knowledge (95.0%). In terms of attitudes, all pregnant women in the intervention group had a positive attitude (100.0%), while the majority in the control group had a positive attitude (90.0%).

Table 4. Effectiveness of Education Using Audio Visual Media on the Knowledge and Attitudes of Pregnant Women regarding the Four Conditions for Providing Complementary Feeding

Variables	n	Mean Rank	Asymp. Sig (2-tailed)
Knowledge			
Intervention (Audio Visual)	20	24.58	0.020
Control (Leaflet)	20	16.43	
Attitude			
Intervention (Audio Visual)	20	25.88	0.001
Control (Leaflet)	20	15.13	

Source: Primary Data, 2023

The table above shows that the use of audio-visual media is superior to the leaflet by looking at the average value between the two groups (intervention knowledge 24.58 > control knowledge 16.43) and (intervention attitude 25.88 > control attitude 15.13). The results of the statistical test analysis in Table 3 using Mann Whitney after being given education to both groups show that the knowledge variable is p=0.020 (p<0.05) and attitude is p=0.001 (p<0.05) so it can be concluded that there is a difference in influence. education using audio visuals and leaflets on knowledge and attitudes about the four conditions for providing complementary feeding to prevent stunting in pregnant women. The use of audio-visual educational media is more effective than leaflets, as shown by the fact that the mean rank in the intervention group is greater than the control group in both knowledge and attitude variables.

DISCUSSION

The Effectiveness of Audio-Visual Media on Pregnant Women's Knowledge Regarding the Four Aspects for Complementary Feeding to Prevent Stunting

This research proves that the use of audio-visual media and leaflets equally influences pregnant women's knowledge about the four requirements for providing complementary feeding to prevent stunting. However, if we compare the average scores in the two groups after being given education, it shows that the intervention group's average knowledge score is greater (24.58) compared to the average score in the control group (16.43). These results indicate that the use of audio-visual educational media is more effective than leaflets in increasing pregnant women's knowledge about the four requirements for providing complementary feeding to prevent stunting. Based on these results, it can be concluded that pregnant women better understand the information conveyed using audio-visual which predominantly has sound displays and moving images, while leaflets only present images and writing.

Research conducted by Nurkhayati, Yunarsih, Sari, Octamelia, & Argaheni (2022) shows that education using leaflets can increase mothers' knowledge about complementary feeding. This is because leaflets contain writing in short and easy-to-understand sentences accompanied by simple pictures Agustini (2014) Even though they are interesting, leaflets only rely on absorbing information through sight. This is different from audio-visual media which is absorbed through hearing and sight so that it can create conditions that can enable respondents to gain knowledge. This is because audio-visual is a moving medium that combines images and sound, making educational media more interesting compared to leaflets. This opinion is in line with research conducted by Muthmainah et al (2015) that counseling using audio-visual media is more effective in increasing mothers' complementary feeding knowledge than

leaflet media.

Audio-visual media provides several advantages compared to other educational media, including being able to influence respondent behavior more than other print media Indriani, Sendra, Rahayu, & Firdayanti (2023). Other research proves that the use of audio-visual media is more effective in increasing knowledge about complementary feeding when compared to leaflets and pocket books (Ismawati et al., 2018). With appropriate, clear and interesting media, respondents will be more interested in the material presented and understand it more easily. The effectiveness of media in increasing knowledge of educational targets varies. According to Susilowati (2016) if educational media only involves verbal elements then it can increase knowledge 1 times, if it involves visuals the increase in knowledge will be 3.5 times and audio-visual will increase 6 times.

This audio-visual media has advantages compared to leaflets, including that audio visual media is more interesting because it presents moving images accompanied by explanations through sound and musical accompaniment. Apart from that, respondents can observe closely what is displayed on audio-visual media (Yuanrsih & Rahayu, 2017). Providing this education is carried out by playing a video of the four conditions for providing complementary feeding once for a total time of approximately 10 minutes. This can encourage respondents to recall what was shown in the video so that when answering post-test questions, most can answer correctly.

Audiovisual media is more effective than leaflets in increasing knowledge due to several factors. First, it captures attention better, making learning more engaging and improving focus. Second, it utilizes multisensory learning by combining visual and auditory channels, which enhances understanding and retention. Third, research consistently shows higher knowledge scores for participants using audiovisual materials compared to those using leaflets. These advantages make audiovisual media a superior tool for education (Koch, Fione, Lidya Maramis, & Pasambuna, 2024; Rahayuningsih & Kristinawati, 2023; Wardhana, Ratnawati, Failasufa, & Balqis, 2023).

The Effectiveness of Audio-Visual Media on Pregnant Women's Attitudes Toward the Four Aspects for Complementary Feeding to Prevent Stunting

This research proves that the use of audio-visual media and leaflets equally influences the attitudes of pregnant women regarding the four requirements for providing complementary feeding to prevent stunting. However, if we compare the average scores in the two groups after being given education, it shows that the intervention group's average attitude score is greater (25.88) compared to the average score in the control group (15.13). These results indicate that the use of audio-visual educational media is more effective than leaflets in improving the attitudes of pregnant women regarding the four conditions for providing complementary feeding to prevent stunting. In this study, both the intervention and control groups were given information regarding the four conditions for providing complementary feeding , namely timely, adequate, safe, and properly fed. Providing this information, apart from increasing knowledge, can also influence attitudes to be more positive. Apart from that, fulfilling nutrition for children, especially providing complementary feeding and stunting, is a topic that attracts the attention of pregnant women because they will implement this when their child is born.

The process of forming attitudes is almost always carried out by the presence of objects and manipulation of environmental situations, resulting in the desired change in attitude. Attitude is a closed reaction, not an open reaction to certain stimuli (Zulmiyetri, Safaruddin, & Nurhastuti, 2020). In this case, attitudes can be positive

because the reaction to the stimulus is in the form of providing information about complementary feeding. Therefore, attitudes will be desirable when there is an increase in knowledge.

Material presented in audio-visual form is often more interesting than material in plain text such as in leaflet media. This increases respondents' interest in trying to understand the message conveyed so that in the evaluation the majority of pregnant women's attitudes are positive in providing complementary feeding. In line with research conducted by Utama et al (2021) audiovisual media can improve mothers' attitudes and behavior regarding stunting prevention in everyday life. Likewise, in other research conducted by Adhisty et al (2023) the use of videos had a significant influence on mothers' attitudes in providing complementary feeding to toddlers aged 6-24 months. This research targets respondents, namely pregnant women, with the hope that when the mother gives birth, a positive attitude regarding the four conditions for providing complementary feeding can be applied to the child.

Pregnant women's attitudes are significantly impacted by their knowledge level Suhaid, Sulistiani, Manungkalit, & Pabeno (2022). The increase in knowledge can also be influenced by several factors, including education, in this study, the majority of pregnant women had a high school education, as well as previous experience, the majority of pregnant women having multigravida status, also determine the attitude of pregnant women in giving complementary feeding. It is hoped that a positive attitude of pregnant mothers will be able to have a positive behavioral impact when implementing correct complementary feeding for their children, thereby reducing the incidence of stunting.

CONCLUSION

The research suggests that educating pregnant women about the four requirements for providing complementary feeding in preventing stunting using audio-visual media is more effective than using leaflets. It is recommended that health workers, particularly midwives, consider audio-visual media as an alternative method for educating pregnant women about complementary feeding. This will enhance their knowledge and attitudes towards the subject in the Biromaru Health Center Working Area.

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