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Nutritional Education 'GEMAKIN' for Improving Pregnant Women's Knowledge and Attitudes Towards Stunting Prevention Using Audiovisual Media

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ABSTRACT

Background: *Stunting is a growth and development disorder that causes children to have short stature. One of the causes of Stunting is poor nutritional intake of pregnant women during pregnancy when the fetus is still in the womb. Several interventions addressed the incidence of Stunting, including nutrition education for pregnant women. In the coastal areas of Indonesia, marine wealth is abundant, especially highly nutritious fish. However, there is a gap between the potential of marine wealth and the low level of fish consumption in Indonesia. The 'GEMAKIN' nutrition education program aims to raise awareness about the importance of fish consumption during pregnancy as part of the critical first 1,000 days of life.*

Research Methods: *This study used a Quasi-Experimental design with a one-group pretest and post-test design. The study subjects were 50 pregnant women. Data was collected using pretest and post-test intervention instruments. Data analysis was conducted using the Wilcoxon test.*

Research Result: *The study showed a significant increase in knowledge (p=0.000) and attitude scores (p=0.000) for pregnant women regarding stunting prevention before and after the 'GEMAKIN' nutrition education intervention using audiovisual media.*

Conclusion: *Using audiovisual media on stunting prevention, the 'GEMAKIN' nutrition education can significantly increase pregnant women's knowledge and attitudes in Bandarharjo, Semarang.*

BACKGROUND

The stunting rate in Indonesia was 21.5% in 2023, a decrease of 0.1 percent from the previous year's 21.6 percent. Despite this reduction, the figure still indicates that more than one-fifth of Indonesian children are affected by stunting (Kompas, May 9, 2024). This means that Stunting remains a severe issue for the Indonesian nation that must be addressed. According to Syam A (2018), among the causes of stunting growth is mothers' lack of knowledge and attitudes in selecting and providing nutrition to their children. Therefore, nutrition education is needed to improve the knowledge and attitudes of mothers.

The potential risk of Stunting is influenced by health and nutrition before, during, and after pregnancy. (Yuwanti et al., 2021). The growth in height of a child can be stunted if the mother experiences malnutrition during pregnancy, such as inadequate nutritional intake, particularly in calories, protein, vitamin A, zinc, and iron. (Anggraini et al., 2020). Therefore, ensuring good nutrition during pregnancy is crucial to preventing stunting in children.

Pregnant women must maintain their health and nutritional status throughout pregnancy to prevent Stunting. Attitudes, knowledge, and education related to nutritional needs during pregnancy play a crucial role in improving maternal nutrition and health (Rahadiyanti, 2022). Therefore, nutrition education programs for pregnant women are crucial to ensure they have the necessary information and resources to meet their nutritional needs.

On the other hand, Indonesia is the world's largest archipelagic country, with a rich diversity of natural resources, including fish. Despite fish's high nutritional potential and benefits, Indonesian society needs to be sufficiently encouraged to consume fish in adequate amounts (Virgantari et al., 2022). Therefore, efforts are needed to increase public awareness and interest in consuming fish, given its significant health benefits, especially for pregnant women in preventing Stunting.

Oken et al. (2005). Conducting a study in the United States to investigate the benefits of fish consumption for pregnant women from six months of pregnancy until the child reaches three years of age (Amatullah, 2021). Kusuma (2017) The study states that fish consumption by pregnant women plays a role in influencing birth outcomes. This means consuming fish during pregnancy is highly beneficial and can enhance the child's neural development.(Hendrawati, 2017; Kusuma et al., 2017).

Anwar (2014) The study indicates that the incidence of short stature among toddlers in Indonesia can be attributed to low consumption of animal-based foods such as fish, meat, eggs, and milk, which are sources of protein and calcium. In coastal areas, this presents an opportunity for stunting prevention efforts by utilizing fish catches as a food source to help children thrive (Putri et al., 2023). Unfortunately, the lack of public knowledge about the benefits of fish is reflected in Indonesia's low per capita fish consumption (Zulaihah & Widajanti, 2006). Per capita fish consumption in Indonesia is still relatively low. The Ministry of Maritime Affairs and Fisheries aims to increase the national fish consumption rate from 56.39 kg/capita/year in 2020 to 62.50 kg/capita/year by 2024 (KKP, 2018; Purnaningsih et al., 2020). The average national fish consumption rate 2021 reached 55.37 kg/capita/year. In the province of Central Java, the fish consumption rate was 36.7 kg/capita/year, and in the city of Semarang, it was 36.21 kg/capita/year, which is considered relatively low (Virgantari et al., 2022). Then, in 2023, fish consumption per person in Central Java reached 37.22 kilograms per capita. This indicates an increase, but it is insignificant and remains much lower than the national fish consumption rate, which reached 55.16 kg per capita.

The results from the Indonesian Nutritional Status Study (SSGI) (2021) The Indonesian Nutritional Status Study (SSGI) indicates that the prevalence of Stunting in the city of Semarang is 21.3%, which falls into the chronic-acute category (Stunting> 20%). The high cases of stunting in Semarang are concentrated in the North Semarang District, where 260 out of 4,048 toddlers are reported to be stunted (Dinkes et al., 2022).

The Bandarharjo sub-district covers an area of 342.68 hectares, consisting of 12 RW and 103 RT, and falls under the jurisdiction of the Bandarharjo Health Center in Semarang. It is a coastal area of Semarang City where most of the population are fishermen, with easy access to local fish sources. However, fish consumption rates remain low. To address this issue, efforts are needed to improve pregnant women's knowledge, attitudes, and nutritional health to prevent Stunting and enhance the quality of life for future generations. The 'GEMAKIN' nutrition education program aims to raise awareness about the importance of fish consumption during pregnancy as part of the critical first 1,000 days of life. Therefore, the researchers are interested in analyzing the impact of the 'GEMAKIN' nutrition education program using audiovisual media on improving the knowledge and attitudes of pregnant women regarding stunting prevention in Bandarharjo, Semarang City.

RESEARCH METHODS

This study was conducted in May-June 2024 using a quasi-experimental design with a one-group pretest and post-test approach. Non-probability sampling was employed in this study. Approval for the study was obtained from the Research Ethics Commission of the Health Polytechnic Ministry of Health Semarang. Number: 0589/EA/KEPK /2024. The intervention was given with 'GEMAKIN' nutrition education using audiovisual media, and their outcomes were analyzed. Before the intervention, the group underwent a pretest to assess their initial knowledge and attitudes regarding stunting prevention. Subsequently, a post-test was administered to evaluate changes in knowledge and attitudes after receiving the 'GEMAKIN' nutrition

education. Therefore, the 'GEMAKIN' nutrition education results are more accurate as they allow for comparison before and after the intervention.

The sample for this study consists of 50 pregnant women from Bandarharjo Sub-district, Semarang. The intervention method involved a counseling approach using the audiovisual media "GEMAKIN," which was presented for approximately ± 25 minutes. Normality data were tested first using the Kolmogorov-Smirnov test to verify hypotheses. Data that did not follow a normal distribution were presented using median, minimum, and maximum values, while customarily distributed data were presented with significance values and standard deviations (SD). The study utilized the Wilcoxon test to assess differences between pretest and post-test scores.

RESULTS

Subject Characteristics

The sample in this study is the intervention group consisting of 50 pregnant women (expectant mothers). The frequency distribution of respondent characteristics is as follows.

Table 1. Subject Characteristics

Respondent Characteristics	Frequency (n=50)	Percentage (100%)
Mother's Age		
<20 Years	5	10%
21-25 Years	13	26%
26-30 Years	20	40%
31-35 Years	12	24%
	50	100%
Gestational Age		
1st Trimester (1-13 weeks)	11	22%
2nd Trimester (14-27 weeks)	19	38%
3rd Trimester (28-41 weeks)	20	40%
	50	100%
Educational Level		
Elementary School	2	4%
Junior High School	12	24%
Senior High School	28	56%
Diploma	1	2%
Bachelor	7	14%
	50	100%
Mother's Job		
Housewife	39	78%
Self-employed	6	12%
Teacher	3	6%
Factory worker	1	2%
Businessman	1	2%
	50	100%

In Table 1, it can be observed that there are 50 respondents, with the highest age group being in the 26-30 years range, comprising 20 individuals (40%). Additionally, most respondents are in the third trimester (28-41 weeks), totaling 20 individuals (40%). Regarding educational attainment, most respondents have completed high school (SMA or SMK), totaling 28 individuals (56%). Regarding occupation, the majority are homemakers, with 39 respondents (78%). Most respondents have not received detailed information about the 'GEMAKIN' nutrition education for stunting prevention, primarily due to distance and busy schedules.

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Knowledge and Attitude Scores

Table 2 The Value of Knowledge Before and After Being Given 'Gemakin' Nutrition Education

Variable	Knowledge			
	Lowest value	The highest score	Median	Mean ± SD
Before	5,33	10,00	8,67	8,51 ±1,20
After	8,00	10,00	10,00	9,89 ±0,34

Based on Table 2, before nutrition education was provided, the lowest knowledge score was 5.33, and the highest score was 10.00. After the nutrition education intervention, the lowest knowledge score was 8.00, and the highest was 10.00. The average score for knowledge among pregnant women before the education was 8.51, with a standard deviation of 1.20. After the nutrition education, there was an increase in the average score to 9.89, with a standard deviation of 0.34. There was an average increase of 1.38 between before and after the intervention.

Table 3 The Value of Attitude Before and After Being Given 'Gemakin' Nutrition Education

Variable	Attitude			
	Lowest value	The highest score	Median	Mean ± SD
Before	4,17	10,00	9,17	8,68 ± 1,94
After	9,17	10,00	10,00	9,88 ± 0,29

Based on Table 3, before the 'GEMAKIN' nutrition education intervention, the lowest score was 4.17, and the highest score obtained was 10.00. After the 'GEMAKIN' nutrition education intervention, the lowest score was 9.17, and the highest was 10.00. The average attitude score among pregnant women before the 'GEMAKIN' nutrition education was 8.68, with a standard deviation of 1.94. After the 'GEMAKIN' nutrition education, there was an increase in the average score to 9.88 with a standard deviation of 0.29. There was an average score increase between before and after the intervention of 1.2.

Table 4. Knowledge Value Categories Before and After 'Gemakin' Nutrition Education with Audiovisual

Category	The Value of Knowledge	Last		After	
		n=50	%	n=50	%
Good	7,6-10	32	64%	49	98%
Enough	5,6-7,5	17	34%	1	2%
Not enough	≤5,6	1	2%	0	0%
Total		50	100%	50	100%

Based on Table 4, the knowledge scores before the intervention show that one person (2%) had poor knowledge, 17 people (34%) had sufficient knowledge, and 32 people (64%) had good knowledge. After 'Gemakin's nutrition education intervention on stunting prevention using audiovisual media, the knowledge scores show that 49 respondents (98%) had good knowledge, and one person (2%) had sufficient knowledge. The knowledge measurement scale was categorized into good, sufficient, and poor. According to Arikunto (2013), The categorization of someone's knowledge level into three categories based on percentage values is as follows: good knowledge category if the score is ≥ 7.6%, sufficient knowledge category if the score is 5.6-7.5%, and poor knowledge category if the score is ≤ 5.5%.

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Table 5. Knowledge Value Categories Before and After 'GEMAKIN' Nutrition Education with Audiovisual

Category	The Value of Knowledge	Before		After	
		n=50	%	n=50	%
Positive	5-10	43	86%	50	98%
Negative	≤5	7	14%	0	2%
Total		50	100%	50	100%

Based on Table 5, attitudes before receiving 'GEMAKIN' nutrition education using audiovisual media on stunting prevention show that 43 (86%) had positive attitudes and 7 (14%) had negative attitudes. After receiving the 'GEMAKIN' nutrition education intervention on stunting prevention using audiovisual media, there was a noticeable change where all respondents could correctly answer the questionnaire. This is evidenced by all 50 respondents (100%) scoring in the positive attitude category. The attitude measurement scale was divided into two groups: positive and negative. (Azwar, 2012). The attitude scores are expressed in percentages and detailed as follows: ≤ 50% indicate a negative attitude, while scores > 50% indicate a positive attitude. (Joeharno, 2015).

Table 6. The Influence of 'GEMAKIN' Nutrition Education on Knowledge and Attitudes

Category	n	Mean	*p-value*
Knowledge			
Pretest	50	8,51	0,000
Posttest	50	9,89	
Attitude			
Pretest	50	8,68	0,000
Posttest	50	9,88	

Table 6 shows an increase in the average knowledge and attitudes scores before and after receiving 'GEMAKIN' nutrition education. Based on the Wilcoxon test results, the p-values for knowledge and attitude categories were p-value 0.000 < 0.05. It can be concluded that there is a significant influence on knowledge after 'Gemakin's nutrition education intervention for pregnant women using audiovisual media on stunting prevention, as indicated by the pretest and post-test scores.

DISCUSSION

This study utilized media as an educational tool, specifically audiovisual media in the form of videos. This choice was made due to its ability to present information visually and audibly, thereby aiding recipients in better understanding the material. Additionally, videos enable content presentation to be more engaging and interactive. According to Febriyani (2024), using videos as an educational media is considered effective in enhancing knowledge and attitudes about Stunting because these videos contain informative content combined with engaging visuals and colors.

Audiovisual media use in health education can retain 50% of memory retention (Hapsari et al., 2022; Pujiati, 2024; Sekti & Fayasari, 2019). Someone tends to remember a presentation more quickly when it includes sound and images than just hearing or seeing alone.

This is based on research by Ramadhanty and Rokhaida (2021). It states that there is a difference in the average knowledge scores of mothers about stunting before and after they were provided health education using audiovisual media. This indicates that audiovisual media effectively enhances stunting knowledge among mothers of stunted children.

Another study by Anggraini, dkk (2020) suggests a significant difference in pregnant mothers' knowledge before and after intervention using audiovisual media. This type of media has superior capabilities because it combines both auditory (hearing) and visual (seeing) elements, meaning the tools or materials used in learning situations assist in conveying knowledge, attitudes, and ideas through written and spoken words (Oktiawati et al., 2023).

Rini (2020) states in their research that delivering information about stunting through health education sessions using audiovisual media can change the knowledge and attitudes of mothers about stunting in the Rawasari Health Center area. Arsyanti (2019) also states that nutrition education using audiovisual media has been shown to increase knowledge of stunting prevention from 50% to 78.6%. Other studies have similarly explained that education through video media effectively changes individual behavior.

In addition to its advantages, using video media in delivering 'Gemakin' nutrition education has drawbacks, such as one-way communication, which necessitates additional forms of feedback, and the requirement for complex equipment (Febriyani & Siregar, 2024). The 'GEMAKIN' nutrition education using audiovisual media presents information about the definition of Stunting, the factors causing Stunting, the benefits of fish consumption, recommendations for fish consumption, and the consequences of insufficient fish consumption through a video for approximately 25 minutes.

The Impact of 'Gemakin' Nutrition Education Video on Knowledge

Nutrition education is an educational approach to improve knowledge and attitudes for better outcomes (Atmojo, 2010). Nutrition education content can be delivered using tools such as audiovisual media. Audiovisual media aims to deliver information effectively and capture respondents' attention to ensure the information is well received (Notoatmodjo, 2012).

Based on the research results, the lowest pretest score obtained by respondents was 5.33, with an average score of 8.51 out of 15 questions on stunting prevention, the first 1000 days of life, and the benefits of fish among 50 pregnant respondents. After receiving 'GEMAKIN' nutrition education through audiovisual media, the lowest score obtained by respondents was 8.00, with an average score of 9.89. Based on these results, it is evident that the average post-test knowledge score is higher than the average pretest score.

In line with research by Rokhaidah (2019), the average post-test scores among pregnant women increased by 6.04 points following the health education intervention using audiovisual media on Stunting. Research conducted by Aziza (2023) states that there is a correlation between mothers' knowledge and the incidence of stunting in toddlers. Many mothers have little knowledge about Stunting and perceive that it is not significant enough to warrant action.

Kristiyanti (2021) states that 78.6% of pregnant women who engage in efforts to prevent Stunting are those with good knowledge. The occurrence of stunting in the Bandarharjo Health Center area can be influenced by the lack of knowledge among pregnant women regarding the first 1000 days of life, factors causing Stunting, methods to prevent Stunting, insufficient food intake by pregnant women and children, and the lack of consumption of fish by pregnant women and children (Dinkes et al., 2022).

The lack of knowledge in the community, especially among pregnant women, is one of the barriers to efforts to reduce the prevalence of Stunting. According to Mutingah (2021), Stunting is caused by two types of factors: direct and indirect. Direct factors include infections, inadequate nutrition intake, and food security, while indirect factors encompass parenting practices, family income, education level, knowledge and attitudes, healthcare services, and sanitation. High knowledge can encourage healthy behaviors (Pratiknyo, 2018).

Mothers with low knowledge often tend to adopt unhealthy lifestyles or parenting practices, such as consuming inadequate or nutritionally imbalanced foods (Anggraini et al., 2020). Inadequate parenting practices can indeed be an indirect issue affecting Stunting. According to the UNICEF framework (1990), inadequate parenting is an indirect cause of Stunting due to mothers' lack of information or knowledge (Susilowati et al., 2021).

According to Notoatmodjo (2012), The higher someone's level of education, the easier it is for them to absorb information related to knowledge. Kusuma Sari (2020) found that a mother's knowledge can influence a child's nutritional status; good knowledge leads to better dietary consumption patterns and, consequently, better nutritional status.

Listyarini et al. (2020) states that knowledge can be acquired through formal and non-formal education. Consistent with this, research by Rahadiyanti (2022) Indicates that the increase in knowledge

among the community regarding maternal and child nutrition health is more significant among those with higher education, with an average score of 14.28, compared to those with lower education, with an average score of 13.75."

Effect of 'GEMAKIN' Nutrition Education Video on Attitudes

Notoatmodjo (2012) states that attitudes can be influenced by several factors, one of which is experience. Attitude is the action of someone in response to a stimulus or object (Hendrawati, 2017). The alignment of responses involving opinions and emotional factors is called attitude (Mutingah & Rokhaidah, 2021). Respondents have a disagreeable attitude towards enjoying fish consumption during pregnancy. Some respondents explained that consuming fish during pregnancy can cause pain after childbirth, which they perceive as accelerating recovery after surgery. This perception is inaccurate, so nutritional education interventions on enjoying fish consumption for stunting prevention are provided to change these negative attitudes among pregnant women.

Based on the research findings, the lowest pretest score obtained by respondents was 4.17, with an average score of 8.68 out of 12 questions provided. After receiving nutritional education through the 'Gemakin program via audiovisual media, the lowest score obtained by respondents was 9.17, with an average score of 9.88. Based on these results, it is evident that the average post-test knowledge score is higher compared to the average pretest score.

Based on the Wilcoxon test analysis, a p-value of 0.000 was obtained, which is less than 0.05, indicating that using audiovisual media influences the attitudes of pregnant women. Therefore, nutritional education using audiovisual media significantly affects the change in attitudes among respondents before and after the nutritional education intervention using audiovisual media.

The results of this research align with research conducted by Senja (2023) on the effectiveness of audiovisual media as a nutritional education tool to enhance pregnant women's attitudes toward signs of pregnancy danger (attitude = 0.000, $\alpha = 0.05$). In determining attitude, knowledge, thoughts, beliefs, and emotions play a crucial role (Notoatmodjo, 2012). After the nutritional education intervention, there was an improvement in the respondents' attitudes towards a more positive direction, as indicated by an average score increase of 1.00. Pregnant women who previously agreed with the statement that not consuming fish would not affect their health condition changed their stance to disagree and now agree to enjoy consuming fish with a frequency of 4-5 servings per week, with each serving approximately 50 grams or equivalent to 1/3 of a medium-sized fish piece, in line with the recommendations by the Ministry of Health in the Balanced Nutrition Message for pregnant women (2014).

The researchers' questions posed to pregnant mothers before the delivery of educational materials on enjoying fish consumption aimed at preventing stunting events depict the lack of attitude among pregnant mothers regarding food safety, fish processing, and the attitude towards enjoying fish consumption. The scores below 50 resulted from the questions. When asked whether they agreed or disagreed that not consuming fish would not affect health conditions, the average response from the respondents was that they agreed.

Notoatmodjo (2012) states that attitude formation can be influenced by several factors, one of which is experience. Attitude is a person's response to a stimulus or object (Hendrawati, 2017). The alignment of reactions involving opinions and emotional factors is referred to as attitude. (Mutingah & Rokhaidah, 2021). Respondents have a slightly disagreeable attitude toward enjoying fish consumption during pregnancy. Some respondents explained that consuming fish during pregnancy can cause pain after childbirth, which is a process of accelerating recovery after surgery. This attitude among respondents is considered incorrect, prompting the need for nutritional education interventions on promoting fish consumption to prevent Stunting, which is aimed at changing the unfavorable attitudes of pregnant women. Top of Form
Bottom of Form

Attitude is a viewpoint accompanied by a tendency to act towards an object. The formation of an attitude in someone is influenced by several components, including the cognitive component which relates to beliefs, opinions, or thoughts about the object (Notoatmodjo, 2012). In this case, respondents' attitudes towards preventing Stunting, food safety, and attitudes in processing and consuming fish are influenced by

their perception of the video or object presented in nutrition education activities. This aligns with research conducted by Yulia (2018). The statistical test results indicate a significant influence before and after providing nutrition education using audiovisual media on the knowledge and attitudes of mothers with toddlers in the experimental group, with a p-value of 0.000 < α (0.05).

Media plays a crucial role in educational activities, and the engagement of the senses determines the extent of information retention a person obtains when receiving information (Silalahi, 2021). The process of receiving information is initially stored in short-term memory before it is consolidated into long-term memory (Rokan & Rambe, 2021). The types of stimuli are divided into visual information stimuli, which are input through the eyes and processed in the primary visual cortex and visual association areas in the occipital lobe, and auditory information stimuli, which are input through the ears and processed in the auditory cortex in the temporal lobe. (Sherwood et al., 2004).

Audiovisual stimuli, which combine both types of stimuli, are associated in the parieto-occipital-temporal association area. The provision of two stimuli has a more significant impact on short-term memory due to integration in the cortex of the left brain, making the processing of received inputs easier and resulting in a more complete memory output (FitzGerald et al., 2012). The bivariate test results conducted in this study revealed an impact on knowledge (p=0.000) and attitude (p=0.000). This indicates that statistically, there is a significant difference in the knowledge and attitudes of the respondents before and after the nutritional education intervention promoting fish consumption for stunting prevention using audiovisual media. Thus, nutritional education promoting fish consumption using audiovisual media significantly influenced the improvement of knowledge and attitudes of pregnant women regarding stunting prevention at the Bandarharjo Health Center in Semarang City.

CONCLUSIONS

Based on average scores, the knowledge and attitudes of pregnant women in the intervention group improved. 'Gemakin's nutrition education using audiovisual media was significantly effective in enhancing the knowledge and attitudes of pregnant women regarding stunting prevention.

SUGGESTION

Recommendations from this study include the need for enhanced nutrition education for pregnant women by nutritionists and midwives at health centers in collaboration with local community organizations like the Neighborhood Unit Development (PKK). This could involve regular counseling sessions using audiovisual media to improve pregnant women's knowledge and attitudes toward stunting prevention in the Bandarharjo area of Semarang, Central Java.

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