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Research article

The Effectiveness of Education About Healthy Food on Mother's Knowledge and Action in Preventing the Risk of Stunting

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ABSTRACT
Background: The issue of stunting in Indonesia is a significant chronic nutritional problem caused by inadequate nutritional intake and various other factors, including maternal knowledge about healthy food. This study aims to evaluate the effectiveness of nutrition education through animated videos and booklets in improving maternal knowledge and actions to prevent the risk of stunting.
Methods: The method used is a quasi-experiment with a pre-test and post-test design on both control and intervention groups. The research was conducted with 30 mothers at Posyandu Kelapa Gading and Posyandu Amalia in Samarinda. The intervention involved providing education using animated videos and booklets.
Results: The results showed that the average maternal knowledge and action scores significantly increased after the intervention, with a p-value < 0.05. Education using animated videos and booklets proved to be effective in improving maternal knowledge and actions towards stunting risks. The results from both educational media showed no significant difference between animated video education and booklet education, with a p-value > 0.05.
Conclusion: This study concludes that nutrition education based on visual media and booklets can be an effective approach in improving maternal knowledge and actions to prevent stunting.

BACKGROUND

Nutritional problems are a highly complex and crucial issue that needs immediate attention worldwide, especially in Indonesia. Indonesia is one of the countries with the most comprehensive nutritional issues. It is among the 17 out of 122 countries experiencing malnutrition problems in children, particularly stunting (Lestari & Hanif, 2021). Stunting is a condition where growth is hindered due to malnutrition or health disorders. It results from chronic or recurring nutritional deficiencies that occur during pregnancy and early childhood (Fitriahadi et al., 2023). Stunting can be defined as growth failure in infants (0-11 months) and toddlers (12-59 months) due to chronic nutritional deficiencies, particularly within the first 1,000 days of life, leading to children being too short for their age (Arnita et al., 2020). Efforts to reduce or prevent the risk of stunting include implementing nutritional intervention measures. There are direct factors influencing stunting, such as lack of maternal knowledge about healthy food, maternal malnutrition, early pregnancy, and poor nutrition, as well as indirect factors like healthcare services, education, socio-cultural aspects, and environmental hygiene. Common causes of stunting include lack of awareness, insufficient nutritional intake during pregnancy and after childbirth, and limited access to healthcare services. Therefore, improving nutrition, knowledge, education, and access to clean water is essential (Syafira et al., 2023). A mother's level of knowledge is one of the contributing factors to child malnutrition, as mothers are the closest caregivers and responsible for determining the nutritional intake of their children and other family members. A mother should understand balanced nutrition to prevent her child from suffering from nutritional deficiencies (Kuswanti & Azzahra, 2022).

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An action is an intentional activity carried out to achieve a specific goal. Actions encompass acts, behaviors, or activities undertaken by individuals to reach certain objectives. Actions are also defined as meaningful behaviors and are perceived as a series of experiences shaped by real and individual consciousness (Ramadhan & Nadhira, 2022). Providing balanced nutrition is an appropriate measure to address stunting in toddlers. Ensuring a well-balanced and adequate nutritional intake in food helps improve toddlers' growth and development, leading to better overall health conditions.

Education is a crucial part of health education, functioning as a learning process for individuals, families, groups, and communities to shift from unhealthy to healthier behavioral patterns (Masnina et al., 2021). Nutritional education is a method used to enhance knowledge about nutrition and dietary behavior to achieve optimal nutritional status. It is an educational approach that improves knowledge and attitudes, with higher nutritional knowledge playing a vital role in shaping dietary attitudes and behaviors. Nutritional education can be conducted through various media and methods (Hasriani et al., 2023). Therefore, the researcher utilizes animated video and booklets as educational tools for mothers.

The Indonesian Ministry of Health announced the results of the Indonesian Nutritional Status Survey (SSGI) at the National Working Meeting of BKKBN, stating that the prevalence of stunting cases in Indonesia decreased from 24.4% in 2021 to 21.6% in 2022 (SSGI, 2023). Indonesia, as a developing country in Asia, has a relatively high stunting rate. According to the 2018 Ministry of Health data and information, Indonesia ranks third among Southeast Asian countries with the highest stunting cases. The 2018 Basic Health Research (Riskesdas) revealed that out of 24.5 million toddlers in Indonesia, 9.2 million (30.8%) were categorized as stunted. The province with the highest stunting rate was East Nusa Tenggara, reaching 42.6%, while the lowest was Jakarta, with 17.7% (Sugianto, 2021).

In Samarinda, data from February 2023 recorded approximately 2,500 stunted children, with the highest number in Sungai Kunjang District (390 cases), followed by Loa Janan Ilir District (380 cases) and Samarinda Ilir District (351 cases). The lowest number of stunting cases was in Samarinda Kota District, with 91 cases (Bappeda Kaltim, 2023). Based on this overview, the researcher is interested in conducting a study titled "The Effectiveness of Healthy Food Education on Mothers' Knowledge and Actions in Preventing Stunting Risk at Posyandu Amalia and Kelapa Gading Samarinda." The purpose of this research is to determine whether there is an impact of education before and after the intervention on mothers' knowledge and actions and whether there is a significant difference between education through animated videos and booklets in influencing mothers' knowledge and actions.

METHODS

The study was conducted with mothers on September 25 and October 8, 2024, at Posyandu Kelapa Gading Sehat and Posyandu Amalia in the working area of the Wonorejo Health Center, Sungai Kunjang District, Samarinda City. The activity involved providing education in the form of lectures and discussions using booklets and animated videos on the theme of preventing stunting risks through the provision of healthy food. It is expected that this will enhance maternal understanding and actions to reduce the risk of stunting. The method used in this study is quantitative research. The design employs a Quasi-Experimental method with a Pre-Test and Post-Test With Control design. Quasi-Experiment is a type of research design that includes both control and experimental groups that are not randomly selected. The sample used in this study consists of 30 respondents from each posyandu, namely Posyandu Amalia (Booklet Group) and Kelapa Gading Sehat (Animated Video Group), with a non-probability sampling technique and purposive sampling method, which determines the sample based on specific criteria or considerations.

The instrument used in this study is a questionnaire, employing the Guttman scale for the knowledge questionnaire and the Likert scale for the action questionnaire. In this design, both groups will be given a pretest, followed by the provision of education in the form of animated videos and booklets for each group. After 7 days of the pretest, a post-test questionnaire (with the same questions) will be administered to compare the results of the initial and final tests for both groups.

Based on the objectives of the study, all instruments used have undergone prior testing. The validity test used the point-biserial correlation formula for the knowledge questionnaire and the Pearson product-moment correlation (PPM) for the action questionnaire. Normality tests were then conducted using the Shapiro-Wilk test. The researcher will compare the results of the pre-test and post-test for each posyandu to assess the impact of education with the media used, and subsequently, statistical tests will be performed to determine if there is a significant difference between education provided through animated videos and booklets.

RESULTS

A. Respondent Characteristics

This research employs a quantitative approach and utilizes questionnaires with Guttman and Likert scales for data collection. The distributed questionnaires will be completed by 30 respondents at each posyandu. The characteristics of this study include age, occupation, education, income, number of children, and stunting in children.

Tabel 1 Demographic Data

No	Variabel	Animation Vidio Group		Booklet Group	
		N	(%)	N	(%)
1.	Mother Age				
	19-30	26	86,7	18	60,0
	31-50	4	13,3	12	40,0
2.	Work				
	Housewife	26	86,7	26	86,7
	Government Employees	4	13,3	4	13,3
3.	Education				
	Elementary School	1	3,3	3	10,0
	Junior High School	2	6,7	5	16,7
	Senior High School	22	73,3	17	56,7
	D3	1	3,3	1	3,3
	S1	4	13,3	4	13,3
4.	Income				
	>Rp. 3.400.000	15	50.0	27	90.0
	<Rp. 3.400.000	15	50.0	3	10.0
5.	Number of Children				
	1	6		12	40,0
	2	18	20,0	9	30,0
	3	6	60,0	7	23,3
	4	0	20,0	2	6,7
6.	Stunted Children				
	Yes	0	0	0	0
	No	30	100	30	100
	TOTAL	30	100%	30	100%

Based on the table above, it is known that the majority of respondents in both groups are in the age range of 19-30 years. In the animation video group, there are 26 respondents (86.7%), while in the booklet group, there are 18 respondents (60%). The most common occupation in both groups is as a housewife. In the animation video group, there are 26 respondents (86.7%), and in the booklet group, there are also 26 respondents (86.7%). The most dominant level of education in both groups is high school. In the animation video group, there are 22 respondents (73.3%), while in the booklet group, there are 17 respondents (56%). Regarding income, in the animation video group, there are an equal number of respondents, with 15 respondents (50%) earning above the minimum wage and 15 respondents (50%) earning below the minimum wage. In the booklet group, the majority earn above the minimum wage, with a total of 27 respondents (90%). The number of children in the animation video group is predominantly 2 children, with 18 respondents (60%), while in the booklet group, the most common number of children is 1, with 12 respondents (40%). There are no cases of stunting in either group, meaning that neither group has respondents with stunted children.

B. **Statistical Test Results**

Tabel 2 Univariate Result Of Knowledge

Intervensi	Mean	Median	Modus	Min	Max	SD	CI95%	
							Lower	Upper
Pre-Test Animation Vidio	72,22	75,00	75	42	100	13,184	67,30	77,14
Post-Test Animation Vidio	83,33	83,30	83	58	100	10,946	79,25	87,42
Pre-Test Booklet	74,44	75,00	83	42	100	14,503	69,03	79,86
Post-Test Booklet	83,61	83,30	83	58	100	11,052	79,49	87,74

The table above shows that the average knowledge score of respondents in the animation video group during the pre-test is 72.22, with a median knowledge score of 75.00, a mode of 75, a minimum knowledge score of 42, a maximum knowledge score of 100, a standard deviation of 13.184, and a 95% confidence interval with a lower limit of 67.30 and an upper limit of 77.14. In contrast, the post-test results indicate an average knowledge score of 83.33, a median knowledge score of 83.30, a mode of 10, a minimum knowledge score of 58, a maximum knowledge score of 100, a standard deviation of 10.984, and a 95% confidence interval with a lower limit of 79.25 and an upper limit of 87.42.

1For the booklet group, the pre-test results show that the average knowledge score of respondents is 74.44, with a median knowledge score of 75.00, a mode of 83, a minimum knowledge score of 42, a maximum knowledge score of 100, a standard deviation of 14.503, and a 95% confidence interval with a lower limit of 69.03 and an upper limit of 79.86. The post-test results indicate an average knowledge score of 83.61, a median knowledge score of 83.30, a mode of 83, a minimum knowledge score of 58, a maximum knowledge score of 100, a standard deviation of 11.052, and a 95% confidence interval with a lower limit of 79.49 and an upper limit of 87.74.

Tabel 3 Univariate Result of Action

Intervensi	Mean	Median	Modus	Min	Max	SD	CI95%	
							Lower	Upper
Pre-Test Animation Vidio	31,07	31	30	28	34	1,473	30,53	31,60
Post-Test Animation Vidio	32,50	33	33	30	35	1,280	32,02	32,98
Pre-Test Booklet	31,50	31,50	32	29	34	1,408	30,97	32,03
Post-Test Booklet	32,73	33	33	30	35	1,258	32,26	33,30

From the table above, it is known that of the 30 respondents who were given education on the mother's actions before and after being educated in the animated video group, the average action score increased from 31.07 in the pre-test to 32.50 in the post-test, with a standard deviation of 1.473 and 1.280 respectively and in the mother's actions before and after being given education in the booklet group, the average action score increased from 31.50 in the pre-test to 32.73 in the post-test, with a standard deviation of 1.408 and 1.258, respectively.

Tabel 4 Bivariate Result Dependent T-Test Of Knowledge

Knowledge	n	Mean	Gap	Std.Deviation	P_Value
Pre-test Animation Vidio	30	72,22	-11,113	13,184	0,000
Post test Animation Vidio	30	83,33		10,946	
Pre test Booklet Group	30	74,44	-9,170	14,503	0.000
Post test Booklet Group	30	83,61		11,052	

Based on the data in the table, it can be observed that the average score of respondents before receiving education through animation videos in the animation video group was 72.22, while in the booklet group, the initial score was 74.44. After receiving education, the score in the animation video group increased to 83.33, and the score in the booklet group increased to 83.61. The difference in the animation video group was -11.113, while in the booklet group, it was -9.170. The standard deviation before education in the animation video group was 13.184, and in the booklet intervention group, it was 14.503. After education, the standard deviation in the animation video group was 14.503, and in the booklet group, it was 11.052. This indicates a significant result with a p-value of 0.000, which is less than the significance level of $p < 0.05$, leading to the rejection of H0 and acceptance of Ha.

The results above indicate that there is a difference between the two groups, the animation video group and the booklet group. In the animation video group, the pre-test to post-test difference was -11.333, while in the booklet group, the pre-test to post-test difference was -9.170. Therefore, it can be concluded that there is an effect from the education provided through animation videos and booklets about stunting, which can enhance the knowledge of respondents in both posyandu.

Tabel 5 Bivariate Result Dependent T-Test Of Action

Action	n	Mean	Gap	Std.Deviation	P_Value
Pre-test Animation Vidio	30	31,0667	-1,43333	1,43679	0,000
Post test Animation Vidio	30	32,5000		1,27982	
Pre test Booklet Group	30	31,5000	-1,23333	1,40810	0.000
Post test Booklet Group	30	32,7333		1,25762	

From the data in the table, it can be seen that the average score of respondents in the animation video group, with an initial score of 31.0667 while in the booklet group using a booklet, with an initial score of 31.5000. After being given education on animated videos in the form of healthy food in the animated video group increased with a score of 32.5000 and in the booklet group increased with a score of 32.7333. The difference in the animation video group with a total score of -1.43333 and in the booklet group with a total score of -1.23333. The standard deviation before being given education in the animation video group is 1.43579 and the booklet group is 1.40810 and after education is given in the animation video group 1.27982 and in the booklet group is 1.25762. The table also shows a significant result of a p-value of 0.00 so that the significant value is smaller than the p-value of < (0.05), so there is an influence before and after the education on the mother's actions.

Tabel 6 Bivariate Result Independent T-Test Of knewledge

Group		Mean	SD	Mean Difference	t	*P value*
Animation vidio	30	83,33	10.945	-.280	-.-099	.922
booklet	30	83,61	11.051		-.	

Based on the results of the independent t-test analysis, Levene's test indicates that the two groups are equivalent (Sig. = .849 > 0.05). The analysis results show that the average post-test score for the Animation Video group (M = 83.3333, SD = 10.94574) is lower than that of the Booklet group (M = 83.6133, SD = 11.05178). The difference in the average between the two groups is -0.28, with a standard error of 2.83990. The t-test results show a t value of -0.099 with degrees of freedom and a significance value (p value) of 0.922, which is greater than 0.05. Although the results indicate no statistically significant difference between the media of the animation video method and the booklet.

Tabel 7 Bivariate Result Independent T-Test Of Action

Group		Mean	SD	Mean Difference	t	*P value*
Animation vidio	30	32,5	1,27	-0.23	-.-099	0.479
Booklet	30	32,7	1,25		-.	

Based on the results of the independent t-test analysis, the Levene Test showed that the two groups were equal. The results of the analysis showed that the average post-test score for the animated video group (M = 32.5, SD = 1.27) was lower than that of the booklet group (M = 32.7, SD = 1.25). The mean difference between the two groups was 0.23 with a standard error of 0.32. The results of the t-test show p value = 0.479 which is greater than 0.05. The results showed no statistically significant difference between the animated video method and the booklet.

DISCUSSION

Relationship between Age and the Incidence of Stunting Risk

The results from the research in Table show that in the Kelapa Gading Sehat Posyandu with 30 respondents, the majority of respondents who filled out the questionnaire were in the 19-30 year age range, with 26 respondents (86.7%). The remaining respondents were in the 31-50 year age range, totaling 4 respondents (13.3%). In the Amalia Posyandu, with 30 respondents, the majority were in the 19-30 year age range, with 18 respondents (60%), and the other 12 respondents were in the 31-50 year age range (40%). Based on this, the majority of respondents were between 19-30 years old, where pregnant women under 20 years old and over 35 years old are at higher risk of giving birth to stunted children. This indicates a significant relationship between the mother's age and the incidence of stunting, with statistical analysis showing differences in stunting incidents based on age, highlighting the impact of the mother's age on parenting patterns and child care. This is consistent with the study by Fitriana (2019), which found that the majority of mothers giving birth in Kramat village, Bangkalan Health Center's working area, were under 20 years old (92.6%), while 2 mothers (3.7%) were aged 20-35 years and 2 mothers (3.7%) were over 35 years old. Based on the Spearman Rank test with SPSS, the probability value (p) was smaller than the alpha (0.33 < 0.05), so the null hypothesis (Ho) was rejected and the alternative hypothesis (H1) was accepted, meaning there is a significant relationship between the mother's age during childbirth and the incidence of stunting.

Relationship between Employment and the Incidence of Stunting Risk

Based on the data, most mothers chose to be housewives in the intervention group (26 mothers, 86.7%) and in the control group (18 mothers, 86.7%). There were 4 mothers working as civil servants in both the intervention and control groups (13.3%). A mother's occupation significantly affects her behavior in providing nutrition to her children. Working mothers often have less time with their children, so food intake is not well controlled, and attention to child development decreases. This is in line with research by Rahmawati et al., (2023), which showed that of the 65 cases of stunting, 56 mothers (86.2%) were non-working and 9 mothers (13.8%) were working. The results of the chi-square statistical test showed a significant relationship between employment and stunting incidence at the UPTD Landono Health Center (P value 0.000 < 0.05).

Relationship between Education and the Incidence of Stunting Risk

Based on the data collected, the education level of mothers in the intervention group was as follows: 1 respondent (3.3%) had primary school education, 2 (6.7%) had junior high school, 22 (73.3%) had high school, 1 (3.3%) had a diploma, and 2 (13.3%) had a bachelor's degree. In the control group, 3 respondents (10.0%) had primary school education, 5 (16.7%) had junior high school, 17 (56.7%) had high school, 1 (3.3%) had a diploma, and 4 (13.3%) had a bachelor's degree. The majority of respondents had a high school education. Parental education affects the incidence of stunting in children. In the Kelapa Gading Sehat and Amalia Posyandus, most respondents had a high school education. Education can influence understanding of nutrition and the provision of proper nutrition for children's growth. Higher education levels tend to reduce the risk of stunting, although its effectiveness also depends on the parents' ability to apply proper nutrition for their children. This is consistent with the study by Nurmalasari et al. (2020), which showed that 72 respondents (51.8%) with lower education levels had children with stunting, while 67 respondents (48.2%) had children with normal height. In the group with higher education levels, 24 respondents (24.5%) had children with stunting, while 74 (75.5%) had children with normal height. Statistical tests showed a significant relationship between the mother's education level and the incidence of stunting (p-value = 0.000, $p < 0.05$).

Relationship between Income and the Incidence of Stunting Risk

Based on the data obtained, the average family income of > IDR 3,400,000 was found in 15 respondents (50.0%) in the intervention group, and in 27 respondents (90.0%) in the control group. Family income below < IDR 3,400,000 was found in 15 respondents (50.0%) in the intervention group and in 3 respondents (10.0%) in the control group. Family income has an impact on stunting incidence. Low income and socioeconomic status are risk factors for stunting. The lower the income, the higher the likelihood of stunting, but higher income does not necessarily guarantee good nutritional status for children, as income may not be allocated enough for children's food and nutrition needs. Generally, sufficient income correlates positively with children's nutritional status, emphasizing the importance of the economic aspect in preventing stunting. Families with lower income tend to buy cheaper, less nutritious foods. This is consistent with research by Agustin & Rahmawati, (2021), which showed that 67.9% of families with stunted children had income below the regional minimum wage (UMR), while 32.1% of families without stunting had income below the UMR. Bivariate analysis using chi-square found a significant relationship between family income and stunting incidence, with $p = 0.004$ (OR = 0.178, 95% CI 0.52 to 0.607). This indicates that families with income below the UMR have a 7 times higher risk of stunting.

Relationship between Number of Children and the Incidence of Stunting Risk

Based on the characteristics of the number of children in the intervention group: 6 respondents (20.0%) had 1 child, 18 (60.0%) had 2 children, 6 (20.0%) had 3 children, and none had 4 children. In the control group: 12 respondents (40.0%) had 1 child, 9 (30.0%) had 2 children, 7 (23.3%) had 3 children, and 2 (6.7%) had 4 children. The number of children influences the risk of stunting, with families having more than two children tending to have difficulty meeting nutritional needs and providing optimal attention to each child, especially in limited economic conditions. This is in line with the study by Issadikin, (2023), which concluded that there is a relationship between the number of children in a family and the nutritional status of children. In Pandansari Village, Lumajang, most families with fewer than 2 children had 196 stunted children (80%), while families with more than 2 children had 49 stunted children (20%). The nutritional status of children in these families showed a significant relationship with the number of children (Asymp. Sig. 0.0003 < 0.05).

Relationship between Having a Stunted Child and the Incidence of Stunting Risk

The study found that all 30 respondents in the Kelapa Gading Sehat Posyandu did not have stunted children, and similarly, all 30 respondents in the Amalia Posyandu did not have stunted children. This suggests that both posyandus have effectively implemented good practices in nutrition and child care. Stunting, caused by malnutrition and lack of psychosocial stimulation, can affect children's growth and development. The success of these two posyandus could serve as a model for others, emphasizing the importance of monitoring children's growth and nutrition.

Analysis of the Effect Before and After Healthy Food Education on Mother's Knowledge in Preventing Stunting Risk in the Animation Video Group and Booklet Group

Based on the results of the Dependent T-Test analysis, it can be concluded that the intervention of providing education through animation video and booklet media to mothers has a significant impact on increasing the respondents' knowledge scores. The significance value obtained is < 0.05, which indicates a significant difference between the respondents' scores before and after the intervention. In both groups, during the pre-test, the knowledge score for the Animation Video group had a mean of 72.22 with a standard deviation of 13.184. Meanwhile, the knowledge score for the Booklet group during the pre-test had a mean of 74.44 with a standard deviation of 14.503. After the intervention, there was an increase in the Animation Video group from 72.22 to 83.33 (a difference of 11.113), while the Booklet group increased from a mean of 74.44 to 83.61 (a difference of 9.170). Furthermore, there was a decrease in the standard deviation in the Animation Video group (from 13.184 to 10.946) and the Booklet group (from 14.503 to 11.052). This shows significant results with a p-value of 0.000, which is smaller than the significance level of $p < 0.05$, indicating that there is an effect of education using animation video and booklet media on mothers' knowledge about healthy food provision to prevent stunting.

Research Dewi, (2021) on the relationship between mothers' knowledge and stunting in toddlers was conducted at UPTD Puskesmas Gianyar, involving 120 mothers of toddlers as subjects. Most respondents were aged between 26 and 30 years, totaling 54 people (45.5%). The analysis conducted using a chi-square test resulted in a p-value of 0.007 < 0.05, indicating a significant relationship between mothers' nutrition knowledge and stunting in toddlers. These results align with the research Ningtyas et al., (2020) entitled "Mothers' Knowledge is Related to Stunting in Toddlers in the Working Area of the Karangayu Health Center, Semarang City." The analysis showed that 52.3% of toddlers with stunting came from mothers with poor nutrition knowledge, while only 16.9% of toddlers with stunting had mothers with good nutrition knowledge. The statistical test revealed a p-value of 0.000 ($p \leq 0.05$), with a 95% confidence interval for the odds ratio (POR) of 5.285, between 2.285 and 12.693. Thus, it can be concluded that there is a significant relationship between mothers' nutrition knowledge and stunting in toddlers in the working area of the Karangayu Health Center. Lehan & Utami, (2023) The relationship between mothers' knowledge and stunting in toddlers revealed that most mothers with good knowledge were mothers of toddlers who experienced stunting, totaling 40 people (81.6%). The chi-square analysis resulted in a p-value of 1.000 (> 0.05), showing no relationship between mothers' knowledge and stunting in toddlers.

From this analysis, the researcher assumes that the educational intervention through animation video and booklet media to mothers significantly contributes to the improvement of respondents' knowledge scores, as seen from the difference in mean scores before and after the intervention showing a significant improvement. Furthermore, there was a variation in the respondents' scores reflected in the decrease in standard deviation, which indicates that the respondents' scores became more consistent. The significance values from the t-test for both groups were below 0.05, indicating that the difference between the scores before and after the intervention is statistically significant. Both the animation video and booklet media were proven to be effective in increasing mothers' knowledge, although there was a slight difference in the mean scores between the two groups after the intervention, with the animation video group showing a larger increase. Therefore, it can be concluded that the educational intervention provided had a significant positive impact on the respondents' knowledge.

Analysis of the Difference in Healthy Food Education on Mother's Knowledge Between the Animation Video Group and the Booklet Group in Karang Anyar Village

Based on the results of the Independent t-test analysis, data from two groups with the same sample size (n=30) were obtained. The Animation Video group recorded an average score of 83.33 (SD=10.945), while the Booklet group had an average score of 83.61 (SD=11.051). Levene's test for homogeneity of variances showed a significance value of 0.849 (p>0.05), indicating that the variances of the two groups are homogeneous. The Independent Samples Test analysis resulted in a t-value of -0.099 with a significance of 0.922 (p>0.05). This shows that there is no significant difference between the use of Animation Video and Booklet as learning media. The very small mean difference (-0.28000) with a 95% confidence interval (-5.96468 to 5.40468) that includes zero further reinforces that both learning methods are effective.

Therefore, both Animation Video and Booklet can be used as alternative learning media with equivalent effectiveness. Although the Booklet group has a slightly higher average, both media can be considered

equally effective, and neither is significantly superior. The choice between the two can be adjusted according to the learning needs and conditions without worrying about differences in effectiveness.
This finding has practical implications, indicating that educators or educational institutions have the flexibility to choose between learning methods, either using Animation Video or Booklet, as both have proven to be equally effective in achieving the desired learning outcomes. The results indicate no significant difference between the two groups.
The researcher assumes that with the same sample size (n=30), homogeneous variances, a significance value of p>0.05, and a small mean difference (-0.28000), the use of Animation Video and Booklet as learning media has equal effectiveness in achieving learning goals. Therefore, educators have the flexibility to choose either learning method without significantly affecting the learning outcomes. It is suggested that future research consider using both Animation Video and Booklet as learning media, as both have proven to be equally effective.

Analysis of the Effect of Pre- and Post-Education on Healthy Food on Mothers' Action in Preventing Stunting Risk in the Animation Video and Booklet Groups

Based on the results of the Dependent T-Test analysis, it can be concluded that the intervention of providing education through animation video and booklet media to mothers had a significant impact in improving the respondents' scores at both the Kelapa Gading Sehat Posyandu and Amalia Posyandu. The significance value obtained was below 0.05, indicating a significant effect between the respondents' scores before and after the intervention. Therefore, it can be concluded that education using animation videos and booklets proved to be more effective in improving mothers' actions or practices related to stunting risk factors in children.
These findings are in line with a study by Astriani (2023) titled "The Effect of Counseling Using Video Media on Stunting on Knowledge, Attitudes, and Actions of Mothers with Toddlers." The average pre-test score before education was 5.63, and after education, it increased to 9.90, with standard deviations of 0.873 and 0.300, respectively. The Wilcoxon test analysis yielded a p-value of (0.000) < 0.05, which means there was an effect on mothers' actions before and after receiving nutritional education using animation videos on stunting. This is consistent with research by Listyarini & Fatmawati, (2020), where the average score of parents' actions regarding stunting care for toddlers before education using the booklet media was 62.50, and after education, the average score was 70.00. The statistical test showed a p-value of 0.003 (p < 0.05), meaning that education using booklet media was proven to effectively improve parents' actions/behavior in caring for stunted children.
From this analysis, the researchers assume that the media used in education influences the improvement of mothers' actions in preventing stunting. The data shows that using animation video and booklet media in education is very effective in improving mothers' actions or practices related to preventing stunting. This media is very effective in explaining various processes, as messages conveyed through moving images are not only more efficient but also easier to understand, since they can deliver information quickly and clearly. The advantage of the booklet over other media is its ability to be studied at any time due to its practical format, as well as its capacity to present more detailed information. Thus, this media helps accelerate the understanding process, making health information easier for the respondents to digest. It is recommended to increase the use of animation video and booklet media in nutrition education programs for mothers. This can strengthen their understanding and behavior regarding healthy eating patterns and stunting risk factors, as well as enhance their involvement in improving toddler health.

Analysis of the Difference in Healthy Food Education on Mothers' Actions in the Animation Video Group and Booklet Group

Based on the independent t-test analysis results, the Levene test indicated that both groups were equivalent (F = 1.185, Sig. = 0.668 > 0.05), which indicates that the variance between the two groups was homogenous. Further analysis revealed that the average post-test score for the Animation Video group (M = 32.5, SD = 1.27) was slightly lower than the Booklet group (M = 32.7, SD = 1.25). The mean difference between the two groups was 0.23 with a standard error of 0.32, and the t-test result showed a t-value of -0.712 with degrees of freedom (df) = 58 and a significance value (2-tailed) = 0.479, which is greater than 0.05. As a result, Ha2 is rejected and H02 is accepted, indicating that there is no significant difference between the two groups.
Therefore, both Animation Videos and Booklets can be used as alternative learning media with equal effectiveness. Although the Booklet group has a slightly higher score, both media can be considered equally effective, and there is no significant superiority between them. The choice between the two can

be adjusted according to the learning needs and conditions without concern for a difference in effectiveness. These findings have practical implications, as educators or educational institutions have the flexibility to choose the learning method, whether using Animation Videos or Booklets, since both have been proven equally effective in achieving the desired learning outcomes. Therefore, these results indicate that there is no significant difference between the two groups.

The researchers assume that with an equal sample size (N=30), homogeneous variance, a significance value of p>0.05, and a small mean difference (-0.23333), both the Animation Video and Booklet media have equal effectiveness in achieving the desired outcomes. Therefore, educators or counselors have a variety of options in selecting a teaching method without significantly affecting the learning results. It is suggested that future research may consider using either Animation Videos or Booklets as learning media, as both have proven to be equally effective.

CONCLUSION

From the research results, it can be concluded that there is a significant effect on mothers' knowledge and actions regarding healthy food to prevent stunting before and after being given animation videos, there is a significant effect on mothers' knowledge and actions regarding healthy food to prevent stunting before and after being given a booklet and there is no difference between the use of animation video and booklet media on mothers' knowledge and actions regarding healthy food to prevent stunting. It is recommended that the health centers (Puskesmas) develop stunting prevention programs that are easy for mothers to understand. This can be achieved through regular child check-ups, providing nutritional information using simple language, offering free services, administering additional vitamins, and monitoring children's health from an early age. Additionally, it is advised that future researchers increase the sample size to obtain results that more accurately represent the actual situation. They should also consider other factors, such as education level, socio-economic status, and previous experience with educational media. Conducting follow-up studies would be beneficial to assess the long-term effects of the educational interventions.

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CONFLICTS OF INTEREST

The authors declare that this study is free from any conflicts of interest

REFERENCES

Agustin, L., & Rahmawati, D. (2021). Hubungan Pendapatan Keluarga dengan Kejadian Stunting. *Indonesian Journal of Midwifery (IJM)*, *4*(1), 30. https://doi.org/10.35473/ijm.v4i1.715

Anna Virjunesty Lehan, Tuti Asrianti Utami, P. W. N. (2023). FAKTOR-FAKTOR YANG BERHUBUNGAN DENGAN KEJADIAN STUNTING PADA BALITA. *Jurnal Keperawatan Silampari*, *6*, 961–972.

Arnita, S., Rahmadhani, D. Y., & Sari, M. T. (2020). Hubungan Pengetahuan dan Sikap Ibu dengan Upaya Pencegahan Stunting pada Balita di Wilayah Kerja Puskesmas Simpang Kawat Kota Jambi. *Jurnal Akademika Baiturrahim Jambi*, *9*(1), 7. https://doi.org/10.36565/jab.v9i1.149

Astriani, R. (2023). Pengaruh Penyuluhan Menggunakan Media Video Tentang Stunting Terhadap Pengetahuan, Sikap Dan Tindakan Ibu Balita. *Masker Medika*, *11*(2), 420–431. https://doi.org/10.52523/maskermedika.v11i2.586

Bappeda Kaltim. (2023). *Stunting Tingkat Kota Samarinda*. Bappedaprov.Kaltim.

Fitriahadi, E., Suparman, Y. A., Silvia, W. T. A., Wicaksono G, K., Syahputra, A. F., Indriyani, A., Ramadhani, I. W., Lestari, P., & Asmara, R. F. (2023). Meningkatkan Pengetahuan dan Kesadaran Tentang Stunting Sebagai Upaya Pencegahan Terjadinya Stunting. *Jurnal Masyarakat Madani Indonesia*, *2*(4), 410–415. https://doi.org/10.59025/js.v2i4.154

Fitriana. (2019). *HUBUNGAN UMUR IBU SAAT MELAHIRKAN DENGAN KEJADIAN STUNTING PADA BALITA USIA 24-59 BULAN DI WILAYAH KERJA PUSKESMAS BANGKALAN*. 1–23.

Hasriani, S., Pratiwi, W. R., & Asnuddin, A. (2023). Cegah Balita Dari Stunting Melalui Edukasi Isi Piringku Di Posyandu Cempaka Kabupatten Barru. *Jurnal Altifani Penelitian Dan Pengabdian Kepada Masyarakat*, *3*(3), 450–456. https://doi.org/10.59395/altifani.v3i3.404

Issadikin, D. T. (2023). Hubungan Jumlah Anak Dalam Keluarga Dengan Status Gizi Pada Balita Di Desa Pandansari Kecamatan Senduro Kabupaten Lumajang. *Community Health Nursing Journal*, *1*(1), 1–16. https://doi.org/10.47134/cmhn.v1i1.2

Kuswanti, I., & Azzahra, S. K. (2022). Jurnal Kebidanan Indonesia. *Hubungan Pengetahuan Ibu Tentang Pemenuhan Gizi Seimbang Dengan Perilaku Pencegahan Stunting Pada Balita*, *13*(1), 15–22.

Lestari, N., & Hanif, A. (2021). Penyuluhan Makanan Sehat Untuk Pencegahan Stunting Balita. *Jurnal Pengabdian Masyarakat Medika*, 1–7. https://doi.org/10.23917/jpmmedika.v1i1.264

Listyarini, A. D., & Fatmawati, Y. (2020). Edukasi Gizi Ibu Hamil Dengan Media Booklet Tentang Perilaku Pencegahan Balita Stunting Di Wilayah Puskesmas Undaan Kabupaten Kudus. *Jurnal Ilmu Keperawatan Dan Kebidanan*, *11*(1), 100. https://doi.org/10.26751/jikk.v11i1.743

Masnina, R., Sureskiarti, E., Azzahra, S., Sunarti, S., Saqila, R. L., Nyngtyas, R., Keperawatan, F. I., Muhammadiyah, U., Timur, K., Muara, K., Tengah, J., Jawa, K. M., Kartanegara, K., Timur, K., Farmasi, F., Muhammadiyah, U., & Timur, K. (2021). Community education through a stunting care book in the era of the covid-19 pandemic. *Prosiding Seminar Nasional Pengabdian Kepada Masyarakat:Peduli Masyarakat*, *1*, 255–260.

Ni Wayan Erviana Puspita Dewi, N. K. S. A. (2021). HUBUNGAN PENGETAHUAN IBU TENTANG GIZI MENURUNKAN RESIKO STUNTING PADA BALITA DI KABUPATEN GIANYAR. *Jurnal Menara Medika*, *3*(2), 148–154.

Ningtyas, Y. P., Udiyono, A., & Kusariana, N. (2020). PENGETAHUAN IBU BERHUBUNGAN DENGAN STUNTING PADA BALITA DI WILAYAH KERJA PUSKESMAS KARANGAYU KOTA SEMARANG. *JURNAL KESEHATAN MASYARAKAT*, *8*, 107–113.

Rahmawati, D. A., Zakiah, V., & Mutmaina, R. (2023). Hubungan Pendidikan dan Pekerjaan Ibu dengan Kejadian Stunting Pada Balita 24 – 60 Bulan di UPTD Puskesmas Landono. *Jurnal Ners*, *7*(2), 1294–1297. https://doi.org/10.31004/jn.v7i2.17280

Ramadhan, A., & Nadhira, A. (2022). Penelitian Tindakan Kelas (Ptk) Solusi Alternatif Problematika Pembelajaran Dengan Berbasis Kearifan Lokal Dan Penulisan Artikel Ilmiah Sesuai Dengan Kurikulum Tahun 2013 Di Madrasah Tsanawiyah Darul Hikmah Medan. *Serunai : Jurnal Ilmiah Ilmu Pendidikan*, *8*(1), 121–128. https://doi.org/10.37755/sjip.v8i1.632

SSGI. (2023). *Prevalensi Stunting di Indonesia Turun ke 21,6% dari 24,4%*. Kementrian Kesehatan.

Sugianto, M. A. (2021). Analisis Kebijakan Pencegahan Dan Penanggulangan Stunting Di Indonesia: Dengan Pendekatan What Is The Problem Represented To Be? *Jurnal EMBISS*, *1*(3), 197–209.

Syafira, T., Novianti, F., Susanti, E. D., & Suwarni, L. (2023). Penyuluhan Pencegahan Stunting Melalui Pemanfaatan Pangan Lokal Dalam Olahan Mp-Asi Pada Generasi Z. *Jurnal Abdimas (Journal of Community Service)*, *5*(4), 721–728.