

THE EFFECTIVENESS OF FLIPBOOK ON THE KNOWLEDGE AND ATTITUDE OF POSYANDU CADRES IN STUNTING PREVENTION

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ABSTRACT

Purpose: Posyandu cadres are at the forefront of improving the health of toddlers in the community. With a stunting prevalence of 16% in Sleman Regency, effective education is needed for cadres. Flipbooks as an interactive educational media are considered to have the potential to increase the knowledge and attitudes of cadres in supporting stunting prevention.

Method: This type of study is quasi experimental with a Pretest-Posttest Control Group Design. It will be held in May 2025 in the working area of the Seyegan Health Center. The population in this study is posyandu cadres in Margoagung Village as an intervention group and Margoluwih Village as a control group. The sampling technique used purposive sampling totaling 77 which was divided into 2 groups with inclusion and exclusion criteria. This instrument uses flipbook and leaflet media. The data analysis method consists of univariate and bivariate analysis of the Mann-Whitney U Test

Finding: This study shows that the use of flipbook media significantly increases the knowledge and attitude of Posyandu cadres under five. The knowledge score increased from an average of 5,850 (pretest) to 7,875 (posttest) with a significance value of $p = 0.000$. The attitude score increased from 34,875 to 37,175 ($p = 0.000$). Compared to leaflet media, flipbooks showed a difference in the increase in cadre knowledge ($p = 0.000$), but did not show a significant difference in attitude improvement ($p = 0.926$).

Novelty There is a difference in the provision of flipbook media in increasing the knowledge of Posyandu cadres, but it is not superior to leaflets in improving attitudes related to stunting prevention.

Keywords:

Flipbook, knowledge, attitude, posyandu cadres, stunting

INTRODUCTION

The nutritional status of the community is an important indicator to assess the degree of health. Malnutrition is still a serious problem in infants and children around the world. WHO data in 2020 shows that around 22.2% or 149.2 million children under five are stunted. This figure is categorized as high because it is in the prevalence range of 20–30%. This condition indicates that there is still a need for great efforts to overcome stunting so that it does not have a negative impact on the quality of human resources in the future. Stunting is not only a health problem, but also affects the educational, social, and economic aspects of a nation.¹

Indonesia ranks second highest in Southeast Asia for stunting prevalence, according to a 2021 Asian Development Bank report, with a figure of 31.8% in 2020. Only Timor Leste has a higher number, which is 48.8%. Stunting is a serious concern for the government because in 2022, the national stunting prevalence is still 21.6%. This figure has indeed decreased compared to previous years, but the national target according to Presidential Regulation Number 72 of 2021 is to reduce the prevalence by 14% by 2024. This target requires various efforts, both direct and indirect, from all policy stakeholders.²

The province of the Special Region of Yogyakarta is ranked third lowest in the stunting rate in Indonesia. This figure is better than DKI Jakarta which reached 16.8% and Bali with 10.9%. However, further reductions are still needed for the national target to be achieved.³ Sleman Regency

itself still has a stunting prevalence of 16% in 2021, exceeding the target of 14%.⁴ In Kapanewon Seyegan, the stunting rate continues to decline from 8.1% in 2021 to 6.9% in 2023.⁵ However, Margoagung Village remains the area with the highest cases, namely 36 toddlers or 10.14% in 2021, so it is used as a special location for handling stunting.⁴

Stunting has a serious impact, both short-term and long-term. In the short term, stunting causes impaired brain development, physical growth, and body metabolism. In the long term, children will experience decreased intelligence, cognitive impairment, weak immunity, and are susceptible to diseases such as diabetes, obesity, and disability in old age. Research shows that children with malnourished status have a 5.7 times greater risk of developmental delay than children with good nutrition.⁶ Therefore, stunting must be a major concern because it can threaten the quality of future generations in various sectors, including health, education, and the economy.⁷

The government has made various interventions to reduce stunting. These efforts include the provision of blood-boosting tablets, vitamin A, food fortification, balanced nutrition campaigns, as well as the promotion of exclusive breastfeeding and MP-ASI. In addition, pregnant women's classes, deworming are also carried out, and the treatment of malnutrition through the National Health Insurance.⁸ The factors that cause stunting can be direct, such as parenting, breast milk intake, MP-AST, and infections,⁹ and indirect, such as family income, urbanization, and access to clean water.¹⁰ Non-risk factors for stunting are immunization and toilet status, while for protective factors history of exclusive breastfeeding and access to clean water.¹¹ Nutrition during pregnancy and malnutrition are factors that can affect low birth weight, affecting children to experience stunting.¹²

Health promotion is an important strategy to effectively convey health messages. The media played a big role in supporting the success of this promotion.¹³ Flipbook is one of the educational media in the form of a digital book that contains text, images, or a combination of both. The advantage of flipbooks is their attractive appearance so that it makes it easier for the target to understand the information.¹⁴ In addition to flipbooks, leaflet media is also widely used. Leaflets are in the form of a piece of paper with brief information and simple images, which can be saved and read at any time.¹⁵ These two media are able to help cadres convey information related to stunting prevention more effectively and efficiently to the public.

This study was conducted to examine the effectiveness of the use of flipbook media in improving the knowledge and attitude of posyandu cadres towards stunting prevention. The focus of this research is in Margoagung Village, Kapanewon Seyegan, Sleman Regency, which is designated as a special location for handling stunting. The selection of appropriate educational media is expected to improve the ability of cadres to provide counseling to the community. With good knowledge and attitude, cadres can be at the forefront of reducing the prevalence of stunting. This research is expected to contribute to efforts to accelerate stunting reduction in Indonesia.

RESEARCH METHODOLOGY

The design of this study is quasi experimental with a Pretest-Posttest Control Group Design. The research will be carried out in May 2025 in the working area of the Seyegan Health Center. The population in this study is posyandu cadres in Margoagung Village as an intervention group and Margoluwih Village as a control group. The sampling technique used purposive sampling with the determination of the number of samples using the Lemeshow formula. The total sample was 77 respondents who were divided into 2 experimental and control groups with inclusion and exclusion criteria. This research instrument uses flipbook and leaflet media. Data analysis was carried out univariate and bivariate with chi-square test.

RESULTS AND DISCUSSION

Table 1. Characteristics of Respondent Groups

Characteristic		Group				p-value
		Flipbook		Leaflets		
		n	%	n	%	
Age	Under 35 Years Old	15	37.5	8	21.6	0.128
	Over 35 Years	25	62.5	29	78.4	
Education	Primary Education	33	82.5	25	67.6	0.129
	Higher Education	7	17.5	12	32.4	
Work	Not Working	31	77.5	31	83.8	0.487
	Work	9	22.5	6	16.2	
Long Time Being a Cadre	< 3 years	21	52.5	13	35.1	0.125
	> 3 years	19	47.5	24	64.9	
Total		40	100	37	100	

Based on table 1, the characteristics of posyandu cadres are known to be the age of respondents mostly in the age range over 35 years, as many as 25 people (62.5%) in the flipbook group and in the leaflet group it is known that the age of the respondents is almost entirely, namely in the age range over 35 years, as many as 29 people (78.4%). In the educational characteristics of the respondents, it is known that almost all respondents are graduates of primary education, 33 people (82.5%) in the flipbook group and most of the respondents are 25 people (67.6%) in the leaflet group. Based on the job characteristics of the respondents in this study, almost all respondents did not work, as many as 31 people (77.5%) in the flipbook group and as many as 31 people (83.8%) in the leaflet group. Based on the characteristics of being a cadre for less than 3 years, most of them were 21 people (52.5%) in the flipbook group and more than 3 years as many as 24 people (64.9%) in the leaflet group.

Table 2. Improvement of Knowledge and Attitudes Before and After Being Given Flipbook Media.

Variable	Red (Pretest)	Mean (Posttest)	Δ Mean	Mean Rank	Sum of Ranks	Z	Asymp. Sig. (2- tailed)
Knowledge	5.850	7.875	Δ 2.025	20.50	820.00	-5.655	0,000
Attitude	34.875	37.175	Δ 2.300	20.20	505.00	-3.558	0,000

Based on table 2, the results of the respondents' research with flipbook media intervention as many as 40 respondents experienced an increase in knowledge scores on average Pretest 5,850 and average Posttest 7.875, incremental difference (Δ) by 2,025 points (20.25%). Based on non-parametric statistical tests using Wilcoxon obtained a value of $Z = -5.655$, and $p = 0.000$ ($p < 0.05$). In line with this research, the Lestari research, 2024 where there is an average difference in the level

of knowledge of the bride-to-be in stunting prevention before and after being given health education through flipbook media with a score p -value 0.001 is less than 0.05.¹⁶ Another parallel research is research Jajuli, 2023 There is a difference in the level of maternal knowledge about diarrhea in toddlers in Mandalaherang village before and after being given health education through flipbook media with a score p -value 0.000 is less than 0.05.¹⁴

Meanwhile, in the attitude, the average pretest is 34.875 increase to 37.175 in the posttest, with an incremental difference (Δ) by 2.300 points (5.75%). Test results Wilcoxon show $Z = -3.588$ and $p = 0.000$ ($p < 0.05$), which also indicates a significant improvement in attitude after being given flipbook media. In line with the results of the Lestari research, 2024 which shows the difference in the average attitude value before and after being given counseling with flipbook media, which is 7.92 with a p -value of 0.001 ($p < 0.05$) which means that there is a difference in the level of attitude of the bride-to-be in stunting prevention before and after being given health education through flipbook media.¹⁶ Research by Nurulita Priandini (2023) shows a difference in the increase in adolescents' attitudes before and after health education using flipbook media and there is a difference in the average attitude of adolescents before and after health education using flipbook media with a p value of 0.000.¹⁷

Table 3. Increased Knowledge and Attitudes Before and After Being Given Media Leaflets

Variable	Red (Pretest)	Mean (Posttest)	Δ Mean	Red Ranks	Sum of Ranks	Z	Asymp. Sig. (2-tailed)
Knowledge	5.2703	6.4865	Δ 1.2162	17.69	601.50	-4.863	0.000
Attitude	32.5135	34.6486	Δ 2.1351	15.50	310.00	-2.915	0.004

Based on table 3, the results of this study showed that 37 respondents with leaflet media intervention experienced an increase in knowledge scores on average Pretest of 5.2703 and average Posttest 6.4865, incremental difference (Δ) of 1.2162 (12,162%). Based on the results of Wilcoxon's statistical test, the $Z = -4.863$ and $p = 0.000$ ($p < 0.05$). In line with Pasila's research, in 2022 where the average knowledge score after being given education using leaflets is 8.80 with p -value $0.00 < 0.05$. This means that there is a significant difference after counseling is given to the change in the level of knowledge of the respondents.¹⁸ Another research that is in line with this research is research from Restu Ayu Lestari, 2024 where there is a difference in the level of knowledge of mothers about stunting in toddlers at the Posyandu in Tanjungpura Village before and after being given health education through leaflet media with a score p -value 0.000 is less than 0.05. The provision of leaflet media in this study aims to make it easier to understand and remember stunting prevention information because with the use of leaflet media in health education, it can be read by all circles and display creative and interesting images.¹⁹

Meanwhile, in the variable attitude of respondents with leaflet media intervention, as many as 37 respondents experienced an increase in attitude scores with an average pretest of 32.5135 and an average of 34.6486, the difference of increase (Δ) of 2.1351 (5,3%). Wilcoxon's test results show a value $Z = -2.915$ and $p = 0.004$ ($p < 0.05$). In line with Pasila's research, in 2022 where the average attitude score after being educated using leaflets was 39.00 with a p -value of $0.000 < 0.05$. This means that there is a significant difference after counseling is given to the change in the level of respondents' attitudes.¹⁸ Restu Ayu Lestari (2024) Showing an increase in the average attitude of mothers before and after participating in health education regarding stunting in posyandu activities

in Tanjungpura sub-district with education using leaflet media, namely from an average of 4.60 to 7.35 with a p -value of 0.000.¹⁹

Table 4. The Effectiveness of Flipbooks on Increasing Cadre Knowledge about Stunting Prevention Efforts in Toddlers

Variable	Mean	Δ Mean	Mean Rank	Sum of Ranks	Mann- Whit- ney U	Z	Asymp. Sig. (2- tail ed)
Flipbook	2.0250	0.8088	49.05	1962.00	338.000	-4.439	.000
Leaflets	1.2162		28.14	1041.00			

Based on table 4, the results of this study show that flipbook media is different in increasing cadres' knowledge about stunting prevention efforts in toddlers compared to leaflet media with it known that the average value of knowledge increase in the flipbook group is 2.0250, while in the leaflet group of 1.2162. The value of the mean difference (Δ Mean) between the two groups is 0.8088. The results of the statistical test showed that the Mann-Whitney U by 338,000 with significance value (Asymp. Sig. 2-tailed) by 0.000 ($p < 0.05$). In line with the results of previous research by Dian Yuliawati Darwis (2024), who stated that flipbook media is more effective in increasing the knowledge of adolescents in the First Mengah School (SMP) in efforts to prevent gastritis in junior high schools in Kulukumba Regency with mean rank results (74.90) and ($p=0.052$).²⁰

According to Notoatmodjo, knowledge is the result of knowing and understanding that this occurs after a person senses a certain object. Sensing occurs through the human senses, namely the senses of sight, hearing, smell, taste and touch. Most of human knowledge is acquired through the eyes and ears.²¹

Flipbook utilizes the principle of multimedia learning, namely the integration of text and images that support more effective information processing in long-term memory. In addition, flipbook media can be learned independently by cadres anytime and anywhere, thus strengthening repetitive learning, which is very important in forming sedentary knowledge. This ease of access is an added value, especially for cadres who have limited time in participating in face-to-face training. The use of flipbook media presents material in a dynamic and attractive visual form, making it easier for Posyandu cadres to understand and remember. The results of this study strengthen Dale's theory, where flipbooks have been proven to be more effective in increasing cadres' knowledge than leaflets, because they provide a more meaningful and comprehensive learning experience.

Based on Edgar Dale's Cone of Experience theory, learning will be more effective if it involves many senses and provides concrete experiences. The more real the learning experience, the higher the absorption and retention of information. Learning that relies solely on text (such as reading leaflets) tends to have low retention, which is around 10–20%. In contrast, media that combines text, images, sound, and interactions such as flipbooks can increase retention by up to 50–90%.

Based on these results, it can be concluded that the use of flipbooks as a medium of health education is the right strategy in increasing cadres' knowledge about stunting. Therefore, the development and utilization of digital media such as flipbooks needs to be expanded in community empowerment programs, especially in the field of maternal and child health.

Table 5. The Effectiveness of Flipbooks on Increasing Cadre Attitudes About Stunting Prevention Efforts in Toddlers

Variable	Mean	Δ Mean	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)
Flipbook	2.3000	1.165	39.23	1569.00	731.000	-092	.926
Leaflets	2.1351		38.76	1434.00			

Based on table 5, the results of this study show that flipbook media is not more effective than leaflets in improving the attitude of Posyandu cadres regarding stunting prevention efforts in toddlers, with the average value of knowledge improvement in the flipbook group of 2.3000, while in the leaflet group of 2.1351. The value of the mean difference (Δ Mean) between the two groups is 1.165. The results of the statistical test showed that the Mann-Whitney U at 731,000 with significance value (Asymp. Sig. 2-tailed) of 0.926 ($p > 0.05$). This value is well above the significance limit ($\alpha = 0.05$), which means that there was no significant difference in effectiveness between the two media in influencing the attitude of cadres. This shows that both flipbooks and leaflets have Relatively equivalent effectiveness in encouraging attitude change. In line with research by Puspitasari et al. (2021) who found that Leaflet media is able to provide an effect equivalent to digital media in improving the understanding and attitude of mothers of toddlers towards stunting prevention.²²

According to Notoatmodjo (2012) Attitude is result of cognitive, affective, and conative processes, which is not only influenced by the form of media, but also by Experience, motivation, social norms, and the environment Individual. Therefore, although flipbooks are considered to be a more visually appealing interactive medium, they do not necessarily guarantee a greater change of attitude than leaflets, especially when The substance of the information conveyed is similar and received with the same understanding by cadres.²³

Leaflet media became effective because be Foldable paper leaflets that can be carried anywhere, designed with supporting images, words or sentences are short, concise, clear and easy to understand, and can be read anytime and anywhere. This can help memory and encourage and motivate pregnant women in preventing stunting.¹⁸

In the context of Posyandu cadres, the effectiveness of educational media does not only depend on the type of media, but is also influenced by the level of readability, ability to understand the material, and the method of delivery. If both media are used passively, without direct discussion or interaction, then their effect on attitude change may be limited.

(Notoatmodjo, 2012) Changing attitudes takes time and repeated reinforcement. Therefore, The success of the intervention does not depend only on at One type of media, but also on holistic implementation strategies, including regular training, supervision, and effective interpersonal communication. Thus, although flipbooks have the potential as an educational media innovation, the results of this study reinforce that Leaflet media remains relevant and effective, and can be alternative practical and efficient in educating Posyandu cadres, especially in areas with limited access to digital technology.²³

CONCLUSION AND RECOMMENDATIONS

Based on the results of this study, it was found that there was a difference in the average knowledge value of posyandu cadres in Margoagung Village, Kapanewon Seyegan, Sleman Regency before and after education with flipbook media. There is a difference in the average attitude value of posyandu cadres in Margoagung Village, Kapanewon Seyegan, Sleman Regency before and after education with flipbook media. There was a difference in the average knowledge value of posyandu cadres in Margoluwih Village, Kapanewon Seyegan, Sleman Regency before and after education

with leaflet media. There was a difference in the average attitude value of posyandu cadres in Margoluwih Village, Kapanewon Seyegan, Sleman Regency before and after education with leaflet media.

There is a difference in the effectiveness of health education through flipbook and leaflet media on increasing the knowledge of posyandu cadres about stunting prevention efforts in toddlers. Flipbook media has proven to be more effective in increasing knowledge than leaflets because the presentation of information is more interesting and easy to understand. However, when viewed from the aspect of attitude, the effectiveness of these two media is relatively the same. Both flipbooks and leaflets were able to have a positive influence on changes in cadres' attitudes in stunting prevention, although the rate of change did not show a significant difference.

It is recommended to the next researcher to be able to compare the effectiveness of other educational media such as animated videos, e-books, or mobile application-based media to find out which media is most effective in increasing knowledge and attitudes of cadres as an effort to provide health education.

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