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Template Contagion_Innovation Of Prototype Of Stunting Health Information System And 3D Pageflip

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Innovation of Prototype of Stunting Health Information System and 3D Pageflip E-Module on Stunting Preventive Knowledge and Attitude in South Tangerang

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Abstract

According to an analysis conducted by the World Bank Group, WHO, and UNICEF, around 144 million children who are under the age of five (21.3%) were affected by stunting world-wide in 2019. By 2022, this figure had risen to an estimated 148.1 million children (22.3%). To evaluate the health promotion effectiveness interventions utilizing a 3D Pageflip e-module and a prototype of stunting health information system in enhancing attitudes and knowledge for the prevention of stunting in South Tangerang. This study applied a quantitative approach combined with a quasi-experimental design, utilizing a two-group design with pretest and post-test measurements framework. A total of 106 individuals surveyed were included, divided equally into two groups: one group received the prototype stunting health information system intervention, and the other was provided with the 3D Pageflip e-module, comprising 53 participants for every group. The Wilcoxon test showed meaningful differences between pretest and post-test scores for both intervention methods. The Stunting Health Information System Prototype demonstrated a p-value of 0.046, while the p-value for the 3D Pageflip e-module was 0.000. These findings indicate a measurable improvement in knowledge between the post-test and pretest phases for both stunting health intervention methods.

Keyword: Prototype; Stunting Health Information System; 3D Pageflip E Module; Knowledge; Preventive; Attitude

INTRODUCTION

Health problems are one of the serious issues faced in Indonesia, one of which is stunting. Stunting has been the main focus of the government since 2017. Stunting refers to height that is not appropriate or too short when compared to age. Stunting is a health issue that may occur because of long-term or chronic malnutrition and repeated infections, which can be characterized by height that is less than or below -2 standard deviations (-2 SD) of child growth* according to WHO (UNICEF & WHO, 2020; Windasari et al., 2020).

Drawing on the analysis published in 2019 by the WHO, World Bank Group, and UNICEF; there were approximately 144 million children below 5 showing stunted growth. Further

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analysis was done in 2022, where it recorded a rise from 21.3% in 2019 to 22.3% of affected children world-wide. The incidence of children suffering from stunting mostly live in Asia (52%) and Africa (43%) (UNICEF & WHO, 2020; World Health Organization, 2023).

The rate of stunting among toddlers in Indonesia, as referenced regarding the outcomes of the Indonesian Toddler Nutrition Status Survey (SSGI), was 27.67% in 2019 and 24.4% in 2021. According to the Riskesdas (Basic Health Study) conducted by Litbangkes, the stunting rate in Indonesia was 21.6% in 2022. Although The frequency of stunting cases in Indonesia has decreased, this figure is still quite high. The World Health Organization (WHO) set the standards to be less than 20% (Kemenkes RI, 2023).

The government has targeted the prevalence of stunting to be 14% by 2024. Banten Province is among the top five regions with the highest stunting rates in Indonesia and is also one of the 12 priority regions, as reported to the SSGI (Indonesian Toddler Nutrition Status Survey) in 2021. Using the results of the research done by the SSGI, it was reported that the stunting rate in Banten in 2022 fell by 4.5% (24.5% in 2021 to 20% in 2022). The data gathered through research by the Riskesdas (Basic Health Study) in 2023, explained that the frequency of stunted children in South Tangerang increased by 0.2% (9.0% in 2022 to 9.2% in 2023). Although there was a slight increase of only 0.2 percent, this should not be ignored and must be a serious concern for all parties.

Growth failure or stunting is a condition that occurs due to poor nutrition during pregnancy (womb) or childhood. A child who experiences stunting is likely to not grow as much as a child of the same age, and the development of cognitive potential does not develop optimally and can last a lifetime, which also impacts or affects the next generation. Stunting is a threat to economic growth and national welfare, continuing to haunt the development and health of millions of children around the world (UNICEF & WHO, 2020).

The rate of stunting is driven by several factors. They are inadequate access to nutritious food, insufficient availability of clean water, and poor sanitation facilities, limited access to health services (e.g. prenatal and postnatal healthcare services), inadequate nutrition among pregnant women and toddlers, combined with a lack of awareness about health and nutrition. (before, during, and after pregnancy), as well as quality early learning (Imani, 2020).

The attitude of a mother when taking care of her child is closely related to the stunting in children. Mothers who have good child nutrition are usually able to maintain proper nutritional fulfilment, while mothers with inadequate nutritional fulfilment will also have poor nutrition.

Good understanding will cultivate a favorable mindset and attitude, which then if the attitude

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is deemed suitable, good results would also emerge. Stunting knowledge is obtained from formal education or from the media (non-formal), such as internet, TV, radio, newspapers, magazines, etc. The involvement of mothers is essential in the rate of stunting. The characteristics of the mother need to be considered because they could affect the growth process of the fetus (Kemenkes RI, 2018; Wanimbo & Wartiningsih, 2020).

Health promotion and community empowerment are ways that can be done to prevent stunting. Various parties make various efforts and interventions to change into positive behaviors in the information possessed by pregnant women regarding nutritional needs during childbirth, pregnancy, and child growth before turning the age of 2 years old (Fitriani & Darmawi, 2022). In health promotion, media selection is also very important to consider. Given that in the digital era like today, the role of mobile phones/smartphones has become a primary daily need, the use of smartphones has spread to various age groups, from children, adults to the elderly. The influence or impact on media users can provide/receive information quickly, allow communication anytime and anywhere, facilitate daily life in education, business, social interactions, communication, and politics. In light of a study carried out by Daeng et al., (2017) It highlights that using smartphones is beneficial for supporting tasks and tracking current information updates (Daeng et al., 2017).

Using the points described above as research background, the researcher is keen to study the innovation of a Information System Prototype regarding health, especially stunting, and a 3D Pageflip E-Module, in relation to the understanding and attitudes of mothers towards stunting preventive measures in South Tangerang.

METHODS

A quantitative research methodology is applied in the study. It is using a Quasi-Experimental research type with a two-group post-test and pretest design. The number of contributing samples collected from 106 respondents, consisted of two variables of equal numbers; Health Information System Prototype for Monitoring Stunting and 3d Pageflip E-Module, each of them provided by 53 respondents, respectively. Ethical approval was granted by the Institutional Ethical Committee of WDH Institution with Reference Number 667/K-1KP/WDH/II/2024.

Data collection used a pretest-posttest questionnaire. The Wilcoxon test is used as a data analysis model to assess the discrepancy in understanding and attitudes of mothers regarding stunting, before and after health promotion was given with the prototype method of the health

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information system for monitoring stunting and 3D Pageflip E-module. To determine the difference in effectiveness of the health information system prototype and e-module, the Mann Whitney test was used.

RESULTS

A. Univariate Analysis

Table 1. Characteristics of Respondents

Variable	Prototype of Health Information System for Monitoring Stunting		3D Pageflip E-Module	
	n	%	n	%
Age				
21-31 years	-	-	26	49.1
32-41 years	4	7.5	27	50.9
42-51 years	21	39.6	-	-
52-61 years	22	41.5	-	-
62-71 years	6	11.3	-	-
Education				
Elementary School	-	-	8	15.1
Junior High School	5	9.4	15	28.3
Senior High School/ Vocational High School	38	71.7	24	45.3
D3	7	13.2	4	7.5
Bachelor's Degree	2	3.8	2	3.8
Master's Degree	1	1.9	-	-

As shown in table 1, the characteristics of respondents based on age from 106 respondents show that in the Stunting Health Information System Prototype group, most respondents are aged 52-61 years, as many as 22 respondents (41.5%) and in the 3D Pageflip E-Module group, most respondents are aged 32-41 years, as many as 27 respondents (50.9%). The characteristics of respondents based on education from 106 respondents show: in the Stunting Health Information System Prototype group, 38 respondents representing 71.7% of the group have received high school education. Meanwhile, the 3D Pageflip E-Module group has 24 respondents that have received high school education, representing 45.3% of the group.

Table 2. Distribution Frequency of Respondents Based on Mothers' Knowledge and Attitudes About Stunting Before (Pre) and After (Post) Health Promotion Using 3D Pageflip E-Module and The Health Information System Prototype for Monitoring Stunting

Variable	Prototype of Health Information System for Monitoring Stunting	3D Pageflip E-Module

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	Pre-Test		Post-Test		Pre-Test		Post-Test	
	n	%	n	%	n	%	n	%
Knowledge								
Less	-	-	-	-	25	47.2	5	9.4
Sufficient	4	7.5	-	-	23	43.4	34	64.2
Good	49	92.5	53	100	5	9.4	14	26.4
Attitude								
Negative	5	9.4	-	-	32	60.4	4	7.5
Positive	48	90.6	53	100	21	39.6	49	92.5

As shown in Table 2, the distribution frequency of respondents based on mothers' knowledge about stunting before (pre) health promotion from 106 respondents shows that in the health information system prototype group, more than half of the respondents had good knowledge about stunting, with 49 respondents (92.5%). After (post) health promotion using the health information system prototype, all respondents had good knowledge regarding stunting, with 53 respondents (100%). Meanwhile, in the E-Module group before (pre) health promotion, almost half of the respondents had inadequate knowledge about stunting, with 25 respondents (47.2%). After (post) health promotion using the E-Module, over 50% of respondents possessed sufficient awareness of stunting, with 34 respondents (64.2%).

The distribution frequency in Table 2 illustrates that in the prototype group before health promotion, more than half of total respondents had a favorable attitude about stunting, with 48 respondents (90.6%). After health promotion, all 106 respondents had a positive attitude about stunting, with 53 respondents (100%). In the 3D Pageflip E-Module group before health promotion, 32 respondents had a negative attitude about stunting, amount to 60.4% of total respondents. After health promotion with the 3D Pageflip E-Module, the majority of the respondents had a favorable attitude about stunting, with 49 respondents (92.5%).

B. Bivariate Analysis

Table 3. Wilcoxon Test Results of The Stunting Health Information System Prototype

Variable	Prototype of Stunting Health Information System		
	N	Mean	Asymp. Sig. (2-tailed)
Knowledge			
Pre-Test	53	2.92	0.046
Post-Test	53	3.00	
Attitude			
Pre-Test	53	1.91	0.025
Post-Test	53	2.00	

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As shown in Table 3, the findings of the calculation using the Wilcoxon Test of maternal knowledge about stunting pre (before) and post (after) health promotion using the Stunting Health Information System Prototype show that the p value (Asymp. Sig. (2-tailed) was 0.046 (p-value <0.05). This result implies a significant difference that could be observed between pre-test and post-test values with the Stunting Health Information System Prototype method. This is evident from the increase in the average pre-test value from 2.92 to the average post-test value of 3.00. The mother's outlook about stunting before (pre) and after (post) health promotion using the Stunting Health Information System Prototype, the p-value (Asymp. Sig. (2-tailed) was 0.025 (p-value < 0.05), highlighting that a meaningful difference exists between the pre-test and post-test values with the Stunting Health Information System Prototype method. This is shown in the increase of the average pretest value of 1.91 to the average post-test value of 3.00.

Table 4. Wilcoxon 3D Pageflip E-Module Test Results

Variable	3D Pageflip E-Module		
	N	Mean	Asymp. Sig. (2-tailed)
Knowledge			
<i>Pre-Test</i>	53	1.62	0.000
<i>Post-Test</i>	53	2.17	
Attitude			
<i>Pre-Test</i>	53	1.40	0.000
<i>Post-Test</i>	53	1.92	

The data from Table 4 shows the findings of the calculation using the Wilcoxon Test of maternal knowledge about stunting before and after health promotion using the 3D Pageflip E Module. The p-value (Asymp. Sig. (2-tailed)) is 0.000 (p-value <0.05), highlighting meaningful difference values. This is shown by the rise in the average pretest value from 1.62 to the average post-test value of 2.17 for maternal knowledge. Similarly, for the mother's attitude about stunting before (pre) and after (post) health promotion with the 3D Pageflip E Module, the p-value (Asymp. Sig. (2-tailed)) is 0.000 (p-value <0.05), suggesting a meaningful correlation between the pre-test and post-test values with the 3D Pageflip E Module method. This is supported by the rise in the average pretest value from 1.40 to the average post-test value of 1.92.

Table 5. Mann Whitney Test Results of Mother's Knowledge and Attitudes About Stunting Using The 3D Pageflip E-Module and The Health Information System Prototype for Monitoring Stunting

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	Group	Changes (<i>Post-test - Pre-test</i>)		
		n	Mean	P-Value
Knowledge	Prototype of Stunting Health Information System	53	0.08	0.000
	3D Pageflip E-Module	53	0.55	
Attitude	Prototype of Stunting Health Information System	53	0.09	0.000
	3D Pageflip E-Module	53	0.53	

As shown in Table 5, the findings of the Mann-Whitney test showed significant differences in the number of scores between providing proactive measures for wellbeing about stunting using the Health Information System Prototype for Monitoring Stunting and the 3D Pageflip E Module in increasing mothers' knowledge and attitudes about stunting, with P-values of 0.000 and 0.000 respectively ($P\text{-value} < 0.05$). Therefore, based on the interpretation of the H_a , it can be inferred that there is a discrepancy between the impact of health awareness promotion using the health information system prototype and the impact of using E-Module on mothers' understanding and attitudes towards stunting preventive measures in South Tangerang.

These data also show that the rise in the level of understanding and outlook of mothers who were given health promotion using the E-Module was greater than in the group given health promotion using the health information system prototype. This is shown through the discrepancies in the average value of the E-Module group. Therefore, it can be concluded that the 3D Pageflip E Module method is more effective than the Stunting Health Information System Prototype method on mothers' knowledge and attitudes about stunting.

DISCUSSION

A. Age

Drawing from the study's result in table 1, characteristics of respondents by age from 106 respondents show that in the Stunting Health Information System Prototype group, most respondents were aged 52-61 years, with 22 respondents (41.5%), and in the 3D Pageflip E Module group, most respondents were aged 32-41 years, with 27 respondents (50.9%).

This study aligns with the study conducted by Saadah et al., (2024) entitled "Prevention and Intervention of Stunting Through Mother's Empowerment", where it was found that the 240 mothers involved mainly were aged 20-35 years old by 219 (94.4%) mothers (Saadah et al., 2024).

A study in Ethiopia found that children who had mothers whose age was above 20 years at giving birth had less risk to experience stunting than children with adolescent mothers.

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Adolescents usually have higher nutritional demands for their growth. Pregnancies during this age group result in competition for nutrients between the mother and the developing fetus. This often leads to impaired child growth, including stunting (Muche & Dewau, 2021).

Reflecting on the description pictured above, the researcher is of the opinion that an individual's cognitive abilities can develop with age, where the older they are, the more knowledge they gain so that it can be applied to everyday life which can be used to prevent stunting.

B. Education

In light of the findings, in Table 2, regarding education of 106 respondents shows that in the Stunting Health Information System Prototype group, 38 respondents (71.7%) had enrolled in high school, over half of the number of participants within the group itself. In contrast, there were 24 participants in the 3D Pageflip E Module group who had accessed high school level of education, representing the majority of the group with 45.3%.

Education is a process to obtain knowledge, skills, values, and attitudes through various types of learning, both through formal and non-formal institutions, in order to support individuals to develop so that they can contribute to everything for the progress of themselves or society (Dr.R.K.Doharey et al., 2023).

A mother's level of education shapes the awareness and perspectives of parents, which subsequently influences decisions related to family planning, healthcare utilization, and access to information about nutrition. Additionally, maternal education plays a critical role in how nutritious foods are prepared, obtained, and chosen for both mothers and their children. These combined factors contribute significantly to reducing the risk of stunting in children (Bhagowalia et al., 2012).

A study in Nepal found that a baby born from an uneducated mother has a higher risk than a baby born from an educated mother (Budhathoki et al., 2020). Parents with limited education are likely to be less able to receive information, while highly educated parents are likely to have behaviors in fulfilling children's nutritional status including making choices for foods and addressing health concerns wisely and correctly (Mirowsky, 2017).

This study aligns with research conducted by Saadah et al., (2024) entitled "Prevention and Intervention of Stunting Through Mother's Empowerment" which showed that most of the mothers have high school education 97 (41.8%) (Saadah et al., 2024).

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As outlined above, the researcher holds the view that the role of education to parents is really important during personal growth, development, and decision-making, especially in children's health problems. With adequate information obtained, parents can do everything that is best to fulfill children's nutritional needs, thereby preventing children from experiencing stunting.

C. Knowledge

The frequency distribution table shows that, before the health promotion, more than half of the 106 respondents in the prototype group of the stunting health information system had good knowledge about stunting, with 49 respondents (92.5%). The result was all 53 respondents had good knowledge about stunting (100%) after receiving health promotion using stunting health information system prototype. The Wilcoxon Test result calculation related to maternal knowledge about stunting before (pre) and after (post) health promotion using the Stunting Health Information System Prototype obtained (Asymp. Sig. (2-tailed)) of 0.046 (p-value <0.05), which signifies a notable difference in values using the Stunting Health Information System Prototype method. This can be seen from the rise in the average pretest value from 2.92 to the average post-test value of 3.00.

The findings of the study regarding the frequency distribution of individuals surveyed based on maternal knowledge about stunting in the 3D Pageflip E Module group before (pre) health promotion indicated that nearly half of the respondents lacked adequate knowledge about stunting, with 25 respondents (47.2%). After (post) health promotion using the 3D Pageflip E Module, more than half of the respondents had adequate knowledge about stunting, with 34 respondents (64.2%). Wilcoxon Test is used to assess maternal knowledge about stunting before (pre) and after (post) health promotion using the 3D Pageflip E Module, with the result as follows: obtained a p-value (Asymp. Sig. (2-tailed)) of 0.000 (p-value <0.05), thus suggesting the 3D Pageflip E-Module method prominently effective in increasing values as evidenced from the rise in the average pre-test value from 1.62 to the average post-test value of 2.17.

This study aligns with Simamora et al., (2023) entitled "Increasing Mothers' Knowledge, Attitudes, and Actions through Stunting-Based Prevention Education AECAS App" which showed that before being given education on the use of Android the knowledge level was in* the poor category as many as 28 people (59.6%), after being given the education regarding stunting based on Android application media given again, the mother's knowledge level increased, namely good for 35 people (74.5%). Based on the results of the analysis, p-value =

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0.000 < 0.05, it can be concluded that there is a significant difference in the knowledge variable between before and after the intervention in the experimental group who were given education using Android application media (Simamora et al., 2023).

Knowledge refers to the understanding, awareness, or familiarity obtained through learning, experience, or study. It includes information, concepts, facts, and skills accumulated over time, enabling individuals to analyze, interpret, and comprehend various aspects of the world.

Knowledge is closely tied to the use of the five human senses. Those five senses are sight, hearing, touch, taste, and smell. These senses serve as the primary channels through which individuals perceive and their interaction with the environment, forming the foundation for experiential learning and understanding. In that sense, knowledge is strongly linked to education, as it is generally assumed that individuals with higher levels of education possess more extensive knowledge and deeper understanding. The mother's knowledge proficiency is essential for the household management, this will influence the mother's approach to selecting food ingredients for the family's consumption according to the explanation (Fitriani & Darmawi, 2022; Mugianti et al., 2018).

Based on Lailiyah et al., (2021) a A mother with limited nutritional knowledge and poor attitudes can significantly impact her toddler's nutritional status and will struggle to select nutritious food ingredients and menus for her child and family. Good, balanced nutrition means that nutrient intake must be in accordance with the body's needs. Malnutrition in toddlers has an impact on brain growth and impaired intelligence levels. This is due to a lack of protein production and a lack of energy obtained from food. Mothers' knowledge and attitudes towards fulfilling nutrition are very important to ensure toddlers receive adequate nutrition and avoid malnutrition, especially to prevent stunting (Lailiyah et al., 2021).

D. Attitude

Based on the frequency distribution table of respondents based on mothers' attitudes about stunting before (pre) health promotion from 106 respondents, it shows that in the prototype group of the stunting health information system, The majority of respondents expressed a favourable attitude about stunting, with 48 respondents (90.6%). After (post) promoting health through the use of the prototype of a health information system for addressing stunting, all respondents had a positive attitude about stunting, with 53 respondents (100%). The calculation results with the Wilcoxon Test of mothers' attitudes about stunting before (pre) and after (post) Health promotion through the use of the Stunting Health Information System prototype System

5 obtained a p-value (Asymp. Sig. (2-tailed)) of 0.025 (p-value < 0.05). This means that a notable difference exists between the post-test and pre-test results. values with the Prototype of the Stunting Health Information System method. This is evident from the rise in the average pre-test value from 1.91 to the average post-test value of 2.00.

5 The findings of the study on the frequency distribution of individuals surveyed based on mothers' attitudes about stunting in the 3D Pageflip E Module group showed that more than 50 % of the individuals surveyed had negative attitudes about stunting before health promotion (32 respondents, 60.4%) and after health promotion, more than half had positive attitudes (49 respondents, 92.5%). The Wilcoxon Test results on mothers' attitudes showed a significant difference between pre and post health promotion using the 3D Pageflip E Module method, with a p-value of 0.000 (p-value < 0.05). This is evident from the increase in the average pretest value from 1.40 to the average post-test value of 1.92.

2 The findings of this study are consistent with Nugroho & Anggraeni (2024) study, which showed that 53 parents the average mother's attitude before 29 fair (54.7%) and after good 25 (47.2%). That the average attitude after being given health education about stunting through the Ceting e-booklet media has increased. The p-value is 0.000 < 0.05, so it can be concluded that there is a difference in attitudes before and after the intervention. So it can also be concluded that providing health education using ceting (prevent stunting) e-booklet media has an influence on attitudes towards stunting prevention in the toddler posyandu in Gunung Wetan Village.

37 Attitude refers to an individual's personal reaction or response to a specific stimulus or certain object, encompassing opinion and emotion (e.g., happy – unhappy, agree – disagree, good – bad), is insightful. The manifestations of attitudes cannot be observed instantly; instead, they can only be inferred from behaviors that are apparent in advance. Attitudes essentially reflect the underlying reactions to stimuli in daily life (Anggraeni et al., 2022; Notoatmodjo, 2010).

5 Good knowledge will create a good attitude. Attitude is an inclination of an individual to respond to a specific stimulus or object in a certain way. Attitude is not an activity or action, but rather a tendency to exhibit behavior, action, or assume a role. Attitudes related to overcoming stunting prevention include mothers' efforts to improve the nutrition of pregnant women by consuming good food, taking iron tablets, and maintaining their health during pregnancy to be protected from diseases (Kristiyanti et al., 2021).

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E. Differences in the Effectiveness of Health Awareness Promotion Utilizing the 3D Pageflip E-Module and Health Information System Prototype for Monitoring Stunting on Mothers' Knowledge and Attitudes Towards Stunting

According to the findings of the Mann-Whitney test, it was discovered that a significant difference existed in the number of scores between providing health promotion about stunting using the 3D Pageflip E Module and the Prototype of the Health Information System for Monitoring Stunting, and in increasing mothers' knowledge and attitudes about stunting with P-values of 0.000 and 0.000 respectively or $P\text{-value} < 0.05$. So according to the interpretation of H_a , it is accepted, or it can be interpreted that there is a difference in the effectiveness of health promotion through the use of the Prototype of the Health Information System for Monitoring Stunting and the 3D Pageflip E Module on mothers' knowledge and attitudes about stunting in South Tangerang.

This data also shows that the increase in the level of mother's attitudes and knowledge who were given health promotion using the 3D Pageflip E Module was greater than in the group given health promotion using the Stunting Health Information System Prototype. This is shown through the variation in the average value of the 3D Pageflip E Module group. As a result, it can be concluded that the 3D Pageflip E Module method is more effective than the Stunting Health Information System Prototype method on the Attitudes and Knowledge of Mothers about Stunting.

Increased knowledge and attitudes are forms of the effects of the results of knowing caused by the respondent's learning process after sensing certain objects and awareness of the evaluation. Health promotion and community empowerment are ways that can be done to prevent stunting because parents' knowledge and attitudes will in turn influence their behavior, use of health-care utilization, and access to information regarding nutrition (Adam et al., 2022; Fitriani & Darmawi, 2022).

Health education is oriented towards changing healthy behavior in a more positive direction. Health education has the main objective of increasing the knowledge of participants or targets regarding health (Abdussamad et al., 2021). Health education media refers to all channels or methods used to deliver information or messages that the communicator aims to share, whether through electronic, digital, print, or outdoor media. These mediums are intended to enhance the target audience's knowledge, ultimately leading to a positive change in their health-related behavior (Gejir et al., 2021). The principle of using digital media, if using interesting media in conveying health information, the audience or community can enjoy quality and valuable

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information studies that are even more varied than direct experience. Thus, the effectiveness and efficiency of learning can be increased to a better level (Hulu et al., 2020; Marlinawati et al., 2023).

Every nation adopts unique approaches to address stunting. In India, stunting and child mortality are managed using *The Lives Saved Tool (LiST)*. This tool has been instrumental in estimating how increasing the coverage of interventions can reduce undernutrition and mortality rates, both nationally and regionally. While LiST has produced national projections with reasonable accuracy, enhancing its functionality for regional applications could make it even more effective (Alderman et al., 2019).

Health education about stunting for mothers can help reduce the incidence of stunting. Health education on preventing stunting can shape respondents' perspectives and actions, aligning with Green's 1991 theory. According to this theory, behavior can be influenced through effective health promotion strategies (Green & Kreuter, 1991). According to Sulistyawati & Widarini (2022) stunting prevention can be achieved by offering education in the form of health education through digital media (such as website articles and YouTube videos) or telemedicine/ electronic health applications like WhatsApp groups. One option for health literacy is the use of e-module applications as educational media, this process emphasizes the role of information, technology, and communication in applying a person's ability to access the process (Parnell, 2018; Sulistyawati & Widarini, 2022).

This study aligns with Nugroho & Anggraeni (2024) study, which showed that there is a difference in knowledge and attitudes before and after the intervention. So it can also be concluded that providing health education using ceting (prevent stunting) e-booklet media has an influence on efforts to increase mothers' knowledge and attitudes towards stunting prevention in the toddler posyandu in Gunung Wetan Village (p-value 0.000 <0.05) (Nugroho & Anggraeni, 2024).

The outcomes of this study are in accordance with Mutmainnah & Musni (2023) the outcomes of previous research that e-modules are effective in increasing the knowledge of pregnant women to prevent and early detection of stunting (p-value 0.000 <0.05). The significant increase in knowledge among the respondents can be attributed to the ability of the E-Module to provide comprehensive and easily accessible information on stunting* prevention. Media in the form of electronic modules can be an option to be developed, considering that most of them also want the presence of these media products. It is undeniable that e-modules can be used to maximize understanding of the dangers of stunting and

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understanding of adequate nutrition for mothers and children independently through video tutorials, and the material contained there-in. In line with that, it is known that as learning materials, e-modules are very suitable to be studied independently by their users, this is in line with their inherent characteristics (Hadianto, 2020; Mutmainnah & Musni, 2023).

Implementing digital health interventions relies heavily on digital literacy, which affects the performance of health-based apps by influencing users' capacity to comprehend and interact with the app's content (Arias López et al., 2023). The impact of educational background on contextual knowledge aligns with the findings of Côté et al., (2020); Korkmaz & Toraman, (2021) underscoring formal education's role in theoretical understanding. Adaptive learning pathways that accommodate these demographic differences can enhance the accessibility and effectiveness of learners (Côté et al., 2020; Korkmaz & Toraman, 2021).

CONCLUSIONS

Based on the research findings using Prototype of Information System regarding Health especially Stunting and 3D Pageflip E-Module, there are differences in knowledge and attitude between the posttest and pretest phases for both stunting health intervention methods. These results also show that the Innovation model using the 3D Pageflip E Module is more effective in improving stunting prevention. This research provides health education for mothers about stunting knowledge and preventive attitudes through the 3D Pageflip E Module, so that it is expected to be used by stakeholders in reducing stunting incidence.

REFERENCE

- Abdussamad, Z., Rosita, E., Alfianto, A. G., Pramana, C., Kristianto, B., Wicaksono, K. E., Solehah, E. L., Wahyuni, W., Linadi, K. E., & Prasetyo, B. (2021). *Promosi Kesehatan: Program Inovasi dan Penerapan*. Media Sains Indonesia.
- Adam, A., Amir, A., Islam, D., & Imran, A. (2022). Knowledge and attitude students through nutrition health education with e-Modul "Against Stunting." *Indonesian Journal of Global Health Research*, 4(1), 203–210. <https://doi.org/10.37287/ijghr.v4i1.911>
- Alderman, H., Nguyen, P. H., & Menon, P. (2019). Progress in reducing child mortality and stunting in India: an application of the Lives Saved Tool. *Health Policy and Planning*, 34(9), 667–675. <https://doi.org/10.1093/heapol/czz088>
- Anggraeni, R., Sansuwito, T. Bin, Aljaber, M. A. A., & Nambiar, N. (2022). EFFECT OF PREVENTIVE MODUL TO IMPROVE KNOWLEDGE AND ATTITUDE TOWARD STUNTING PREVENTION AMONG MOTHERS: LITERATURE REVIEW. *Al Insyirah International Scientific Conference on Health*, 3(1), 274–281. <https://jurnal.ikta.ac.id/aisch/article/view/2363>
- Arias López, M. del P., Ong, B. A., Borrat Frigola, X., Fernández, A. L., Hicklent, R. S., Obeles, A. J. T., Rocimo, A. M., & Celi, L. A. (2023). Digital literacy as a new

Author names dkk / Scientific Periodical of Public Health and Coastal 4(2),2022 , halaman 87-99 (10pt, all caps, Cambria, Normal)

- determinant of health: a scoping review. *PLOS Digital Health*, 2(10), e0000279. <https://doi.org/10.1371/journal.pdig.0000279>
- Bhagowalia, P., Menon, P., Quisumbing, A. R., & Soundararajan, V. (2012). *What dimensions of women's empowerment matter most for child nutrition? Evidence using nationally representative data from Bangladesh*.
- Budhathoki, S. S., Bhandari, A., Gurung, R., Gurung, A., & Kc, A. (2020). Stunting among under 5-year-olds in Nepal: trends and risk factors. *Maternal and Child Health Journal*, 24, 39–47. <https://doi.org/10.1007/s10995-019-02817-1>
- Côté, J., Rouleau, G., Ramirez-Garcia, M. P., Auger, P., Thomas, R., & Leblanc, J. (2020). Effectiveness of a web-based intervention to support medication adherence among people living with HIV: web-based randomized controlled trial. *JMIR Public Health and Surveillance*, 6(2), e17733. <https://doi.org/10.2196/17733>
- Daeng, I. T. M., Mewengkang, N. N., & Kalesaran, E. R. (2017). Penggunaan smartphone dalam menunjang aktivitas perkuliahan oleh mahasiswa fispol unsrat manado. *Acta Diurna Komunikasi*, 6(1). <https://ejournal.unsrat.ac.id/v3/index.php/actadiurnakomunikasi/article/view/15482>
- Dr.R.K.Doharey, Verma, A., Verma, K., & Yadav, V. (2023). *Education : Meaning, definition & Types* (pp. 1–6).
- Fitriani, F., & Darmawi, D. (2022). Hubungan Pengetahuan dan Sikap Ibu dengan Kejadian Stunting pada Balita di Desa Arongan Kecamatan Kuala Pesisir Kabupaten Nagan Raya. *Jurnal Biology Education*, 10(1), 23–32. <https://doi.org/10.32672/jbe.v10i1.4114>
- Gejir, I. N., Kencana, I. G. S., Artawa, I. M. B., & Suanda, I. W. (2021). *Implementasi Proses Pembelajaran dalam Penyuluhan Kesehatan Bagi Tenaga Kesehatan*. Media Nusa Creative (MNC Publishing).
- Green, L. W., & Kreuter, M. W. (1991). *Health promotion planning: an educational and environmental approach*.
- Hadianto, A. (2020). Meta analysis the use of e-modules based on research based learning models. *Journal of Physics: Conference Series*, 1481(1), 12067. <https://doi.org/10.1088/1742-6596/1481/1/012067>
- Hulu, V. T., Pane, H. W., Tasnim, T., Zuhriyatun, F., Munthe, S. A., Hadi, S., Salman, S., Sulfianti, S., Hidayati, W., & Hasnidar, H. (2020). *Promosi kesehatan masyarakat*. Yayasan Kita Menulis.
- Imani, N. (2020). *Stunting Pada Anak*. Yogyakarta: Hikam Media Utama.
- Kemendes RI. (2018). *Laporan Nasional Riskesdas 2018*. Kementerian Kesehatan RI: Badan Penelitian dan Pengembangan Kesehatan. <https://repository.badankebijakan.kemdes.go.id/id/eprint/3514>
- Kemendes RI. (2023). Survei kesehatan Indonesia. *Survei Kesehatan Indonesia*.
- Korkmaz, G., & Toraman, C. (2021). Exploring medical students' readiness for e-learning and knowledge sharing behaviors in emergency remote learning environments during Covid-19. *Journal of Education in Science Environment and Health*, 7(3), 259–268. <https://doi.org/10.21891/jeseh.960141>
- Kristiyanti, R., Khuzaiyah, S., & Susiatmi, S. A. (2021). MOTHER'S KNOWLEDGE AND ATTITUDE ABOUT STUNTING PREVENTION. *Siklus: Journal Research Midwifery Politeknik Tegal*, 10(1), 49–52. <https://doi.org/10.30591/siklus.v10i1.2820>
- Lailiyah, N., Ariestiningih, E. S., & Supriatiningrum, D. N. (2021). Hubungan pengetahuan ibu dan pola pemberian makan dengan kejadian stunting pada balita (2-5 tahun). *Ghidza Media Jurnal*, 3(1), 226–233. <https://doi.org/10.30587/ghidzamediajurnal.v3i1.3086>
- Marlinawati, D. A., Rahfiludin, M. Z., & Mustofa, S. B. (2023). Effectiveness of media-based

Author names dkk / Scientific Periodical of Public Health and Coastal 4(2),2022 , halaman 87-99 (10pt, all caps, Cambria, Normal)

- health education on stunting prevention in adolescents: a systematic review. *AgriHealth: Journal of Agri-Food, Nutrition and Public Health*, 4(2), 102–111. <https://doi.org/10.20961/agrihealth.v4i2.71357>
- Mirowsky, J. (2017). *Education, social status, and health*. Routledge. <https://doi.org/10.4324/9781351328081>
- Muche, A., & Dewau, R. (2021). Severe stunting and its associated factors among children aged 6–59 months in Ethiopia; multilevel ordinal logistic regression model. *Italian Journal of Pediatrics*, 47, 1–10. <https://doi.org/10.1186/s13052-021-01110-8>
- Mugianti, S., Mulyadi, A., Anam, A. K., & Najah, Z. L. (2018). Faktor penyebab anak stunting usia 25-60 bulan di Kecamatan Sukorejo Kota Blitar. *Jurnal Ners Dan Kebidanan (Journal of Ners and Midwifery)*, 5(3), 268–278. <https://doi.org/10.26699/jnk.v5i3.ART.p268-278>
- Mutmainnah, & Musni. (2023). Development Of E-Module To Prevent And Early Detection OF Stunting Against Knowledge Of Pregnant Woman. *Comprehensive Health Care*, 7, 50–59. <https://doi.org/10.37362/jch.v7i1.905>
- Notoatmodjo, S. (2010). Metode Penelitian Kesehatan. Jakarta. In *Jakarta: Rineka Cipta*.
- Nugroho, H. A., & Anggraeni, A. D. (2024). The Effect of E-Booklet: CETING on Maternal Knowledge and Attitude Regarding Stunting at Integrated Health Posts for Toddlers in Gunung Wetan Village, Banyumas Regency. *Proceedings Series on Health & Medical Sciences*, 5, 210–214. <https://doi.org/10.30595/pshms.v5i.989>
- Parnell, T. A. (2018). Health literacy: history, definitions, and models. *Health Literacy in Nursing: Providing Person-Centered Care*. New York: Springer Publishing Company, 3–32. <https://doi.org/10.1891/9780826161734.0001>
- Saadah, N., Khasanah, U., & Yulianto, B. (2024). Prevention and Intervention of Stunting Through Mother's Empowerment. *Proceeding International Conference on Health Polytechnic Ministry of Health Surabaya*. <https://icohpsp.poltekkesdepkes-sby.ac.id/index.php/icohps/article/view/118>
- Simamora, D. N., Lumbantoruan, N., Siregar, N. S. N., & Simamora, M. F. (2023). Increasing Mothers' Knowledge, Attitudes, and Actions through Stunting-Based Prevention Education AECAS App. *Jurnal EduHealth*, 14(04), 346–353. <https://ejournal.seaninstitute.or.id/index.php/healt/article/view/3213>
- Sulistyawati, F., & Widarini, N. P. (2022). Stunting Prevention Efforts During the Covid-19 Pandemic. *Gorontalo Journal of Public Health*, 5(1), 64–71. <https://doi.org/https://hdl.handle.net/10568/153923>
- UNICEF, & WHO, W. (2020). Levels and trends in child malnutrition: key findings of the 2020 Edition of the Joint Child Malnutrition Estimates. *Geneva: World Health Organization*, 24(2), 1–16.
- Wanimbo, E., & Wartiningsih, M. (2020). *Hubungan karakteristik ibu dengan kejadian stunting baduta (7-24 bulan)*. <http://dspace.uc.ac.id/handle/123456789/2643>
- Windasari, D. P., Syam, I., & Kamal, L. S. (2020). Faktor hubungan dengan kejadian stunting di Puskesmas Tamalate Kota Makassar. *AcTion: Aceh Nutrition Journal*, 5(1), 27–34. <https://doi.org/10.30867/action.v5i1.193>
- World Health Organization. (2023). *UNICEF/WHO/The World Bank: Joint child malnutrition estimates (JME)*. World Health Organization. <https://www.who.int/teams/nutrition-and-food-safety/monitoring-nutritional-status-and-food-safety-and-events/joint-child-malnutrition-estimates>

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