



The Use of Technology as a Health Promotion Strategy on Stunting Knowledge in Nursing Students Pasca The Covid-19 Pandemic

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Abstract: According to WHO, the primary causes of stunting in children under five years old include infections, insufficient infant and child feeding practises, and poor maternal health and nutrition. This study aimed to investigate the use of Technology as a health promotion strategy for stunting knowledge in nursing students during the COVID-19 pandemic. This study used an analytic study using a quasi-experimental study. The sampling technique used purposive sampling. The sample in this study was 22 respondents in health university students, with a total population of 45 respondents. The findings revealed that the use of animation-based technology in health promotion can help nursing science students at the Faculty of Nursing and Midwifery of Megarezky University learn more about stunting, including how to provide children with enough nutrition and how to parent stunted children. Animation-based Technology makes information easier to understand and allows for repetition; it has an impact on nursing students' understanding of stunting and how to promote health effectively.

Keywords: Covid-19; Health Promotion; Nursing students; Stunting; Technology

Introduction

Stunting in children under five years old is a problem in developing and impoverished nations worldwide till 2022. This is seen by the high rate of stunting in a number of nations (Taqwin et al., 2023). A nutritional status concern in toddlers, stunting is defined as failing to grow as a result of malnutrition throughout the prenatal and postnatal periods (Mays & Judge, 2020). Stunting may be caused by recurrent infectious infections or chronic malnutrition if the z-score (TB/U) value is less than -2 SD (shortness) (Roudhotun Nasikhah, 2012; Taqwin et al., 2023; Alydrus et al., 2023). Many toddlers in today's society struggle with stunting due to nutritional issues. Stunting affected over 150.8 million children under five globally in 2017, or 22.2% of all children. This figure, while still high, is less than the

32.6 percent stunting rate that existed in 2000. Asia accounted for 55% of the world's stunted toddler population in 2017, with 39% of births occurring in Africa. Among the 83.6 million stunted babies in Asia, South Asia accounted for 58.7% of births, while Central Asia accounted for the remaining 0.9% (Ministry of Health of the Republic of Indonesia, 2018).

Stunting is associated with low birth weight, childhood overweight, anemia in women of reproductive age, exclusive breastfeeding, and wasting (Gordon & Maule, 1989). According to UNICEF, 24 developing Asian and African countries account for 80% of the world's stunted children. Indonesia has the fifth-highest prevalence of stunted children worldwide, behind Pakistan, India, China, Nigeria, and Nigeria. According to data compiled by the World Health Organisation (WHO) on the prevalence of stunting in

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children under the age of five, Indonesia is the country with the third-highest incidence in Southeast Asia/Southeast Asia Regional (SEAR). In Indonesia, children under five years old had an average frequency of 36.4% stunting from 2005 to 2017 (Ibrahim et al., 2021). It has been challenging to prevent and treat stunting in children despite attempts to promote healthy growth (Silvestre et al., 2023). The prevention of infection during pregnancy, the encouragement of breastfeeding, diet diversity, and diet supplementation for children are among the current approaches (Mosites et al., 2017).

Stunting indicates a lack of linear growth and is the most important anthropometric indicator of malnutrition in children as well as the most sensitive assessment of a child's quality of life (Black et al., 2011). There is substantial diversity between socioeconomic groups in almost every low- and middle-income country because the three primary factors that affect a child's development—food, illness, and care—are controlled by social and economic circumstances (Restrepo-méndez et al., 2014; Liem et al., 2019).

Health education can influence the learning process; by providing health education to someone, they can increase their knowledge and improve their behavioral abilities to achieve health (Marpaung et al., 2022; Trisutrisno et al., 2022; Hairuddin et al., 2023; Hairuddin et al., 2023). Providing health education, one of which uses the audiovisual method, is very effective because mothers can repeat and understand what has been explained or what has been conveyed (Fadyllah & Prasetyo, 2021).

Inadequate nutrition, or stunting, can have detrimental effects that can short-term hinder brain and cognitive development, cause physical growth anomalies, and cause metabolic issues in the body (Marlina & Indika, 2022). Reduced academic performance and cognitive function, reduced immunity, which increases susceptibility to sickness, and an increased risk of diabetes, obesity, heart and blood vessel disease, cancer, stroke, and old age incapacity are some of the long-term detrimental impacts. In addition to inadequate economic productivity brought on by subpar work quality (Ministry of Health RI, 2016). Because toddler stunting may hamper a child's physical and mental development, it requires specific treatment.

Nowadays, Technology is developing more widely and quickly, enabling a greater number of people to benefit from the many conveniences that have brought it (Nurhikmah et al., 2021; Sasabone et al., 2022; Muhammad et al., 2022; Sujarwo et al., 2023). Health information technology can raise the standard and effectiveness of medical care (Aramico et al., 2020). Increased adherence to treatment standards or recommendations, improved supervision and monitoring, and a decrease in treatment procedure

errors are three main benefits to the quality demonstrated. Preventive health initiatives are the primary area for development (Chaudhry et al., 2016). Parents can greatly benefit from using Android-based applications in their nurturing and caregiving of their children. Therefore, in order to understand how app usage affects stunting prevention over a longer period and how it affects changes in toddlers' nutritional status, more research is required (Friska & Andriani, 2022).

Information processing theory states that information enters the human information system through written materials, problems to be solved, or events and then exits with output that can be stored in long-term memory, motor behaviors, or decision-making (Miller, 2012 in Suryanto et al., 2022).

Some research results support this research, stating that the use of audiovisuals in health education can improve mothers' understanding of how to care for children who are stunted or have chronic malnutrition. The audiovisual content regarding stunting was disseminated through a variety of channels, including web videos, TV ads, health education, and education classes. The video ran for almost six minutes (Fadyllah & Prasetyo, 2021). the availability of an app for Android that prevents stunting. Innovation can facilitate public health monitoring, education, and counseling of healthcare professionals (Friska & Andriani, 2022).

Furthermore, living in an unhealthy environment can result in stunting in children (Torlesse et al., 2016), and research findings from 2017 revealed that 16.8% of new pupils entering elementary or junior high school had stunting (Olsa et al., 2017). TikTok is the most effective social media platform for changing target knowledge, but Instagram is the most effective platform for changing target attitudes and behaviors. The research's conclusions are highly strategic, advantageous to society, and broadly applicable (Suryanto et al., 2022).

Method

The study used a quasi-experimental design with one group pre-test and post-test. Quasi-experimentation is a type of experimental research in which respondents are not randomly assigned and the researcher is unable to control the variables under study. A pretest-posttest design was used in this quasi-experimental investigation. At Megarezky University, the study was carried out. Twelve weeks passed during the trial. Nursing students comprised the study population. Twenty-four respondents make up the sample. Using a sequential sampling technique, the sample is chosen. Data were obtained for both the pretest and posttest.

What the respondent knows about preventing stunting is the variable that is measured.

The pre-test is the first step in the study flow. Respondents complete a questionnaire measuring their knowledge, attitudes, and behaviours linked to stunting. They are also asked to select the technology-based animation media that they would use to listen to intervention content. Results of the knowledge measurement are categorized as good, sufficient, or bad depending on whether the respondent's answers have a value of ≥ 76 , $50-75$, or ≤ 50 . An animation technology media that included information on preventing stunting was the intervention that was deployed. An examination including twenty-one statements was utilized to gauge the participants' understanding of stunting prevention.

A pretest and a posttest utilizing the same questionnaire are used to gauge knowledge. On the final day, the posttest was measured, and the pretest was administered during the first meeting. Nursing students receive materials about stunting prevention as part of their health education through animation technology. This 8-minute and 12-second animation was created entirely by the creator herself, utilizing captivating images or illustrations. Employing SPSS version 26, the analysis is both univariate and bivariate.

Results and Discussion

This study used a pretest and posttest to examine variations in respondents' knowledge regarding stunting prevention through animation-based technology media interventions among nursing students at Megarezky University. Forty-five responses were selected from nursing students of Megarezky University. The study's findings demonstrated there was 58.64% as mean score in pretest control group and 58.64 as mean score in pretest of experimental group. While there was increase in posttest of 59.55 as mean score in posttest of control group. And the mean score of posttests in experimental group was 70.23.

The statistical test findings showed a considerable value. As a result, both before (pretest) and after (posttest), the animation-based technology media intervention greatly improved the respondents' knowledge of stunting prevention. Between the pretest and posttest, there was a drop in the knowledge of respondents in the "sufficient" and "poor" groups. There was a noteworthy rise from the pretest to the posttest as well, according to the mean value. The results of the statistical test likewise revealed a highly significant value.

Table 1. The results of pretest in experimental group and control group values

		PreTest Control	PostTest_Control	PreTest_Experiment	PostTest_Experiment
N	Valid	22	22	22	22
	Missing	0	0	0	0
Mean		58.64	59.55	c	70.23
Std. Deviation		10.372	9.501	9.247	9.060

Moreover, the pretest provides a more accurate assessment of the respondents' increased knowledge than the posttest, the observable rise in the posttest may be attributed to respondents' repeated exposure to

knowledge about stunting prevention through technology-based animation, which helps them retain and recall the material.

Table 2. Value of Normality Test

	Statistic	Kolmogorov-Smirnov ^a		Shapiro-Wilk		
		df	Sig.	Statistic	df	Sig.
PreTest_Control	0.189	22	0.040	0.954	22	0.372
PostTest_Control	0.138	22	0.020	0.942	22	0.221
PreTest_Experiment	0.187	22	0.045	0.951	22	0.335
PostTest_Experiment	0.191	22	0.036	0.916	22	0.063

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 2 showed that pretest_control had a significant value of $0.040 > 0.05$ then posttest_control had a significant value of $0.200 > 0.05$. Next,

posttest_experimental had a significant value of $0.045 > 0.05$ and posttest_experimentak had a significant value of $0.063 > 0.05$. Therefore, data were normal distribution.

Table 3. Value of Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Students' Achivement	Based on Mean	0.146	1	42	0.705
	Based on Median	0.143	1	42	0.708
	Based on Median and with adjusted df	0.143	1	41.980	0.708
	Based on trimmed mean	0.127	1	42	0.724

Table 3 showed that students achievement the same variant in analyzing data. Therefore, data were including control and experimental class had a homogeneity. significant value of $0.705 > 0.05$. It meant that data had

Table 4. Results of Independent Samples Test

	Levene's test for equality of variances					t-test for equality of means				
	F	Sig	t	df	Sig. (2-tailed)	Mean Difference	Std. err Difference	95% Confidence interval of the difference		
								Lower	Upper	
Equal variances assumed	0.146	0.705	-3.816	42.000	0.000	-10.682	2.799	-16.330	-5.033	
Equal variances not assumed			-3.816	41.906	0.000	-10.682	2.799	-16.331	-5.033	

Table 4 showed that t-test had a significant value of $0.000 < 0.05$. Therefore, this data indicated that there was the effect of on nursing students' understanding of stunting and how to promote health effectively through animation based technology. This study examined differences in respondents' knowledge of stunting reduction through animation-based technology media interventions among Megarezky University nursing students using a pretest and posttest. 45 respondents were chosen from nursing students of Megarezky University.

The results of the study showed that nursing students' pretest scores on the control and experimental groups were moderate. Additionally, there was an increase in the experimental group's and control group's posttest results. The WHO recommends increasing exclusive breastfeeding for the first six months as one of the steps to achieve the WHO Global Nutrition Targets 2025 regarding reducing the number of stunting in children under five years due to the magnitude of the influence of exclusive breastfeeding on children's nutritional status (WHO, 2016).

Therefore, in order to achieve this target, from the results of this study, a management plan for achieving exclusive breastfeeding from health workers can be planned by involving those closest to the mother in terms of breastfeeding in the form of support or motivation so that mothers can enthusiastically breastfeed their children because the failure to achieve exclusive breastfeeding is due to a lack of understanding of the mother about the advantages of breastfeeding so that in practice the mother cannot give exclusive breastfeeding.

Days State of the World's Mothers 2012 states that conditions during the 1000 days of life, or from the time the fetus is in one stomach or when the mother is pregnant until the child is 2 years old, can have an impact on the incidence of stunting. This period is known as the "Windows critical period" because it is during this time that the brain or intelligence develops rapidly. The body grows rapidly, so during this period, pregnant women are not given adequate nutrition, are not given exclusive breastfeeding, and are less nutritious for children, causing the potential for stunting (Alydrus et al., 2023).

Stunting in young children 25-59 months is highly influenced by the mother's nutritional condition, particularly her level of chronic energy shortage. Stunting and wasting are very likely to occur in children born to mothers who suffer from severe malnutrition during pregnancy, especially the intake of macro and micronutrients, as these children will be born with low weights and below-average heights, and the nutritional adequacy rate will not be met by adequate nutritional intake (Oktriyani et al., 2014). SEZ status in mothers with

stunting in toddlers 25-59 months is related based on the results of chi-square analysis; this is due to mothers who suffer from macro and micro malnutrition and suffer from helminthiasis so that mothers are at risk of giving birth to low birth weight babies.

Some results of studies stated that the risk of stunting in children is reduced when there is improved household water, sanitation, and hygiene practices, which may be increased by mothers' exposure to television and the internet. As far as we are aware, this is the first study to use route analysis to examine the relationship between media exposure and stunting (Huo et al., 2022). In order to develop and implement effective interventions, it will be necessary to comprehend the contributions of the various stunting risk factors in order to meet the WHO milestones for reducing stunting. In a complex network of social, family, and environmental factors that affect stunting (Mosites et al., 2017). After many incidents going unnoticed, Indonesia finally united to stop Stunting from taking over the country.

However, along with professional and educational media, we also encounter the digital disruption brought about by political buzzers. This highlights the fact that political decisions are influenced by the government (Daniel Susilo, 2023). Pregnant women in the Wani Health Center's operating area had a considerably higher understanding of stunting prevention in posttest 2, thanks to health education using audiovisual media (Taqwin et al., 2023).

The creation of a model for health promotion centered on preventing stunting Social capital and health promotion strategies have enhanced mother behavior with reference to preventing stunting (Suharto et al., 2020). Mothers' understanding of how to care for children with chronic malnutrition or stunting can be improved by the use of audiovisuals in health education. Stunting-related audiovisual material was disseminated via a variety of channels, including web videos, TV ads, health education, and education programs. The video lasted for five or six minutes (Fadyllah & Prasetyo, 2021).

Animation-based Technology can be a supporting medium for conducting outreach because the information provided is concise and clear, interesting and easy to understand for nursing students, and can also increase a person's knowledge. The advantages of animation-based Technology are easy and effective. The use of animation-based technology media has various types, such as videos, advertisements, animated videos, and graphic videos. This large selection of media can make it easier for participants and prevent participants from getting bored with ordinary counseling, which is carried out using the lecture method using posters and flipcharts. The various types of media available in animation-based Technology are able to provide interesting and concise information about nutrition, diet,

carbohydrate adequacy, good nutrition, and protein, as well as environmental cleanliness that must be carried out by health students so that student knowledge becomes wider and increasing so that they will later provide education to pregnant women about the importance of avoiding stunting.

The impact of providing health education by using audiovisual methods for mothers, namely increasing the provision of food and nutrition for children in accordance with balanced nutrition guidelines, changing mothers' behavior in fulfilling nutrition for children, knowing the importance of providing additional food for children, increasing mothers' knowledge of the importance of food diversity and fruit and vegetable intake, as well as fulfilling protein, which can meet children's nutritional needs in reducing the prevalence of stunting (Fadyllah & Prasetyo, 2021).

While the Indonesian Ministry of Health has utilized digital media as a means of promoting health, the integrated service programs (posyandu) in various regions of the country employ pamphlets and videos to spread information and education on nutrition. This is a result of the dearth of communication resources. Digital media can be used to spread health information to parents, enabling them to give their children the proper care (Aramico et al., 2020).

There are still many people who do not have adequate knowledge about the impacts, causal factors, and how to deal with stunting. Therefore, it is necessary to take the necessary actions regarding stunting, its implications, the urgency of overcoming it, and efforts to tackle stunting at the basic level to prevent action for local communities apart from programs that the government has launched because stunting is an urgent problem that must be addressed by all elements as soon as possible without waiting for anything as a preventive measure (Saputri, 2019).

Moreover, environmental sanitation is influenced by communication, and frequent socialization and education raise the standard of a healthy environment. Health professionals' disposition and oral communication skills aid in the community's comprehension; as a result, their behavior and attitude complement the role that is being played (Sazali et al., 2023).

Health education can influence the learning process; providing health education to someone can increase knowledge and improve behavioral abilities to achieve health. Providing health education, one of which uses animation technology methods, is very effective because mothers can repeat and understand what has been explained or what has been conveyed.

Furthermore, the results of the study showed that nursing students' pretest scores on the control and experimental groups were moderate. Additionally, there

was an increase in the experimental group's and control group's posttest results. Animation-based technology facilitates repetition and makes information easier to absorb; it affects nursing students' comprehension of stunting and effective health promotion.

Conclusion

Health promotion using animation-based Technology can increase the knowledge of nursing science students at the Faculty of Nursing and Midwifery, Megarezky University, regarding stunting knowledge in fulfilling nutrition for children with stunting and parenting patterns for stunted children. There is an influence of the use of animation-based technology to increase nursing students' knowledge about stunting, which is effective in carrying out health promotion due to the ease of receiving information and the ability to repeat information. Health workers need to educate mothers about the importance of providing balanced nutrition, a good diet, and good environmental hygiene, especially for mothers with stunted children. As a recommendation for alternative policies and action plans in efforts to prevent and control stunting by increasing public awareness of the impact of stunting on children's intelligence through outreach, increasing community empowerment, and utilizing Technology.

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Conflicts of Interest

There is no interest conflict in this research. In this research.

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