http://ejournal.seaninstitute.or.id/index.php/healt
Jurnal Eduhealt, Volume 14, No. 04 2023
E-ISSN. 2808-4608

Increasing Mothers' Knowledge, Attitudes, and Actions through Stunting-Based Prevention Education AECAS App

Debora Natalia Simamora[1], Nova Lumbantoruan[2], Nova Sontry Node Siregar[3], Mayes Felda Simamora[4]
[1,2,3,4]Prodi Kebidanan Sekolah Tinggi Ilmu Kesehatan Kesehatan Baru

ARTICLE INFO

Keywords:
Knowledge, Attitudes, Actions, Stunting prevention, Android Applications

ABSTRACT

Babies and toddlers in Indonesia often experience stunting, with around 21.6% of them affected by this condition. In North Sumatra, the prevalence reached 21.1%, while in Humbang Hasundutan, the figure reached 29.6%. A survey in Simarigung Village found that 27 toddlers were stunted. This study aims to evaluate the benefits of stunting prevention education based on the AECAS application, with a focus on increasing the knowledge, attitudes, and actions of mothers in Simarigung Village. This research used a quasi-experimental design with pre-test and post-test, involving 47 mothers of babies and toddlers using Android cellphones. The sampling method used was total sampling, and a paired t-test was carried out to analyze the results. The research results show a difference between the pretest and posttest with a confidence level of 95%. In the knowledge variable, there was a significant increase (p-value=0.000 < 0.05) with a Mean Paired Difference of 0.34. The attitude variable also showed a significant increase (p-value=0.000 <0.05) with a Mean Paired Difference of 0.36. Likewise, the action variable showed a significant increase (p-value = 0.000 < 0.05) with a Mean Paired Difference of 0.27. The results of the normality test show that the data for the Knowledge, Attitude, and Action variables are normally distributed. Therefore, it is hoped that respondents can increase their understanding of preventing stunting in infants and toddlers thanks to the education provided through the AECAS application

Email :
deborasimamora739@gmail.com
nova.lumbantoruan@student.stikeskb.ac.id
nova.siregar@stikeskb.ac.id
mayes.simamora@stikeskb.ac.id

1. INTRODUCTION

Stunting is a condition where the body is shorter than those of the same age due to the nutritional needs of toddlers not being met over a long period of time, starting from pregnancy to 24 months of age. Stunting toddlers are toddlers whose height is less than the WHO Child Growth standard deviation <-2 (z-score TB/U) (Radjamuda, 2022). Stunting is a condition of failure to grow and develop in children under five due to chronic malnutrition so children are shorter for their age. These nutritional deficiencies will only appear when the child is 2 years old. Stunting is caused by various factors including improper childcare practices, limited health services, and lack of access to nutritious food, clean water, and sanitation (Saadah, 2020).

In 2020, globally, around 22% or 149.2 million children under the age of 5 experienced stunting, 45.4 million were underweight, and 38.9 million were overweight (UNICEF, 2021). The world has made progress in nutrition but major challenges remain. There has been a global decline in stunting (high to low age ratio) between 1990 and 2018, the prevalence of stunting in children under 5 years decreased from 39.2% to 21.9%, or from 252.5 million to 149.0 million children, although progress has been much slower in Africa and Southeast Asia (WHO, 2020).

The World Health Organization (WHO) in 2022 stated that the incidence of stunted toddlers in the world would reach 22.3% or 148.1 million toddlers. In Southeast Asia, the highest prevalence of

stunting data is in Timor Leste with a percentage of 48.8%, Indonesia with a percentage of 31.8%, Laos with a percentage of 30.2%, Cambodia with a percentage of 29.9%, the Philippines with a percentage of 28.7%. , and last is Singapore with a percentage of 2.8%. The prevalence of stunting data in Indonesia according to SSGI (Indonesian Nutritional Status Study), in 2022 stunting data is 21.6%, this data has decreased by around 2.8% from 2021 to around 24.4%. The prevalence of stunting in North Sumatra (North Sumatra) based on the 2022 Indonesian Nutrition Status Data (SSGI), stunting data is 21.1%. Of the 33 districts/cities in North Sumatra, there are 5 districts that have stunting rates above 30%, South Tapanuli Regency with a Stunting prevalence of 39.4% topped 1st place out of 33 regencies in North Sumatra, Padang Lewas Regency with a stunting prevalence of 35.8%, Mandailing Natal Regency with a prevalence of 34.2%, West Pakpak Regency with a prevalence of 30.8%, Central Tapanuli with a prevalence of 30.5%, then in 6th place, the prevalence of Humbang Hasundutan Regency is 29.6%, up 2.9% from 2021 (26.7%).

In April 2023, it was found that the prevalence in the Saitnihuta Community Health Center area was 20% of toddlers experiencing stunting. Of the 1,252 toddlers measured, there were 247 stunted toddlers in the Saitnihuta Community Health Center area. In Purba Dolok Village there were 34 toddlers, in Lumban Purba Village there were 37 toddlers, in Simarigung Village there were 27 toddlers, in Saitnihuta Village there were 52 toddlers, in Aek Lung Village there were 17 toddlers, in Purba Manalu Village there were 30 toddlers, in Pakkat Village there were 20 toddlers, in Lumban Tobing Village there were 30 toddlers. 13 toddlers, and in Sileang Village as many as 17 toddlers experienced stunting.

Research conducted by Nurfajriyani, I., & Andhini, C. S. D. (2022), through the Child Stunting Prevention Education Application (AECAS) is a strategy developed to prevent stunting based on an Android application, this research analyzes the effectiveness of implementing the application as an educator to increase knowledge and attitude towards stunting prevention and this application has proven to be effective in preventing stunting by increasing perceptions of stunting prevention so that the test results from the research show that from 68 respondents it is known that the sig. (2-tailed) is 0.0001<0.05, so it is concluded that there is a significant difference in effectiveness between the use of the AECAS application method.

Research conducted by Fitriami, E. alaresa, A. V. (2022) indicates that through an Android application the effect of stunting education on increasing mothers' knowledge and attitudes at the Tenayan Raya Community Health Center, Pekanbaru is a relevant study in efforts to increase mothers' awareness about stunting and change their attitude towards this issue. In this context, the Android application is a comprehensive program that has the potential to positively influence knowledge levels and serve as an efficient tool in nutrition education about stunting, which in turn will help improve stunting prevention efforts. This research was conducted at the Tenayan Raya Community Health Center, Pekanbaru, involving 54 respondents as samples. The research results show that stunting education through the Android application has a significant impact on increasing knowledge and changing mothers' attitudes at the Tenayan Raya Community Health Center, Pekanbaru.

Based on an initial survey conducted by the author in March 2023 at the Simarigung Village Health Post, which is the Working Area of the Saitnihuta Health Center, Doloksanggul District, Humbang Hasundutan Regency in 2023, it was found that there were 47 mothers with a total of 81 toddlers in the village. Of the number of toddlers, 27 of them experienced stunting. Counseling will be given to 47 mothers of a total of 81 toddlers using the AECAS Application, by conducting a pre-test before counseling and a post-test after counseling. This research aims to evaluate and measure the impact of stunting prevention education based on the AECAS application on increasing knowledge, changing attitudes, and actions taken by mothers in Simarigung Village, Doloksanggul District, Humbang Hasundutan Regency in 2023. Thus, this research aims to assess the effectiveness of the AECAS application as an outreach medium in increasing mothers' understanding and actions related to preventing stunting in toddlers in the area.

2. METHOD

This type of research uses quasi-experimental methods, also known as Quasy Experiments. This method aims to test hypotheses related to cause-and-effect relationships by manipulating

independent variables and observing changes that arise as a result of this manipulation. In this research, a one-group pre and post-test research design was used, which means this research involved a previous experiment (pretest) and after the experiment (post-test) with one group of subjects. This research adopts a quasi-experimental approach because it is not possible or ethical to exercise complete control over the independent variables. Therefore, this research focuses more on measuring changes that occur after providing stunting prevention education using the AECAS application to groups of mothers in Simarigung Village. Thus, this research was designed to identify the concrete impact of this education on the knowledge, attitudes, and actions of mothers regarding the prevention of stunting in toddlers in the region.

Table 1 Quasi-experimental research design with two pretests and a posttest in the control group (Notoatmodjo, 2018)

Pre test	Treatment	Posttsest
Q1 ⟶	X ⟶	Q1

X : Treatment is a form of treatment (intervention) given to a group of experiments.
O1: Pretest, namely measurements carried out before intervention (treatment).
O2: Posttest, namely measurements carried out after intervention (treatment).

In this study, mothers with toddlers were selected, which began with observation through an initial questionnaire (pre-test). This research was carried out in Simarigung Village, which is part of the work area of the Simarigung Village Health Post in Doloksanggul District, Humbang Hasundutan Regency in 2018. This research took place during the period March to May 2023, starting from the initial survey stage, data collection, research implementation, data processing, to making the final report. The population in this study was 47 mothers and the sample was the entire population. The sampling technique in this research was carried out using the total sampling method, where the entire population that met the criteria was selected to be part of the research sample. Data collection was carried out using a field survey by directly interviewing mothers who had toddlers. In the research process, the author administered a questionnaire to respondents by visiting mothers who had toddlers and asking them about the extent to which they knew about, attitudes and actions towards Stunting Prevention in Toddlers, data was collected by direct interviews and filling out questionnaires. Data collection was carried out for 3 days and education was given directly regarding the use of the Aecas application as a means of education to prevent stunting, and after being given education regarding the use of the Aecas application, mothers were given a period of 1 week to understand and use the application, then the researchers again ran the questionnaire as a measuring tool. the level of educational utilization (post-test) where data collection was carried out for 3 days.

3. RESULTS AND DISCUSSION

Univariate results

It is a data analysis technique that simplifies or facilitates the presentation of data, according to the variables studied. The variables in this research are knowledge, attitudes, and actions and the effectiveness of animated counseling about stunting prevention distributed in a frequency distribution table.

Description of Data Resulting from Mother's Knowledge about Stunting.

The implementation of knowledge data collection begins with the activity of collecting data on respondents' initial abilities, where the mother as the respondent is given work on pretest questions, while collecting data from research results uses the results of work on posttest questions. Data collection on mothers was carried out during 2 meetings.

Table 2. Results of Knowledge Variables for Mothers of Toddlers Before and After Receiving Education through Android Application Media

Knowledge level	Pre Test		Post Test	
	N	%	N	%
Good	19	40,4	35	74,5
Not good	28	59,6	12	25,5
Total	47	100	47	100

Based on Table 2 above, it can be seen that before being given education on the use of Android (Pre Test) the knowledge level was in the good category as many as 19 people (40.4%), and 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 (Post Test), the mother's knowledge level increased, namely good for 35 people (74.5%) and poor for 12 people (25.5%).

Description of Data Results of Mother's Attitudes Regarding Stunting

Data collection on attitude variables in the experimental group was carried out during 2 meetings. Based on the data obtained from this research, a table of maternal attitudes toward stunting prevention was created as follows.

Table 3. Results of variable attitudes of mothers who have toddlers before and after providing education based on Android application media

Attitude Level	Pre Test		Post Test	
	N	%	N	%
Positive	17	36,2	32	68,1
Negative	30	63,8	15	31,9
Total	47	100	47	100

Based on Table 3 above, it can be seen that the attitude variables of the 47 respondents before the counseling (Pre Test) were positive, namely 17 people (36.2%), and 30 people (63.8%) had negative attitudes. After being given education, mothers' attitudes towards preventing stunting increased, namely positive attitudes by 32 people (68.1%), and negative attitudes by 15 people (31.9%).

Description of data resulting from maternal actions regarding stunting

Data collection for action variables in the experimental group was carried out during 2 meetings. Based on the data obtained from this research, a table of maternal actions to prevent stunting was created as follows.

Table 4. Results of Action Variables for Mothers with Toddlers Before and After Providing Education Based on Android Application Media

Action Level	Pre Test		Post Test	
	N	%	N	%
Good	29	61,7	42	89,4
Not good	18	38,3	5	10,6
Total	47	100	47	100

Based on Table 4 above, it can be seen that the action variables of the 47 respondents before the counseling (Pre Test) were good actions were 29 people (61.7%), and bad actions were 18 people (38.3%). After being given education, mothers' actions towards preventing stunting increased, namely good actions by 42 people (89.4%), and bad actions by 5 people (10.6%).

Bivariate results

After carrying out univariate analysis, further analysis was carried out in the form of bivariate analysis. The data obtained from the variables is categorical data, tested using a statistical test, namely Paired Samples Statistics T-Test, which aims to test the relationship between the average differences of the 2 paired groups in the research, namely pre-test and post-test data in the experimental group. The requirement for carrying out the Paired Samples Statistics T-Test test is the Paired Samples Statistics T-Test to carry out a normality test.

Data Normality Test Results for Pre-test Group and Post-test Group

Data processing The benefits of education using Android application media with the Pre-test and Post test groups using the Paired T-Test statistical test with a significance level of 5%, but before carrying out this test, data normality testing was first carried out using the one-sample Kolmogorov-Smirnov test The test results for data normality are as follows.

Table 5 Normality Test Results for Data on Knowledge, Attitudes, and Actions Before and After Education

Variable	Kolmogorov-Smirnov Z		Information
	Df	Asymp.sig. (2-ailed)	
Knowledge	47	0.004	Normal
Attitude	47	0.012	Normal
Action	47	0.000	Normal

Based on the results of testing the knowledge variable using the Kolmogorov-Smirnov test, a significant number (p) = 0.004 < 0.05 was obtained, so the data was declared normally distributed. Furthermore, the results of attitude testing using the Kolmogorov-Smirnov test showed a significant number (p) = 0.012 < 0.05, so the data was declared normally distributed. Finally, the Action variable was tested using the Kolmogorov-Smirnov test and found a significant number (p) = 0.000 < 0.05, so the data was declared normally distributed.

Paired Sample T-Test Results

The results of the normality test show that the data is normally distributed so the research meets the requirements for using the t-test so that hypothesis testing is carried out using non-parametric statistics. The hypothesis test used is the paired samples T-Test with a confidence level of 95% and an error rate of 5%. The Paired Sample T-test was carried out to evaluate the average difference between the two paired groups in this study, namely pre-test and post-test data in the experimental group.

Table 6 Paired T-Test Results of Mother's Knowledge Score Regarding Stunting Prevention Before and After Education.

Variable	Paired Differences		T	Df	Sig. (2-tailed)
	Mean	Std.Deviation			
pre test knowledge – post test knowledge	-.34043	.52239	-4.468	46	.000

Based on table 6 above, states that the Mean Paired Differences value is -.34043. This value shows the difference between the average pre-test knowledge results and the average post-test knowledge results or 0.4043 – 0.7447 = -0.34043. From this data, it means that there is a change in the average pre-test and post-test knowledge scores, namely an increase of 0.34. Based on the results of the analysis, p-value = 0.000 <0.05 or count = - 4.468 > table 2.013, 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.

Table 7 Paired T-Test Results of Mothers' Attitude Scores Regarding Stunting Prevention Before and After Education

Variable	Paired Differences		T	Df	Sig. (2-tailed)
	Mean	Std.Deviation			
pre test attitude – post test attitude	-.36170	.51526	-4.246	46	.000

Based on table 46 above, states that the Mean Paired Differences value is -.36170. This value shows the difference between the average pre-test attitude results and the average post-test attitude results or 0.3617– 0.7234 = -0.36170. From this data, it means that there is a change in the average pre-test and post-test attitude scores, namely an increase of 0.36. Based on the variable results, p-value = 0.000 <0.05 or count = - 4.246 > table 2.013, it can be concluded that there is a significant difference in attitude variables between before and after the intervention in the experimental group who were given education using Android application media.

Table 8 Paired T-Test Results of Mothers' Action Scores Regarding Stunting Prevention Before and After Education

Variable	Paired Differences		T	Df	Sig. (2-tailed)
	Mean	Std.Deviation			
pre test action – post test action	-.27660	.53981	-3.513	46	.001

Based on table 8 above, states that the Mean Paired Differences value is -.27660. This value shows the difference between the average pre-test action results and the average post-test action results or 0.6170–0.8936 = -0.27660. From this data, it means that there is a change in the average value of the pre-test and post-test actions, namely an increase of 0.27. Based on the results of the analysis, p-value = 0.000 <0.05 or count = - 3.513 > table 2.013, it can be concluded that there is a significant difference in the action variables between before and after the intervention in the experimental group which was given education using the AECAS application media.

Table 9 Frequency Test Results of Mothers Using Applications Regarding Stunting After Education Application

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not utilized	3	6,4	6,4	6,4
	Take advantage of	44	93,6	93,6	100,0
	Total	47	100,0	100,0	

Based on table 9 above, states that the value of the benefits of using the Aecas media application is that there are 44 mothers who use the application (93.6%), and there are 3 mothers who do not use the application (6.4%).

Discussion

The Relationship between Stunting Prevention Education Based on AECAS Application Media in Increasing Mothers' Knowledge Regarding Stunting Prevention

The results of research using paired t-test analysis showed a difference in the average results of pre-test and post-test knowledge of respondents' knowledge in preventing stunting in Simarigung Village in 2023 (p-value = 0.000), From the results of data in Table 5, it is known that before and after conducting an intervention in the form of education for mothers using an Android application, the mean paired differences result was -0.34043, this shows that there is a difference between the average knowledge results after the pre-test and post-test of respondents. towards preventing stunting, and there was an increase of 0.34 with df=47. So it can be concluded that there was a significant increase in respondents' knowledge after receiving treatment and data processing. The results of a study conducted by Nurfajriyani, I., & Andhini, C. S. D. (2022) show that knowledge is related to stunting prevention based on Android application media. Knowledge is the result of someone's knowledge which is focused on an object so that it is developed into knowledge that is owned by everyone.

The Relationship between Stunting Prevention Education Based on AECAS Application Media in Improving Mothers' Attitudes in Efforts to Prevent Stunting

The results of research using paired t-test analysis showed a difference in the average results of pre-test and post-test attitudes towards respondents' attitudes towards preventing stunting in Simarigung Village in 2023 (p-value = 0.000). From the results of data in Table 6, it is known that before and after conducting an intervention in the form of education for mothers using the Aecas application, the mean paired differences result was -.36170, this shows that there is a difference between the average attitude results after the pre-test and post-test. respondents regarding stunting prevention, and there was an increase of 0.36 with df=47. So it can be concluded that there was a significant improvement in respondents' attitudes after receiving treatment and data processing. The research results showed that the majority of mothers had a positive attitude toward preventing stunting. Data collection was carried out using questionnaires and observations and taking data using total sampling. From these results, mothers who have children under five have a positive attitude. The results of a study conducted by Fitriami, E. Alaresa, A. V. (2022) show that attitudes are related to stunting prevention based on Android application media. Attitude is a pattern of behavior, anticipatory readiness to adapt to controlled social situations.

The Relationship between the Benefits of Stunting Prevention Education Based on the AECAS Application Media to Increase Mothers' Actions in Stunting Prevention

The results of research using paired t-test analysis showed a difference in the average results of pre-test and post-test actions regarding respondents' actions in preventing stunting in Simarigung Village in 2023 (p-value = 0.000), From the results of the data in Table 4.7, it is known that before and after conducting an intervention in the form of education for mothers using an Android application, the mean paired differences result was -.27660, this shows that there is a difference

between the average results of the actions after the pre-test and post-test. respondents regarding stunting prevention, and there was an increase of 0.27 with df=47. So it can be concluded that there was a significant increase in respondents' actions after receiving treatment and data processing. Action is a form of open reaction but can be a form of preposition of an action or behavior which is also a form of closed reaction. The results of a study conducted by Hadi, S. P. I., & Rahayu, T. B. (2022) show that actions related to stunting prevention are based on the aecas application media. In this case, some respondents had actions in the good category, this may be due to the existence of supporting factors or encouraging mothers to prevent stunting.

4. CONCLUSION

Based on the results of research regarding the Benefits of Stunting Prevention Education Based on the Aecas Application Media in Simarigung Village, Doloksanggul District, Humbang Hasundutan Regency in 2023, it can be concluded that there have been significant changes in mothers' knowledge, attitudes and actions after receiving education using the AECAS application. The pre-test and post-test results show a significant increase in these three variables. Thus, the AECAS application has proven to be effective in increasing mothers' understanding and behavior regarding preventing stunting in toddlers in the region. As a suggestion, it is hoped that respondents can continue to improve the application of their knowledge, attitudes, and actions by using the AECAS application media in an effort to prevent stunting. For educational institutions, the results of this research can be used as additional references in developing learning materials in libraries. Apart from that, monitoring and control by health workers in Simarigung Village needs to be increased, and education regarding stunting prevention must continue to be carried out, not only for mothers of toddlers but also for the community in general. In this way, it is hoped that it can reduce the stunting rate among children under five and improve the welfare of the people in the area.

REFERENCES

[1] Adila, W. P. (2023). *Faktor-Faktor Yang Berhubungan Dengan Kejadian 2022* (Doctoral dissertation, *Stunting Pada Anak Di Nagari Aua Kuning Pasaman Barat Tahun* Universitas Andalas).

[2] Fitriami, E., & Galaresa, A. V. (2022). Edukasi pencegahan stunting berbasis aplikasi android dalam meningkatkan pengetahuan dan sikap ibu. *Citra Delima: Jurnal Ilmiah STIKES Citra Delima Bangka Belitung*, *5*(2), 78-85.

[3] Fadilah, A., Nurzakiyah, KR, Kanya, NA, Hidayat, SP, & Setiawan, U. (2023). Pengertian Media, Tujuan, Fungsi, Manfaat dan Urgensi Media Pembelajaran. *Jurnal Penelitian Mahasiswa* , *1* (2), 17-01.

[4] Hadi, S. P. I., & Rahayu, T. B. (2022). Pengembangan Aplikasi Sahabat Bunda| Cegah Stunting Berbasis Android Sebagai Upaya Pencegahan Dini Stunting. *Embrio: Jurnal Kebidanan*, *14*(1), 84-96.o0

[5] Hikmatul, Khoiriyah (2022). Faktor kejadian stunting pada balita : *systematic review.* https://journals.stikim.ac.id/index.php/jikm

[6] Ina Kuswanti1, Salsabila Khairani Azzahra (2022). hubungan pengetahuan ibu tentang pemenuhan gizi seimbang dengan perilaku pencegahan stunting pada balita. https://stikesmus.ac.id/jurnal/index.php/JKebIn/index

[7] Munir, Z., & Audyna, L. (2022). Pengaruh edukasi tentang stunting terhadap pemgetahuan dan sikap ibu yang mempunyai anak stunting. *Jurnal Keperawatan Profesional*, *10*(2), 29-54.

[8] Nurfajriyani, I., & Andhini, C. S. D. (2022). The Effectiveness of Educational Applications to Prevent Stunting Children (AECAS) on Perceptions of Stunting Prevention. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, *5*(4), 29069-29076.

[9] Notoatmojo, P.D.(2018). *Metodologi Penelitian Kesehatan.* Jakarta: Rineka Cipta.

[10] Radjamuda, N., & Khofiyah, N. (2022). PENYEBAB STUNTING DI ASIA. *Jurnal Kesehatan*, *13*(1), 008-020.

[11] Saadah, N., & Kp, S. (2020). *Modul Deteksi Dini Pencegahan dan Penanganan Stunting*. Scopindo Media Pustaka.

[12] Sari, N. W., Akbar, H., Masliah, I. N., Kamaruddin, M., Sinaga, E. S., Nuryati, E., & Chiani, S. H. (2021). *Teori dan Aplikasi Epidemiologi Kesehatan*. Zahir Publishing.
[13] UNICEF.2020.Joint Child Malnutrition Estimates.https://data.unicef.org/resources/joint-child-malnutrition-estimates-interactive-dashboard/
[14] WHO.2021. "Tingkat dan tren malnutrisi anak: UNICEF/WHO/The World Bank Group estimasi malnutrisi anak bersama: temuan utama edisi 2021". Diakses dari https://www.who.int/publications/i/item/9789240025257
[15] Yuseran, Y., Suryanto, D., Basid, A., & Negara, C. K. (2022). The Effect of Community Nutrition Education Innovation Based on Social Media Marketing on Knowledge, Attitude, And Behavior To Prevent Stunting. *Jurnal eduhealth*, *13*(02), 531-544.