

Original Article**Stunting Care Application (SCATION) and Its Effect in Early Detection of Stunting in Toddlers in Langkat District**

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Abstract:

Introduction: According to WHO data from 2020, 144 million children around the world had stunted growth in 2021. Based on the results of the Indonesian Nutrition Status Study (SSGI), Ministry of Health, the prevalence of stunting among children under five is 24.4% in 2021. Poor nutrition during pregnancy and the early years of childhood has the terrible side effect of stunting. Children that are stunted may never reach their full height potential, and their brains may never fully mature cognitively.

Methods: This study is quantitative in nature, with an analytic approach and a quasi-experimental design with a pre-post test design by using scation (*stunting care application*). The population in this study were parents who had children aged 0–5 months, with a total sample of 212 mothers.

Result: The median value of knowledge is 55.0 and 50.0 for skills after being given an intervention by scation (*stunting care application*), while the median value for the control group is 45.0 for knowledge and 45.0 for skills. The increase in knowledge was 5.0 in the intervention group (scation) and 2.0 in the control group, and there was an increase in the same skills in both groups, namely 5.0 with a p-value of 0.004 for knowledge and 0.007 for skills.

Conclusion: There is an effect of the SCATION application on increasing mothers' knowledge and skills in the early detection of stunting in toddlers

JK-Practitioner2023;28(1-2):25-34**INTRODUCTION**

Inadequate nutrient intake is a long-term malnutrition issue that results in stunting. As a result, the individual may have trouble reaching their full potential in terms of physical and mental development. Poor nutrition during pregnancy and the early years of childhood has the terrible side effect of stunting. Children that are stunted may never reach their full height potential, and their brains may never fully mature cognitively.[1,2]

A child is said to be stunted if his height and body length are minus 2 from the Multicentre Growth Reference Study standard or the median standard deviation of the WHO child growth standard. In addition, the Indonesian Ministry of Health stated that stunting is a child under five with a z-score less than -2SD/standard deviation (stunted) and less than -3SD (severely stunted).[3,4]

Government efforts to reduce the prevalence of stunting include the Sustainable Development Goals (SDGs). The second goal of the SDGs is to end hunger and achieve food security. Adopting better nutrition and sustainable agriculture. Second Objective of Part A of The SDGs include ending hunger, achieving food security and balanced diets, and tackling child stunting. This situation continues in his RPJMN (National Medium) 2020-2024 in Indonesia. [5]A policy that addresses one of the problems associated with stunting (term development planning). Accelerate the reduction of stunting by increasing the effectiveness of specific meticulous measures nutritional intervention.

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Indexed

EMBASE, SCOPUS, IndMED, ESBCO, Google Scholar besides other national and International Databases

Cite This Article as

Pangaribuan IK, Said FM, Rahim SA, Hasan HC, Poddar S, Stunting Care Application (SCATION) and Its Effect in Early Detection of Stunting in Toddlers in Langkat District..JK Pract2023;28(1-2):25-34

Full length article available at jkpractitioner.com one month after publication

Keywords

Stunting Care Application (Scation), Knowledge, Skill, Stunting

One means of intervention to reduce stunting is formation. Stunted areas, including stunted villages. Stunt Locus Village Rural areas within stunted area districts designated as Focus on integrated stunting interventions by multiple sectors, i.e. OPD (regional appropriate organizations), NGOs (non-governmental organizations) and communities, Host a stunting convergence conference to discuss ways to integrate multiple disciplines in a focused effort to reduce stunting and reduce the incidence of stunting. Although there were some Indonesian government efforts to reduce the prevalence of stunting Indonesia's prevalence remains at 14%, below target for 2024. [6,7]

According to World Health Organization statistics from 2020, 144 million children worldwide had stunting in 2021. Of these children, 55% live in Asia, where its prevalence is higher than that of childhood obesity and wasting. Stunting affected 32.6 percent of children under the age of five globally in 2000. According to data from UNICEF, WHO, and the World Bank Group, the rate of stunting has been progressively reducing and is expected to reach 22% in 2020.[3]

Children under the age of five who are stunted are distributed as follows: 27% of all stunted children live in low-income countries, 65% of all stunted children reside in lower-middle-income countries, 8% of all stunted children reside in upper-middle-income countries, and 1% of all stunted children reside in high-income countries.[Based on the results of the SSGI 2021, the national]stunting rate decreased by 1.6 percent per year,] from 27.7 percent in 2019 to 24.4 percent in 2021.[

Stunting in Langkat is 18.23%; it has decreased, but it is not in line with the government's target of 10%. Thus, Indonesia is not able to achieve Millennium Development Goal 4 (reduce child mortality). [9] Based on the preliminary survey, mothers in the Langkat area only bring their children to healthcare centres until they are 1 year old. One reason is that healthcare facilities are so far away, mothers work, and several mothers had picked them up but did not come. So it is necessary to carry out an innovation to create parental independence in the early detection of stunting, and this sanitation application is very effective and relevant to resolving problems in Langkat district. Technology continues to develop at an exponential speed, online platforms are also increasing. The use of technology is used to increase knowledge that can prevent a disease and promote positive behavior change to achieve MDGs4. Government of Indonesia has introduced and implemented M-Health, E-Health such as Hello Doctor for provision of health information and health services, Prima Ku for growth of children and friends of pregnant women to monitor the development of pregnant women. However, limited application on

child health especially in controlling stunting. I chose a health-based application because, based on data from the Ministry of Communication and Information, in 2021, 89% of the Indonesian population will use smartphones, and now health information is already based on digital technology. Therefore, it is call for research stunting care application (SCATION) and it effect for early detection of stunting in toddlers in Langkat Health District

MATERIALS AND METHODS

Samples

The sample in this research is parents who had children under five in the Langkat Health Center Work Area, which is 212 mothers. The matching approach technique will be used to select the sampling technique for respondents, which will be either cluster sampling or probability sampling. With inclusion criteria, parents with children under the age of five who are willing to be respondents, parents with smartphones; with exclusion criteria, toddlers with growth and development disorders, and parents who do not live with the child.

Research Design

This study used a quasi-experimental design because it is a study that provides an intervention with a pre-post-test with a control group design to evaluate the role of the stunting care application (SCATION) versus conventional methods on early detection of stunting in toddlers. This study uses a quasi-experimental design because it has an intervention group and a control group, and there are external variables that cannot be controlled by the researcher.[10]

Stunting care application (SCATION) is an android application that can be used to prevent stunting. In this SCATION application, discussions can be held between the general public, pregnant women, and health workers regarding health information about stunting and there is an alarm in the form of a reminder when parents should bring their children to monitor growth and development to health care facilities. In this SCATION application there are (normal sizes of baby's head and chest circumference, normal height and weight) so that if they are not appropriate, they can be detected immediately, so making the SCATION application is one of the best solutions we have to reduce stunting rates in Indonesia.

Data Collected

Looking for secondary data from health center the number of mothers who have toddlers, the researcher asked the consent of all respondents, after obtaining the necessary approvals and approvals, data collection

begins, Respondents filled out the Knowledge questionnaire and performed skills according to the checklist sheet. Researchers measured the knowledge and skills of mothers before the intervention in the control group and the intervention group. Researchers intervened in the intervention group; researchers conducted post-intervention measurements on respondents from both groups at the next visit (about the eighth week after the intervention); The data collected are sociodemographic factors: mother and child, mother's knowledge and skills, Researchers carry out data processing and analysis. The data information that will be requested at the time of registration can be seen in the figure 1.

Furthermore, the data written by the respondent can be used for health workers in Langkat district, next in this application there are several features that are very useful in early detection of stunting. There are features that help mothers in early detection of stunting and how to prevent it in the education feature. Furthermore, the scation application will help the mother to remind the schedule for measuring the height and weight contained in the picture, the application user mother can click which will later appear on the mother's cellphone.

Then the results of measurements of height per age and weight per age will appear, and conclusions will

emerge that can be used as a guide for mothers to consult with pediatric specialists if needed. (Figure 3) In the educational feature, mothers will get some information about stunting, assessment of toddler development, how to measure height and weight and the provision of complementary feeding (MP-ASI) that is appropriate for the child's age, as shown below in figure 4.

The Scation application is also equipped with Q and A (Question and Answer) features where in this feature mothers of toddlers can directly ask questions about the health of toddlers which will be answered immediately by the admin (health workers).

Ethical Approval:

This research get ethical approval from Sekolah Tinggi ILMU Kesehatan (STIKes) Mitra Husada Medan with No 780/KEP-MHM/X/2022 dated 22nd October 2022.

RESULT

Respondent Rate

The number of respondents in this study is as many as 212 samples, where all respondents are willing to be the research sample, so that it can be concluded that the respondent rate in this study is 100%.

Analysis Univariate Demographic

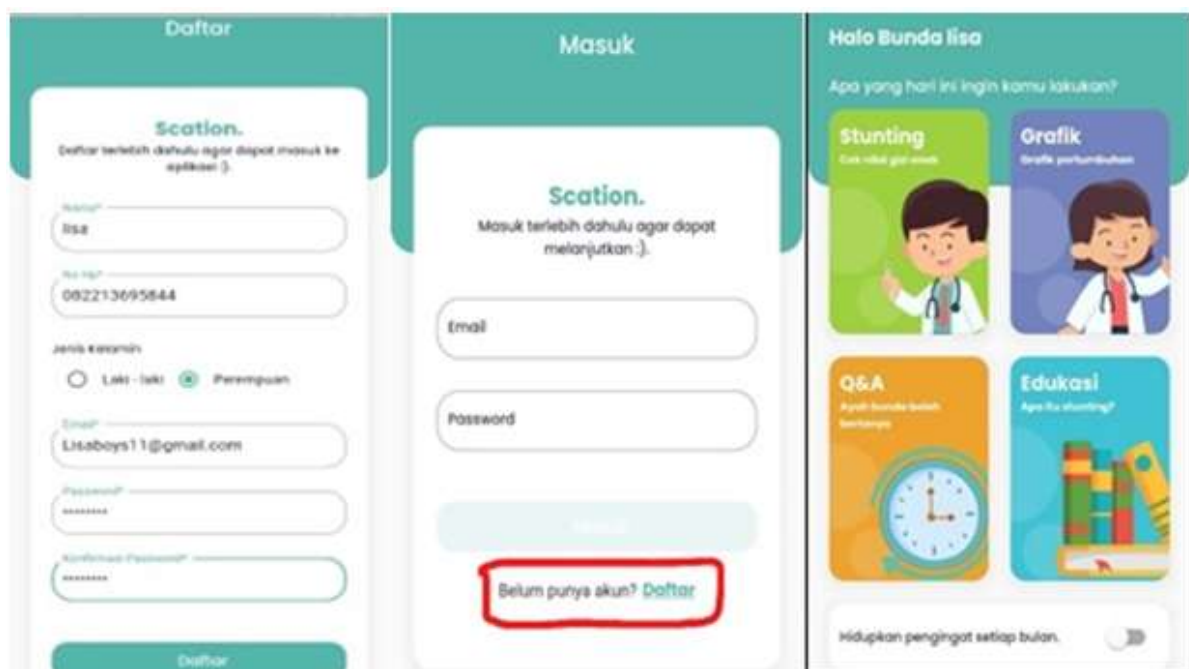


Figure 1. Login for application

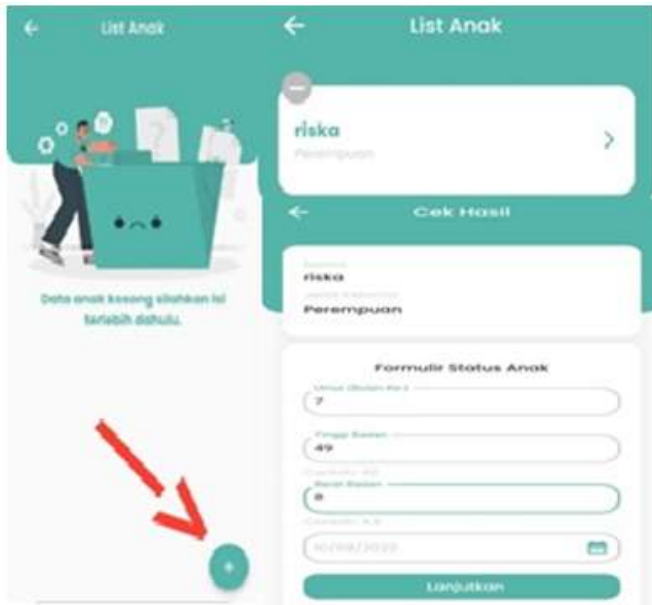


Figure 2. Identity of child



Figure 3. Result for growth development of child



Figure 4. (Question and Answer)

Profile

Mother Demographic

Table 1 Frequency Distribution of Mother Demographic in Langkat Regency by Using Scation (Stunting Care Application) in 2022

Characteristic	Group		Total
	Intervention (SCATION) (n = 106)	Control Book KIA (n = 106)	
1. Age			
a. < 20	3(2.8%)	6 (5.7%)	9 (4.24%)
b. 20 - 35	98 (92.5%)	96 (90.6%)	194 (91.5%)
c. > 35	5 (4.7%)	4 (3.8 %)	9 (4.24 %)
2. Education			
a. Junior High School	17 (16.0 %)	3 (2.8 %)	20 (9.43%)
b. Senior High School	67 (63.2 %)	89 (84.0 %)	156 (73.6 %)
c. College	22 (20.8 %)	14 (13.2 %)	36 (16.9 %)
3. Job			
a. Housewife	72 (67.9 %)	75 (70.8 %)	147 (69.3 %)
b. Working Mother	34 (32.1 %)	31 (29.2 %)	65 (30.7 %)
4. Parity			
a. 1-2	47 (44.3 %)	70 (66 %)	117 (55.2 %)
b. 3-4	59 (55.7 %)	36 (34 %)	95 (44.8 %)

The majority of parents in the intervention and control groups were aged 20–35 years, as many as 194 (91.5%). Based on their education level, the majority of respondents' education level is high school, as many as 156 (73.6%). According to occupation characteristics, the majority of respondents in both groups of housewives were 147 (69.3%), and the majority of respondents in both groups had 1-2 children as many as 117 (55.2%). Majority of toddlers

aged 1 <2 years are 74 toddlers (33%), based on gender the majority are male as many as 122 people (54.5%), based on body weight the majority of toddlers have normal weight as many as 176 people (78.6%), and based on height the majority of toddlers have normal height as many as 129 people (57.6%) Both research groups have a score for maternal knowledge before and after the intervention using

scation (stunting care application). From the table significant difference ($p < 0.005$) which means that the two groups can be compared (comparable). The comparison of posttest knowledge scores was seen in the intervention group, where the median score was 55.0 with a range of 30–77.50, and in the control group, where the median score was 50 with a range of 30–75. This difference was statistically significant ($p = 0.004$).

Toddler Demographic

Table 2 Frequency Distribution of Toddler Demographic in Langkat District by using Scation (Stunting Care Application) in 2022

No	Characteristics	Frequency	%
Age			
1	0<1 year	27	12.1
2	1<2 year	74	33
3	2<3 year	77	34.3
4	3<4 year	33	14.7
5	4<5 year	13	5.9
Gender			
1	Female	102	45.5
2	Male	122	54.5
Weight			
1	More Nutrition	23	10.2
2	Normal	176	78.6
3	Malnutrition	25	11.2
Height			
1	Normal	129	57.6
2	Stunting	95	42.4
Total		224	100

Bivariate Analysis

Table 3 Comparison of Knowledge and skills Scores of Mothers for Early Detecting Stunting in Toddlers in the Intervention Group using Scation and the Control Group

Item	Group		Score P*
	Intervention (n = 106)	Control (n = 106)	
Knowledge Score			
a. Pretest			
Mean	47.78	45.74	0.174
Median	50.0	45.0	
Range	20 - 75	30 - 75	
b. Posttest			
Mean			0.004
Median	53.73	49.33	
Range	55.0 30 – 77.50	50.0 30 - 75	

above, there is no The intervention group's maternal skill score and posttest observation were higher than those in the control group. It can be seen from the median score of 50 with a range of 20–80, while the median score in the control group is 50 with a range of 30-75. This difference is statistically significant ($p = 0.007$), and it can be concluded that there is an effect of the mother's skills on the early detection of stunting in toddlers.

Skill Score**a. Pretest**

Mean (SD)	47.22	45.19	0.295
Median	45.0	45.0	
Range	10 – 80	10 – 75	

b. Posttest

Mean (SD)	53.16	48.63	
Median	50.0	50.0	
Range	20 – 80	30 – 75	0.007

DISCUSSION

Based on the results of the study, the majority of respondents were aged 21-35 years. Where at this time respondents were considered mature for women in terms of emotions, personality and social so that they had the opportunity to access information about stunting. Based on the respondent's occupation, the majority of housewives have less knowledge about stunting. Based on education, the majority of mothers completed school up to high school. Based on (11) states that education greatly affects one's knowledge. Knowledge has a close relationship with education, where with higher education, a person will broaden his knowledge. Low education does not guarantee that a mother does not have sufficient knowledge about the nutrition of her family. The existence of high curiosity can influence mothers in getting information about the right food for children. Increased knowledge is not absolutely obtained from formal education alone, but can be obtained through non-formal education (12)

This research is in line with the (13) on Growth Monitoring Applications to Increase Mother's Self-Monitoring of stunting where the statistical test results with Man Whitney analysis showed a p value of 0.007, which means that there was a significant difference between the independent practice of the control group and the intervention group during the posttest so that it can be concluded that the use of growth monitoring applications has a good effect on mothers' independent practices in monitoring stunting. This research is in accordance with (14) research which states that parental knowledge is closely related to parenting styles for the growth and development of toddlers.

The activity of providing the SCATION application (Stunting Care Application) showed very good results in increasing mother's knowledge to detect early stunting in toddlers where the comparison of posttest knowledge scores was seen in the intervention group from the median score of 55.0 with a range of 30-77.50 and the median control group had a score of 50 with a range of 30-75. This difference was statistically

significant ($p = 0.004$) which could be concluded that there was an effect of changing mother's knowledge after using the Scation application.

This research is in line with another study (15), which states that one of the most widely accessed media by mothers is mobile phones, so efforts to increase knowledge through android-based mobile applications are quite effective in providing knowledge and preventing stunting in toddlers. Globally, the increasing use of mobile phone applications is no longer just for the use of sending messages but for downloading health-related applications such as those about pregnancy, nutrition, and diet.

Giving the Scation application to mothers has proven that there is an increase in the mother's knowledge in the early detection of stunting in toddlers, where mothers who have used the Scation application will routinely fill out measurements of children's height and weight to determine the nutritional status of toddlers, coupled with an alarm (reminder) every month that will be accepted by the mother so that she does not forget to fill in the measurements of the child's height and weight based on age. The pretest knowledge between the control and intervention groups showed a p value = 0.174, which means that the two groups had homogeneous knowledge / there was no difference in knowledge between the two groups at first. After being given the Stunting Care Application (Scation), the results obtained a significant difference with a p value = 0.004. It shows that the Scation application is proven to increase the knowledge of respondents.

According to research (16), a person's level of knowledge is closely related to the level of formal education; the higher a person's formal education, the easier it is for that person to understand health-related matters. Knowledge, or cognitive ability, is a very important domain in shaping one's actions. Some researchers (17) also stated that based on the results of research on the ability of mothers' knowledge about balanced nutrition before being given the Ayo Dedis android application, the majority of mothers had sufficient abilities, and after being given the Ayo

Dedis android application, the majority of mothers' knowledge increased to good, so it can be concluded that there is an influence on the Ayo Dedis application based on android to increase mothers' knowledge with a p value of 0.004.

According to (18) mentions knowledge is an individual who knows what to do and how to do it. Knowledge is one aspect of behavior that shows a person's ability to understand and use abilities by thinking about everything he has learned. Parents who do not know about stunting cause them to be disinterested and reluctant to prevent stunting early detection. This research is also in accordance with the research of (19) Adopt a learning style, smartphone portability and concept expression with interactive illustrations and global reach has made application-based learning (app) an effective medium. Educational mobile apps can increase one's knowledge. The author believes that educational applications can have a significant impact knowledge. This study supports research (10), which states that mothers' skills in stimulating growth and development in toddlers have an influence, with a difference in the average skills of respondents in the practise of stimulating growth and development of toddlers before and after attending a class for mothers of toddlers with a p value of 0.001. The use of the m-health application can increase knowledge and skills in the area of pregnancy and child health. M-health applications can be used as a means for health promotion. In the m-health application, there is health information that can be used by users as a source of information about the health information used. As a result, users of the m-health application will gain more knowledge. (11)

Based on the results of the study, the mother's skill score in the intervention group, posttest observations in the intervention group were higher than the control group. It can be seen from the median score of 50 with a range of 20-80 while the median score in the control group is 50 with a range of 30-75. This difference is statistically significant ($p = 0.007$) it can be concluded that there is an effect of mother's skills on early detection of stunting in toddlers. this study also supported by research by Susilawati & Dhamayanti, 2017(20).

The results of the research using the scation application can be seen that there is a decrease in children who experience stunting and children who experience malnutrition, based on these results it can be seen that the scation application can assist parents in monitoring the growth of children so that they can

overcome or prevent stunting in toddlers. The scation application has features that are easy for parents to understand so that it is easy for mothers to enter data on the child's height and weight according to the child's age. The scation application provides information about stunting such as the causes, impacts, and how to overcome stunting so as to provide information to parents for early detection of stunting in toddlers in Langkat district.

To achieve optimal results, the activity of providing information must pay attention to the media to be used. Media is a means or effort to display messages or information to be conveyed, both through print, electronic and outdoor media, so that target knowledge can increase and ultimately change behavior in a positive direction towards health (21). The use of media will help clarify the information conveyed. So that the information conveyed can be clearer and easier to understand in accordance with the objectives to be achieved.

Mobile devices, smartphones and tablets Computers have influenced many fields including the health sector. Progress mobile technologies such as smartphones and tablets personal computer (PC) has provided major impact on the treatment system health. Mobile technology offers innovative approach to solving problems complex health. Many applications current mobile health (mHealth app) available in market. This app is designed for facilitating various issues and problems health, and intended for use outside the clinic (22).

The following research is a study conducted (23) regarding the use of android applications in diagnosing and monitoring stunting cases early. This study is also a study conducted by (24) with a smartphone to increase parental compliance in providing growth and development stimulation to their children using the rimender system. Prevention of growth and development disorders in toddlers can be detected early by doing stimulation is one way that can be used to monitor and monitor growth and development abnormalities in children. Where there is a role for the application of Mother Cares (MOCA) to increase parental compliance in stimulating children's growth and development with an increase in compliance of 2.2 times in the intervention group compared to the control group. The author makes a prototype in this study based on an expert system in the form of a Stunting Care Application (SCATION) with the use of technology. The SCATION application is an application that can be downloaded via an android smartphone that can be used to help

detect stunting in toddlers early and is useful for parents to monitor their child's growth regularly independently. With the SCATION application, it is hoped that it will increase the knowledge and skills of parents in monitoring children's growth because the advantages of this application are that it is attractive, easy to use, and uses a reminder system.

LIMITATIONS OF THE STUDY

In this study, the authors face limitations that affect the research conditions, while the limitations of the study include At the time of the research the internet network was not strong, at the time of conducting the research there were results of children experiencing stunting and malnutrition, the researchers did not conduct in-depth research regarding the causes of the case to the toddler.

SUGGESTION

Parents are expected to pay attention to the growth of children according to the right age and pay attention to the development of children. Because during the research the parents paid less attention to the child's growth, they only focused on the condition of the child being healthy or sick without looking at the child's growth and development. From this research need socialize the use of the Stunting Care (SCATION) application to parents of toddlers as an effort to increase knowledge and skills in early detection of stunting in toddlers so that treatment and prevention can be carried out.

CONCLUSION

There is an effect of stunting care (SCATION) application on early detection of stunting incidence in children under five in Langkat Regency, where there are:

1. The majority of parents in the intervention and control groups were aged 20–35 years, as many as 194 (91.5%). Based on their education level, the majority of respondents' education level is high school, as many as 156 (73.6%). According to occupation characteristics, the majority of respondents in both groups of housewives were 147 (69.3%), and the majority of respondents in both groups had 1-2 children as many as 117 (55.2%).
2. The majority of toddlers aged 1-2 years are 74 (33.3%); the majority are male, as many as 122 (55%); the majority of toddlers have normal weight, as many as 176 (78.5%); and the majority of toddlers have normal height, as many as 129 (57.5%).
3. There was an increase in mother's knowledge in the intervention group compared to the control group, with a comparison of posttest knowledge

scores showing in the intervention group a median score of 55.0 with a range of 30-77.50 and in the control group a median score of 50 with a range of 30-75. This difference was statistically significant ($p = 0.004$).

4. There was an increase in maternal skills in the intervention group compared to the control group: the intervention group's median score was 50 with a range of 20-80, while the control group's median score was 50 with a range of 30-75. This difference was statistically significant ($p = 0.007$). the effect of a mother's skills on early detection of stunting in toddlers.

REFERENCES

1. UNICEF. Levels and trends in child malnutrition: Key findings of the 2019 edition. April 2019. Available at: <https://www.unicef.org/reports/joint-child-malnutrition-estimates-levels-and-trends-child-malnutrition-2019>
2. United Nations-World Health Organization-The World Bank Group. UNICEF-WHO-The World Bank: Joint child malnutrition estimates - Levels and trends. Report. 2019; p.1-15.
3. WHO. Levels and trends in child malnutrition: Key findings of the 2020 Edition of the Joint Child Malnutrition Estimates. Geneva WHO. 2020;24(2):1–16.
4. Kemenkes RI. Profil Kes Indo 2019. Kementerian Kesehatan Republik Indonesia. 2020. 487 p. Available at: <https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-indonesia-2019.pdf>
5. Tobing ML, Pane M, Harianja E, Badar SH, Supriyatna N, Mulyono S, et al. Tnp2K 2017. PREPOTIF J Kesehat Masy. 2021;13(1):238–44. Available from: http://www.tnp2k.go.id/images/uploads/downloads/Binder_Volume1.pdf
6. Ali PB. Evaluasi Program Percepatan Pencegahan Stunting: Pelaksanaan dan Capaian. 2020;(November):1–26. Available at: https://stunting.go.id/sdm_downloads/evaluasi-program-percepatan-pencegahan-stunting-pelaksanaan-dan-capaian/
7. Rakotomanana H, Gates GE, Hildebrand D, Stoecker BJ. Determinants of stunting in children under 5 years in Madagascar. Maternal & child nutrition. 2017 Oct;13(4):e12409. <https://doi.org/10.1111/mcn.12409>

8. Kemenkes. Hasil Survei Status Gizi Indonesia (SSGI) 2022. Kemenkes. 2023;1-7.
9. Dinas Kesehatan Provinsi Sumatera Utara. Profil Kesehatan Provinsi Sumatera Utara Tahun 2020. Dinas Kesehat Provinsi Sumatera Utara [Internet]. 2020;1-422. Available from: <http://dinkes.sumutprov.go.id/unduh>
10. Notoadmodjo S. Promosi Kesehatan & Prilaku Kesehatan. Jakarta: EGC. 2012.
11. Indrayani D, Legiati T, Hidayanti D. Kelas Ibu Balita Meningkatkan Pengetahuan dan Keterampilan Ibu dalam Stimulasi Tumbuh Kembang. *Jurnal Kesehatan Prima*. 2019 Aug 9;13(2):115-21.
<https://doi.org/10.32807/jkp.v13i2.240>
12. De Onis M, Branca F. Childhood stunting: a global perspective. *Maternal & child nutrition*. 2016 May;12:12-26.
<https://doi.org/10.1111/mcn.12231>
13. Rokhaidah H. Aplikasi Pemantau Pertumbuhan Meningkatkan Pemantauan Mandiri Ibu terhadap Stunting. *Dunia Keperawatan J Keperawatan dan Kesehatan*. 2021; 9(1) 55-63
<https://doi.org/10.20527/dk.v9i1.8257>
14. Pangaribuan IK, Simanullang E, Poddar S. The analyze toddler growth and development according to family's economic status in Village Limau Manis, Districts Tanjung Morawa. *Enfermeria clinica*. 2020 Jun 1;30:92-5.
<https://doi.org/10.1016/j.enfcli.2019.11.029>
15. Indriani AA, Ratnawati R, Wanita F. Aplikasi Reminder Pengontrolan Perawatan Gigi Berbasis Android. *Inspiration: Jurnal Teknologi Informasi Dan Komunikasi*. 2019 Jun 15;9(1):59-68.
<https://doi.org/10.35585/inspir.v9i1.2490>
16. Akombi BJ, Agho KE, Hall JJ, Merom D, Astell-Burt T, Renzaho AMN. Stunting and severe stunting among children under-5 years in Nigeria: A multilevel analysis. *BMC Pediatr* 2017;17(1):1-16. Available from: <http://dx.doi.org/10.1186/s12887-016-0770-z>
17. Sekarwati L. Pengaruh Aplikasi Berbasis Android Ayo Dedis Untuk Peningkatan Pengetahuan Gizi Seimbang Terhadap Stunting Pada Ibu Hamil. *Media Husada Journal of Nursing Science*. 2022 Jul 28;3(2):132-42.
<https://doi.org/10.33475/mhjns.v3i2.86>
18. Ramdhani A, Handayani H, Setiawan A. Hubungan Pengetahuan Ibu Dengan Kejadian Stunting. *Semnas Lppm*. 2020;ISBN: 978-:28-35.
19. Bhatheja S, Fuster V, Chamaria S, et al. Developing a Mobile Application for Global Cardiovascular Education. *J Am Coll Cardiol*. 2018 Nov, 72 (20) 2518-2527.
<https://doi.org/10.1016/j.jacc.2018.08.2183>
20. Susilawati S, Dhamayanti M, Rusmil K. "Sahabat Ibu Balita": Aplikasi Untuk Meningkatkan Pengetahuan Dan Keterampilan Ibu Tentang Pertumbuhan Dan Perkembangan Anak. *Jurnal Kesehatan Al-Irsyad*. 2017 Mar 29:74-85.
<http://jka.universitalirsyad.ac.id/index.php/jka/article/view/75>
21. Salsabila AA, Lala H, Suharno B. Pengaruh Edukasi Kesehatan Phbs Di Sekolah Terhadap Peningkatan Pengetahuan Siswa Kelas 3 Sd. *Jurnal Informasi Kesehatan Indonesia (JIKI)*. 2022 Dec 27;8(2):157-65.
<https://doi.org/10.31290/jiki.v8i2.3355>
22. Jusoh S. A Survey on Trend, Opportunities and Challenges of mHealth Apps. *Int. J. Interact. Mob. Technol*. 2017 Nov 27;11(6):73-85.
<https://doi.org/10.3991/ijim.v11i6.7265>
23. Syaroni W, Munir Z. Pemanfaatan aplikasi android dalam mendiagnosa dan memonitoring kasus stunting lebih dini. *Jurnal Teknik Elektro Dan Komputer*. 2020 Dec 31;9(3):189-96.
<https://doi.org/10.35793/jtek.v9i3.30377>
24. Eka Falentina Tarigan. Midwifery and Complementary Care Peranan Aplikasi Mother Cares (MOCA) terhadap Kepatuhan Orang Tua. 2022;01(01):1-12.
<https://doi.org/10.33859/mcc.v1i1>