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The Effectiveness of an Android-Based Application for Stunting Risk Detection in Children under Five in Urban and Rural in West Java Province, Indonesia

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Abstract The decline in stunting prevalence in Indonesia in the last three years has not met the target of 14% in 2024. In fact, the stunting prevalence in the current year is 21.5%. Early detection of stunting risk is needed by optimizing the use of digital technology to identify and prevent stunting quickly and accurately. The purpose of this study was to analyze the effectiveness of an Android-based application for stunting risk detection in children under five in urban and rural areas in West Java Province, Indonesia. A cross-sectional study was conducted during April-September 2024 on 384 mother-child pairs living in urban (Bogor City) and rural (Bogor Regency) areas in West Java Province, Indonesia, namely 192 mother-child pairs each were selected using a proportional random sampling technique. The android application was used to identify the risk of stunting based on indicators of mother-toddler characteristics, nutrition, and sanitation. The accuracy of the stunting risk detection using an Android-based application shows that the Area Under Curve (AUC) was used which was analyzed using the Receiver Operating Characteristics (ROC) Curve method. Of the 384 children involved in this study based on anthropometric measurements, the stunting rate is still high and not yet according to the target of 14%, where there are about one third of stunting children, which is 30.4%. From this figure, there are 28.6% of stunting children in urban and 32.3% in rural. This application has high accuracy for detecting stunting risk in both urban and rural areas, namely with sensitivity, specificity, and Area Under Curve (AUC) for each region of 92.4%, 89.6%, 90.1%, and, 89.8%, 87.7%, 89.9%, respectively. Android-based application is effective in detecting the risk of stunting with a higher level of accuracy in urban areas than in rural areas. The use of applications needs to be integrated with health services to facilitate prevention and handling of stunting quickly and accurately.

Keywords Android-Based Application, Children under Five, Nutrition, Sanitation, Stunting Risk Detection

1. Introduction

Stunting in infancy is the most significant obstacle to global human development. The long-term consequences of stunting are decreased physical growth, low educational attainment, increased risk of degenerative diseases, decreased labor productivity and national income [1]. Stunting, or being too short for one's age, is defined as a height that is more than two standard deviations below the median of the World Health Organization (WHO) child

growth standards. Stunting is a form of growth failure due to the accumulation of nutritional deficiencies that occur during the First 1000 Days of Life (HPK) [2]. This malnutrition will be visible when the toddler reaches the age of two years, so stunting detection as a preventive measure will be effective before the toddler is two years old [3]–[5].

Stunting detection is carried out by building an accurate stunting prediction model based on the main predictors [6], [7]. This model is the basis for designing a stunting detection application that can be used in nutritional surveillance activities [8], [9]. The use of stunting detection applications is one form of adaptive and innovative technology that is very much needed to facilitate the data collection process, fast and precise intervention recommendations, monitoring and evaluation, and policy making in achieving the target of reducing stunting prevalence. Indonesia is targeting a reduction in stunting of 14% by 2024. Although there has been a gradual decrease in stunting rates in the last 3 years of 2.9%, namely from 24.4% in 2021 to 21.5% in 2023, the target of reducing stunting by 14% has not been achieved [10]. Therefore, the government has made strategic efforts to reduce stunting rates, including optimizing the use of digital technology. In Indonesia, the National Population and Family Planning Agency is tasked with coordinating the implementation of accelerating stunting reduction. One of the efforts made by the BKKBN is using the electronic application ready for marriage and pregnancy (Elsimil) to detect the risk of stunting by measuring the characteristics of prospective brides and grooms such as age, as well as nutritional indicators including arm and stomach circumference, hemoglobin (Hb) levels [11]. Another Android-based application is Nutrition Monitoring (Nutrimo) developed by Permana et al. in 2021, which detects stunting based on monitoring nutritional status. However, both applications have not specifically measured risk factors related to sanitation indicator [12].

An alternative solution for stunting detection using an Android-based application with the main predictor based on nutritional and sanitation indicators was carried out by Permatasari et al. 2023. The design of the stunting prevention information system application based on sanitation and nutrition indicators has been tested on a limited scale, namely on 316 mothers and babies under the age of two, who come from several stunting loci in urban and rural areas in Bogor Regency and City, West Java Province [13]. West Java (20.2%) has a stunting rate close to the national figure (21.6%) in 2022. Although the stunting rate in the province has decreased by 4.3%, namely from 24.5% in 2021 to 20.2% in 2022, it is still included in the high category based on the WHO category (20-30%). Likewise, the prevalence of stunting in Bogor Regency (24.3%) and Bogor City (19%) which are close together, shows a high stunting rate [14].

An android-based application is used to detect stunting in babies under the age of two, so that identification can be carried out for early prevention efforts. The difference between this application and others is that it measures nutrition and sanitation indicators comprehensively, where sanitation indicators refer to healthy home indicators stipulated in Ministerial Decree 829/Menkes/SK/VII/1999 concerning Housing Health Requirements. However, the application needs to be tested on a wider scale so that it can be used on heterogeneous characteristics for mothers and toddlers living in urban and rural areas so that it can be used in nutrition surveillance activities. Based on the stunting prediction model, it can produce a design for a nutrition and sanitation home model which is the basis for compiling an ideal home model index for preventing stunting in toddlers. Detecting stunting with a high level of accuracy can provide recommendations for appropriate and comprehensive integrated interventions including specific nutrition interventions and sensitive nutrition interventions in reducing stunting [15], [16]. The purpose of this study was to analyze the effectiveness of an android-based application for stunting risk detection in children under five in urban and rural areas in West Java Province, Indonesia.

2. Materials and Methods

2.1. Design, Study Area and Period

A cross-sectional study was conducted in April-September 2024 in urban (Bogor City) and rural (Bogor Regency). Both areas are located in the border area with each other, with a distance of 10-15 kilometers between government centers, and a travel time of almost 1 hour. The concept of urban and rural in this study refers to the Regulation of the Head of the Central Statistics Agency Number 37 of 2010 concerning urban and rural Classification in Indonesia, which includes population density, percentage of agricultural households, and the existence/access to urban facilities owned by a village/ sub-district to determine the urban status of a village/sub-district.

Urban and rural classification refers to the Regulation of The Head of The Central Statistics Agency Number 120 of 2020 Concerning Classification of Urban and Rural Villages In Indonesia 2020. Urban is the status of an administrative area at the village/sub-district level that meets the criteria for urban village classification. While rural is the status of an administrative area at the village/sub-district level that meets the criteria for rural village classification. Determination of the classification of urban villages and rural villages includes certain requirements in terms of population density per km^2, percentage of agricultural families, and the existence/access to urban facilities owned by the village/sub-district. Determination of the value/score to determine as urban and rural areas for villages/sub-districts consists of: 1) Urban village classification, if the population density, percentage of agricultural families, and

existence/access to urban facilities owned have a total value/score of at least 9 or above; 2) Classification of rural villages, if the population density, percentage of farming families, and the existence/access to urban facilities have a total value/score below 9 [17].

As one example, to determine the classification of an urban village with a minimum value of 9, the assessment for the three aspects is: 1) population density 2500-3999 (score 4), 2) percentage of farming families 20.00-29.99% (score 4), and 3) there are facilities including: a) availability of kindergartens to high schools or equivalent with a distance of less than or equal to 2.5 km (score 1), b) availability of markets (permanent and semi-permanent) and shops with a distance of less than or equal to 2 kilometers (score 1), c) availability of hospitals with a distance of less than or equal to 5 kilometers (score 1), d) availability of hotels and entertainment facilities such as karaoke places or salons (score 1), e) percentage of families using landlines is a minimum of 2.0% or more (score 1), and f) the percentage of electricity user families is a minimum of 95% or more (score 1). Thus, the total score for the three aspects is point 1 with a score of 4, point 2 with a score of 4, and point 3 with a score of 6, so that the total score is 14.

The classification of urban and rural areas selected as research locations in this study is based on 3 assessment aspects, namely: 1) Urban has the following criteria: population density of 9550/km^2 (score 4), percentage of farming families of 15% (score 5), and the existence/access to urban facilities are fully met (score 6), so that the total score is 14 (more than or equal to 9); and 2) Rural has the following criteria: population density of 1861/km^2 (score 3), percentage of farming families of 31% (score 3), and the existence/access to facilities are met in 2 aspects, namely the availability of schools and markets/shops (score 2), so that the total score is 8 (less than or equal to 9).

2.2. Sampling Technique and Procedure

In this study, as many as 384 mother-child pairs living in urban (Bogor City) and rural (Bogor Regency) areas in West Java Province, Indonesia, namely 192 mother-child pairs each selected using a proportional random sampling technique (Figure 1). The minimum sample size was calculated using the hypothesis test formula of 2 population proportions with a two-sided approach. The significance level used is 5%, power 90%, with P1 value (stunted toddlers who are exposed to stunting risk) and P2 (stunted children but not exposed to stunting risk factors) of 35.7%, so that the minimum sample size after adding 10% anticipation of participants dropping out is 192 for each group, then multiplied by 2 to total 384. The sample inclusion criteria in this study are: 1) mothers who have children aged 0–59 months and who have lived for at least six months or more at the research location; 2) mothers who have and operate Android mobile phones so that they can download and fill in an android-based application.

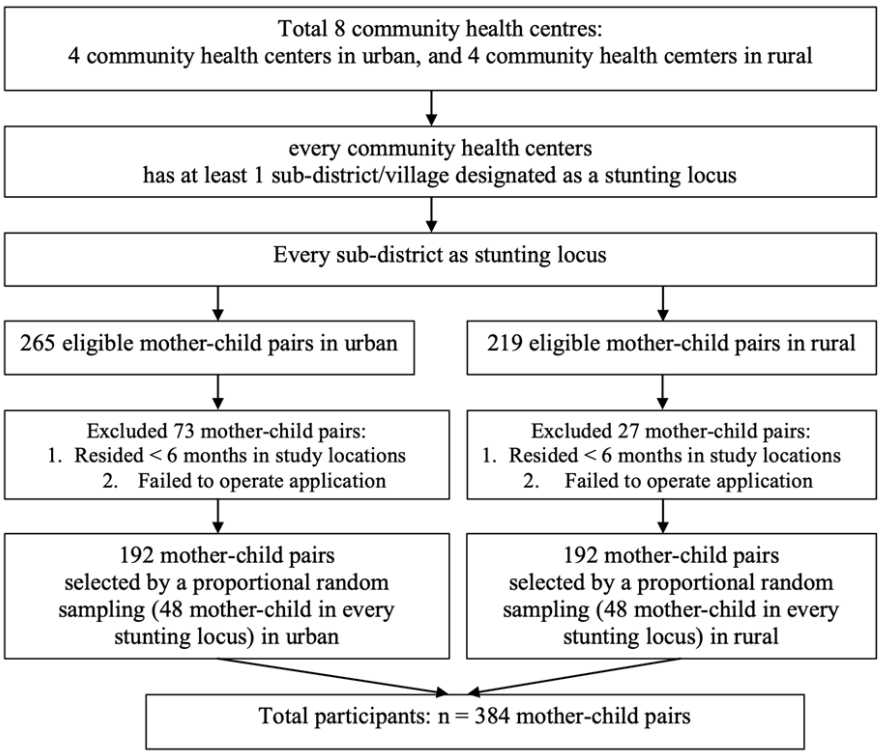

Figure 1. Sampling Procedure

2.3. An Android-Based Application

The minimum specifications to be able to download the Si Centing Sazi application properly are OS: Android OS, v.4.1.1 (Jelly Bean), RAM: 2 GB, Processor: Quad-core 1.6 GHz Cortex-A9; Camera: 8 MP; Space Storage: 15.7 MB; and Screen Resolution: 720x1280-2560x1600. While the exclusion criteria are mothers who have children with serious illnesses or congenital disabilities that will affect their child's nutritional and health conditions. Before mothers become respondents, they will be explained about the research and will state their willingness by filling in the informed consent. Mothers who become respondents will be provided with an internet quota to facilitate downloading and filling in data in the application. The validity and reliability of the measurement are carried out by ensuring that each data entry in the application is appropriate, where the questions used as the main predictors of stunting have been tested for validity and reliability in the first and second years, and the answer coding has been confirmed appropriate. Each mother is accompanied by 1 enumerator when downloading and filling in the data, so it can be ensured that there are no obstacles and the data are filled in properly and stored on the website to facilitate data processing. Enumerators have a bachelor's degree in nutrition who have been trained in data collection, and have experience in being involved in similar research. In this study, there were 6 enumerators involved in data collection, namely 3 enumerators each for data collection in urban and rural areas. In addition, there were 2 supervisors, where each area of the enumerators was accompanied by 1 supervisor who had a master's degree in nutrition or public health whose job was to ensure data quality, and the data collection process was carried out appropriately and according to target.

The Android-based application for stunting risk detection used in this study was developed by the researchers themselves. Based on the results of previous research, this application was developed through 5 stages, namely the stage of analyzing the needs of the use of Android applications to detect stunting, the stage of designing Android applications, the stage of implementing Android applications, the stage of testing Android applications, and the stage of implementing and maintaining Android applications. The following are the stages carried out in developing an Android application to detect the risk of stunting in children:

a. The first stage, needs analysis for the use of android applications

At this stage, an analysis is carried out to identify problems found in the community in detecting the risk of stunting, including the number of stunting determinants, long measurement times, and difficult methods. This causes the process of identifying stunting risks to take a long time, causing stunting prevention interventions to be late. In addition, at this stage, identification of the features needed in the android application to answer the problems found in detecting the risk of stunting was also carried out. The method used was Focus Group Discussion (FGD) involving groups of mothers who have children under the age of 5 as the target group, and relevant stakeholders such as health services and health centers, as well as groups of community leaders.

The indicators used in detecting the risk of stunting in this study were selected based on the results of previous research conducted by the research team. Initially, there were 25 indicators covering 3 aspects, namely indicators of mother-child characteristics (8 indicators), indicators of nutrition (8 indicators), and indicators related to personal hygiene and home environmental sanitation (9 indicators). All of these indicators are used to detect the risk of stunting for both children living in urban and rural areas. However, in the current study, for these indicators, the Android application used has differentiated the assessment indicators to detect the risk of stunting in children living in urban and rural areas. For urban areas, there are 8 indicators used to detect the risk of stunting, namely: mother's height, children's age, exclusive breastfeeding, frequency of protein food sources, balanced diet practices, habit of washing hands with soap, complete home functions, and good household waste processing. While in rural areas, the 8 indicators used include mother's height, history of infectious diseases, early initiation of breastfeeding, frequency of protein food sources, complementary feeding, habit of washing hands with soap, availability of safe food storage, and availability of clean water sources for drinking. Of the eight indicators in both urban and rural areas, there are 3 indicators that are the same, namely mother's height, frequency of protein food sources, and habit of washing hands with soap.

b. Second stage, designing the android application

This stage designs the architecture of the Android application system including the database design. In addition, at this stage, the data entry procedure is designed in the application starting from the registration stage and willingness to become a respondent and follow the requirements for entering data, inputting data based on indicators to detect stunting, and displaying the results of the stunting risk detection assessment, namely whether the child is at risk or not at risk of stunting, as well as recommendations based on the results of the assessment.

c. The third stage, Android application implementation

This stage is the actual implementation of the software according to the design, namely using the Android Software Development Kit (SDK) and Java Development Kit (Java IDE). Scoring to detect the risk of stunting in each indicator in urban and rural areas is categorized based on the level of risk, namely: 1) high risk (score 1), and 2) low risk (score 0), with the same weight for each indicator, namely 1. The score range for all indicators is 0-8. Furthermore, the total score is categorized according to the mean value, namely children at risk of stunting based on the mean value, namely: 1) children at low risk of stunting,

if the score is 0-4, and 2) children have a high risk of stunting if the score is 5-8.

d. Fourth stage, Android application testing

At this stage, application function testing is carried out. Qualitatively, the indicators have been assessed by 3 experts related to nutrition and environmental health where the indicators used are considered relevant to detecting the risk of stunting, and 1 expert in the field of information technology assessed that the application function is good and practical to use. While the quantitative assessment assesses the aspects of need, relevance, clarity, and simplicity for each indicator, namely by using a 4-point Likert scale assessment, namely 1-4 (scale 1 for the assessment category very unnecessary / very irrelevant / very unclear / very not simple, up to scale 4, namely with the assessment category very necessary / very relevant / very clear / straightforward). The results of the Content Validity Ratio (CVR) and Content Validity Index (CVI) analysis obtained that each indicator had a CVR and CVI value of 0.8-1.0 so that it met the CVR and CVI value requirements. In addition, all indicators were tested for validity and reliability using Pearson product moment correlation and item correlation - total correlation. At a significance level of 5%, the calculated r value is adjusted to the r product moment table (0.349). The corrected item-total correlation for each indicator is between 0.812-0.0.876 (calculated r value > r table), with Cronbach's alpha of 0.897. The next step, the Android application is used to detect the risk of stunting in children in the actual study, namely in 8 working areas of community health centers, where there are 4 health centers in urban areas, and 4 health centers in rural areas.

e. Fifth stage, implementation and maintenance of Android applications

The final stage of developing an Android application to detect the risk of stunting is the application refinement stage. This stage is carried out by improving the application's function, such as improving the display/menu for filling in data to detect the risk of stunting or promotive and preventive services in the form of interesting educational videos.

2.4. Quality Assurance and Data Collection

This study was approved by The Ethics Commission of Health Research of the Faculty of Medicine and Health, Universitas Muhammadiyah Jakarta (approval number: 105/PE/KE/FKK-UMJ/VII/2024). The validity and reliability of the measurement are carried out by ensuring that each data entry in the application is appropriate, where the questions used as the main predictors of stunting have been tested for validity and reliability in previous years, and the answer coding has been confirmed appropriate. Instructions for using the application can also be seen in an Android-based application user instructions menu. Mothers will be accompanied during the download and filling in of data, so that it can be ensured that there are no obstacles and the data are filled in properly and stored on the website to facilitate data processing.

2.5. Data Processing and Analysis

Data were analyzed using SPSS version 22.0. Bivariate analysis uses the chi-square test to analyze the relationship between independent and dependent variables which have categorical data types. To assess the level of statistical significance, a confidence level of 95% and a P-value of <0.05 were used. In addition, to obtain the accuracy of the stunting prediction model, the Area Under Curve (AUC) was used which was analyzed using the Receiver Operating Characteristics (ROC) Curve method.

3. Results and Discussion

Table 1 shows that 30.4% of children under five (8.3% severely stunted and 22.1% stunted) experienced stunting in this study, with 28.6% of children stunted in urban areas (9.3% severely stunted and 19.3% stunted), and 32.3% of children stunted in rural areas (7.3% severely stunted and 25.0% stunted).

Table 2 shows that out of 8 indicators identified as predictors of stunting for urban and rural areas, several were significantly correlated with the incidence of stunting, with AOR values ranging from 0.678 to 3.912 in urban areas. The highest AOR value was found for maternal height. This indicates that mothers who are short (height less than 150 cm) are 4.212 times more likely to have stunted children compared to mothers of normal height (greater than or equal to 150 cm). Similarly, in rural areas, the OR value range was between 2.021 and 4.165. This indicates that mothers who are short (height less than 150 cm) are 4.165 times more likely to have stunted children compared to mothers of normal height (greater than or equal to 150 cm).

Table 1. Classification of nutritional status based on anthropometric index in children under five years (n=384)

Nutritional Status Categories based on Length/Height-for-Age	Urban (n=192)		Rural (n=192)		Total (n=384)	
	n	%	n	%	n	%
Severely stunted (< −3 SD)	18	9.3	14	7.3	32	8.3
Stunted (-3 SD to < −2 SD)	37	19.3	48	25.0	85	22.1
Normal (−2 SD to +3 SD)	125	65.1	122	63.5	247	64.3
Tall (> +3 SD)	12	6.3	8	4.2	20	5.2

Table 2. Predictors of Stunting in Mothers and Children in Urban and Rural Areas

Indicator	n (%)	P-value	Adjusted OR	95% CI	
				Lower	Upper
Urban					
Mother's height		0.004	3.912	1.212	4.251
≥ 150 cm	256(66.7)				
< 150 cm	128(33.3)				
Children's age		0.041	0.678	0.329	0.750
< 24 months	279(72.7)				
≥ 24 months	105(27.3)				
Exclusive breastfeeding		0.006	3.317	1.241	3.127
Yes	149(38.8)				
Not	235(61.2)				
Frequency of protein foods source		0.036	2.916	1.246	5.682
≥ 3x/day	215(56.0)				
< 3x/day	169(44.0)				
Balance diet practices		0.027	2.413	1.249	5.768
Yes	185(48.2)				
Not	199(51.8)				
Habit of washing hands with soap		0.031	2.149	1.285	3.926
Yes	279(72.7)				
Not	105(27.3)				
Complete home functions		0.015	3.398	1.217	4.126
Yes	226(58.9)				
Not	158(41.1)				
Good household waste processing		0.036	2.154	1.149	4.568
Yes	196(51.0)				
Not	188(49.0)				
Rural					
Mother's height		0.001	4.165	1.132	4.281
≥ 150 cm	227(59.1)				
< 150 cm	157(40.9)				
History of infectious disease		0.025	2.872	1.167	3.792
No	287(74.7)				
Yes	97(25.3)				
Early initiation of breastfeeding		0.007	2.167	1.530	5.261
Yes	195(50.8)				
Not	189(49.2)				
Frequency of protein foods source		0.018	2.678	1.164	4.685
≥ 3x/day	216(56.3)				
< 3x/day	168(43.8)				
Complementary feeding		0.024	3.786	1.271	4.194
> 6 months	256(66.7)				
≤ 6 months	128(33.3)				

Table 2 continued

Habit of washing hands with soap		0.042	2.021	1.194	5.937
Yes	217(56.5)				
Not	167(43.5)				
Availability of safe food storage		0.029	2.824	1.123	4.579
Yes	251(65.4)				
Not	133(34.6)				
Availability of clean water sources for drinking		0.036	2.367	1.258	3.863
Yes	189(49.2)				
Not	195(50.8)				

This application has high accuracy for detecting stunting risk in both urban and rural areas, namely with sensitivity, specificity, and Area Under Curve (AUC) for each region of 92.4%, 89.6%, 90.1%, and 89.8%, 87.7%, 89.9% (Table 3). Based on these results, the accuracy level of the stunting risk detection application is higher in urban areas than in rural areas. The difference in the accuracy level of the Android application for use in both regions is 2.6% for sensitivity, 1.9% for specificity, and 0.2% for Area Under Curve (AUC) respectively. The findings of this study indicate that the level of accuracy of the Android application used to detect stunting in urban areas is better than in rural areas. This may be due to the fact that in this study, the level of education of mothers in urban areas was higher than that of mothers in rural areas. A better level of education of mothers is associated with better ability of mothers to understand and fill in each indicator of stunting risk in the Android application. In addition, a better level of accuracy in urban areas compared to rural areas can also be associated with the availability/access of mothers to Android applications. The Central Statistics Agency reported that the percentage of households that own/control mobile phones according to province and regional classification in 2023 in Indonesia was 91.61%, with the percentage in urban areas being 93.77% higher than in rural areas at 88.58% [18].

Table 3. Accuracy of Android-based Application for Stunting Risk Detection

Accuracy	Urban	Rural
Sensitivity	92.4%	89.8%
Specificity	89.6%	87.7%
Area under Curve	90.1%	89.9%

More mothers in urban areas own/master the use of mobile phones including Android applications than in rural areas. This condition can cause the skills of mothers who live in urban areas in using Android applications to be better than mothers in rural areas, which is related to the quality of data entry in Android applications, thus affecting the level of accuracy.

Stunting prevention is carried out through specific nutrition interventions. Specific interventions are aimed at addressing the causes of stunting and are generally provided by the health sector, such as food intake, infection prevention, maternal nutritional status, infectious diseases, and environmental health, while sensitive nutrition interventions are aimed at addressing generally outside the problem health which provides drinking water and sanitation, nutrition and health services, increases awareness of care and nutrition and increases access to nutritious food [19], [20]. Stunting prevention at 1000 HPK has been the focus of development over the last decade, but now it is not enough. If early gains are to be maintained, and children are to reach their full potential as adults, then children must achieve good health and nutrition during this vulnerable period of development and continue through late i.e. into early adulthood i.e. the preconception period. 8,000 HPK. Prevention in this period is a systematic effort and intervention according to its life cycle, starting from the period of pregnancy, birth, children, adolescence, and early adulthood, namely the pre-conception period of stunting to break the stunting cycle [21].

Adaptive technology is developed according to the situation, characteristics, and needs of the community. Apart from that, technology is innovative, it is positive technology that is useful by departing from previously existing methods. This technology was developed by innovating processes and producing product innovations. The need for technology in almost all aspects of life has even become a basic need when we are facing the COVID-19 pandemic. The significant decline in Antenatal Care (ANC) coverage during the pandemic is one of the factors that increases the risk of death for mothers and children. Posyandu activities at the start of the pandemic did not even run [22].

Measuring and monitoring nutritional surveillance have experienced obstacles, thus increasing the birth of children who are at risk of stunting. On the one hand, this condition has encouraged the emergence of adaptive and innovative technology in maternal and child health services which makes it easier for mothers and children to have health checks and receive health care. Integrated interventions through sensitive nutrition interventions and specific

nutrition interventions are contained in 8 integrated stunting reduction intervention actions, one of which is improving the stunting data management system and intervention coverage at the district/city level. This action shows that reducing stunting rates requires information technology as a tool that facilitates data collection and cross-sector coordination at various levels [23].

The use of adaptive and innovative technology which continues to develop currently plays a role in the health sector, including preventing stunting, among others namely [24]–[27]: 1) Telemedicine, namely the use of digital platforms to conduct remote consultations, especially for populations that are difficult to reach; 2) Technology with Artificial Intelligence (AI) and Data Analytics, namely utilizing artificial intelligence and machine learning for predictive analytics, enabling proactive intervention at the family and community levels; 3) Health applications, namely technology users in promoting applications that provide educational content about nutrition, reminders for examinations and vaccinations, and tracking children's growth and development; 4) Blockchain, namely utilizing technology to increase the efficiency and transparency of the distribution of food and assistance in the community; 5) Wearable devices and the Internet of Things (IoT), namely implementing wearable devices that can track child health metrics in real-time, assisting in early detection and intervention of stunting.

Adaptive and innovative technology continues to be developed in efforts to prevent stunting in Indonesia. Wiryawan et al. in 2022 developed an application for data collection on stunting cases using data visualization in the form of digital maps. Detailed information on stunting is the solution offered to solve problems in areas prone to stunting by using the COBIT 5 framework, with a combination of DSS and MEA domains to test this geography-based stunting case system [24]. Another simple application developed is the minimalistic Ojo Stunting Application which is used for early detection of stunting risk factors [28].

4. Conclusions

Improvements to an Android-based application are still needed to make them more practical and efficient in obtaining simpler indicators that are easy to use both at the family level and at the health service level.

It is necessary to integrate the use of an Android-based application with primary health services so that it can easily and quickly follow up on the results of risk detection recommendations to provide appropriate prevention and handling efforts for stunting.

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