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# Improving cadre knowledge in stunting prevention through android-based application

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**Abstract**---Stunting in children is one of the most significant barriers to human development, globally affecting approximately 162 million children under the age of 5 years. Stunting is one of the problems that the Indonesian government is currently focusing on, even during the Covid-19 pandemic. Government efforts to prevent stunting continue to be developed through the ministry of health, one of which is by optimizing public participation and awareness to prevent stunting at the lowest level, namely the village. The purpose of the study was to analyze the effect of cadre training on increasing cadre knowledge in stunting prevention through an android-based application. This research is a quantitative type with a quasi-experimental design using a pre post test without a control group. The sample of this research is health cadres in the village of Banyubiru and Ambarawa sub-districts, Semarang district, Central Java with a total sample of 120 respondents using purposive sampling technique. The research instrument used a questionnaire. Bivariate data analysis using Paired T-test. There is a significant increase in the level of knowledge of cadres between before and after being given training with a P value of 0.000. The difference in the mean level of knowledge of cadres before and after the intervention was 3.51.

**Keywords**---android application, cadre knowledge, stunting.

## Introduction

Child growth has an important determinant from conception to the first 2 years of life, referred to as 1,000 days. This critical period for growth and the effects of side effects that cause stunting is important (Black & Heidkamp, 2018). Globally, in 2017, 151 million children under 5 years (22%) were stunted (their growth was below the average growth rate for their age). About three-quarters of the children live in Southeast Asia or Africa. The high incidence of stunting has a negative impact on nation development related to the risk of child morbidity and mortality, children's learning capacity, and non-communicable diseases at later stages of life (World Health Organization (WHO), 2017). Stunting is one of the health problems in Indonesia.

One aspect of Indonesia's health profile that still needs to be considered is stunting. Chronic malnutrition in children under five, as evidenced by the high prevalence of stunting in children under five. The results of the Basic Health Research (Riskesdas), the prevalence of short and very short toddlers in Indonesia in 2013 was 37.2%, compared to 2010 (35.6%) and 2007 (36.8%) the figure showed a decrease or improvement, however, not significant because of WHO standards, the prevalence of stunting under five becomes a health problem if the prevalence is 20% or more (Health Research and Development Agency, 2013).

In 2018 Indonesia had one of the highest stunting prevalence rates in the world at 30.8 percent. The prevalence of stunting in Central Java according to Nutritional Status Monitoring (PSG) data shows an increase from 2014 to 2017, namely: 22.6%-24, 8%-23.9% and finally 28.5% in 2017. The high the prevalence of stunting in Indonesia and in Central Java is feared that there will be a "lost generation" in the future. PSG data in 2017 showed that the prevalence of stunting in Central Java was 28.5% spread across districts/cities with a prevalence range, the lowest was 21.0% in Semarang City, and the highest was 37.6% in Grobogan District. According to WHO (2013) the limit of health problems for indicators of short and very short toddlers (stunting) is > 20%, while the lowest prevalence in Central Java is 21.0%, so it can be said that all districts/cities in Central Java are still facing the problem of malnutrition. chronic stunting (Central Java Provincial Health Office, 2019). Stunting is a cyclical process because women who were stunted in childhood tend to have stunted offspring and create an intergenerational cycle of poverty (Prendergast & Humphrey, 2014). Mother's and father's education, household socioeconomic status, sanitation conditions, access to maternal health services, and family planning can affect the incidence of stunting (Vaivada et al., 2020).

National Medium-Term Development Plan 2015-2019 State: (RPJMN) targets a stunting rate of 28 percent, in 2018 the government sets priority areas for stunting prevention in 100 districts/cities through a program that will be gradually expanded until 2021, this aims to provide an explanation technical selection of districts/cities and villages/kelurahan as priority areas for stunting prevention. The indicators used in determining the priority of stunting prevention at the district/city level include: the number of poor people, the prevalence of stunting in children under five years of age and the total number of children under five years of age with stunting. At the village and sub-district levels,

regional priorities are determined using indicators that are adjusted to those used in the preparation of the index at the district and city levels, namely: population, number of poor people, poverty level and number of occurrences of malnutrition (Adji et al., 2019).

The incidence of stunting in Indonesia is influenced by several factors, namely, non-exclusive breastfeeding for the first 6 months, low socioeconomic status of the household, premature birth, short birth length and low maternal education level. and untreated drinking water are also at higher risk. Other factors for the incidence of stunting can be influenced by people living in rural areas with poor access (Beal et al., 2018). The Indonesian government created the Healthy Indonesia Program to increase access and quality of basic health services and referrals, especially in remote, underdeveloped and border areas so as to improve the quality of life of Indonesian people. The Healthy Indonesia Program is the main program of Health Development which is planned to be achieved through the Strategic Plan of the Ministry of Health for 2015-2019, stipulated through the Decree of the Minister of Health Number HK.02.02/Menkes/52/2015. community involvement in the smart Indonesia program, one of which is becoming a health cadre (Kemenkes, 2017). The results of the preliminary study show that villages in the Banyubiru sub-district and Ambarawa sub-district, Semarang district already have active and productive health cadres, however, training activities related to stunting prevention have never been carried out. Background This is the basis for researchers to conduct research on increasing knowledge of cadres in stunting prevention through android-based applications.

## Method

This research is a quantitative type with a quasi-experimental design using a pre post test without a control group. The sample of this research is village officials in Banyubiru and Ambarawa sub-districts, Semarang district, Central Java using purposive sampling as many as 120 respondents. The research instrument used several questionnaires. Questionnaire A was used to identify the characteristics of the respondents which included age, gender and type of occupation of the respondents. Questionnaire B uses a questionnaire related to the ability of village officials to prevent stunting before and after being given lactation management training and anthropometric measurements. Questionnaire B has been declared valid with a range value of 0.938-0.858 and reliable with a Cronbach Alpha value of 0.864. The study was conducted in Semarang Regency from January to December 2022. The interventions provided in this study were lactation management training and anthropometric measurements as an effort to prevent stunting by implementing an android-based application. Bivariate data analysis using Paired T-test.

## Results

Table 1  
Characteristics of Research Subjects based on age (n=120)

Variable	Mean	Std. Deviation	Min-Max
Age	41.95	8.870	23 – 62

The results of the analysis showed that the average age of the respondents was 41.95 years with a standard deviation of 8.87 years. The youngest age is 23 years, while the oldest is 62 years old

Table 2  
Characteristics of Research Subjects by Gender and Occupation (n=120)

Variable	f	%
Gender		
Male	17	14.2
Female	103	85.8
Employment		
Housewife	57	47.5
Government employees	22	18.3
Private sector employee	3	2.5
Self-employed	5	4.2
Etc.	33	27.5

The sex distribution of the respondents showed that the majority were women, i.e. 103 (85.8%) while for men only 17 respondents (14.2). The majority of respondents' occupations are housewives, namely 57 (47.5%), others 33 respondents (27.5%), 22 Civil Servants (18.3), 5 entrepreneurs (4.2%) and at least 3 respondents work as private employees, namely 3 respondents (2.5%).

Table 3.  
Mean Distribution of Cadre Knowledge in Stunting Prevention Through Android-Based Applications (n=120)

Knowledge Score	Mean	Std. Deviation	Std. Error Mean	P Value	N
<i>Pre Test</i>	25.84	1.782	0.163	0.000	20
<i>Post Test</i>	29.35	2.421	0.221		

The average score of respondents' knowledge during the Pre Test was 25.84 with a standard deviation of 1.782 while, in the Post Test the average knowledge score of the respondents increased to 29.35 with a standard deviation of 2,421. Table 3 shows that there is a difference in the mean between the Pre Test and Post Test, which is 3.51. The statistical test results obtained a P Value of 0.000, so it can be concluded that there is a significant difference or change between the respondents' knowledge scores during the Pre Test and Post Test.

## Discussion

The results showed that there was an increase in the knowledge of cadres in Stunting Prevention Through Android-Based Applications with a P Value of 0.000. The results of previous studies stated that increasing knowledge about stunting and the skills of cadres in measuring the length or height of toddlers correctly can be carried out at the Posyandu by providing training to strengthen knowledge about stunting, training on tool validation, using tools and interpreting the

results of measuring length or height. can also improve the knowledge and practice of cadres in measuring length or height in toddlers (Rohmah & Siti Arifah, 2021). The results of this study are in line with the results of research on the knowledge and attitudes of cadres about stunting in toddlers aged 12-36 months in the working area of the Leuwigoong Public Health Center, Garut Regency which showed that there was an increase in the knowledge and attitudes of cadres after being given the Stunting-Free Child Application (ABS) with a p value of  $< 0.005$ , the percentage increase in knowledge is 25.1% and the percentage of attitude is 76.2% (Handayani et al., 2019). The incidence of stunting is not only influenced by access to health services or the ability of cadres. The results of other studies show that knowledge, mother's height, child's disease history, and mother's education level are risk factors for stunting in the city of Palu (Mutiarasari et al., 2021).

The Indonesian government focuses on stunting prevention, one form of the government's seriousness in stunting prevention and handling is that the government makes the Healthy Indonesia Program to increase access and quality of basic health services and referrals, especially in remote areas, by involving the community in the Smart Indonesia program, one of which is being a health cadre. The results showed that increasing the knowledge, attitudes, and skills of health cadres in preventing stunting risk through collaboration with various parties such as education from the puskesmas followed by routine monitoring and evaluation by the puskesmas towards health cadres in the implementation of weighing, detection of nutritional status. as well as detection and stimulation of child growth and development by optimizing reporting such as effective and clear recording methods accompanied by interpretation of measurement results and speed in submitting reports on the results of early detection of child growth and development as well as nutritional status and stunting detection from health cadres to local village midwives or puskesmas (Sari et al., 2021). The active role of health cadres in early detection of stunting and stimulation of growth and development in children contributes to the realization of increasing public health degrees (Adistie et al., 2017).

The findings of previous research indicate that the motivation and knowledge of cadres affect cadre performance (Afifa, 2019). This study analyzed the differences in knowledge of cadres before and after the intervention. This study provides an android-based application that can be used by cadres as a tool for documenting the results of anthropometric examinations, which can be a solution to detect and prevent stunting from an early age so that children's growth can be monitored easily and precisely. The researcher collaborates with the district community and village empowerment office. Semarang as a partner for the implementation of the activity. The partner focuses on developing villages with expertise in information technology, with the aim of training in lactation management and anthropometric examinations to support existing government programs, where the android application which will be used as documentation of the anthropometric examination is synchronized with existing applications in Semarang district, so that sustainability the use of the android-based application can be used as one of the ongoing monitoring and evaluation programs in Semarang district.

## Conclusion

There was a significant increase in the level of knowledge of cadres between before and after being given training with a P value of 0.000 in the Banyubiru and Ambarawa sub-districts, Semarang Regency, Central Java. The difference in the mean level of knowledge of cadres before and after the intervention was 3.51. The results of this research are expected to be a reference for the Central Java government, especially the Semarang Regency Government in making policies on stunting prevention to support the achievement of reducing the incidence of stunting in Indonesia in general and Central Java in particular by optimizing the role of cadres.

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