



## The Effect of Cadre Training on the Knowledge and Skills of Integrated Healthcare Center Cadres in Monitoring the Growth of Toddlers

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### Abstract

Stunting is still a global health emergency, and this is a burden for developing countries including Indonesia. Based on the report, Indonesia is the country with the 5th largest contributor to stunting worldwide. The empowerment of cadres is considered very helpful in monitoring children's growth and development. This study aims to determine the training of cadres on knowledge and skills in monitoring the growth of toddlers in the working area of the Samarinda City Health Centre. The research is a quasi-experimental design conducted in July – August 2023 in the working area of the Samarinda City Health Center, East Kalimantan, Indonesia. A total of 66 cadres were involved as respondents by setting inclusion and exclusion criteria. The data was then collected and analyzed with the Wilcoxon and Mann-Whitney tests. Results show that there is an effect of training using modules on cadre knowledge ( $p = 0.000$ ), there is an effect of training using videos on cadre knowledge ( $p = 0.000$ ), there is an effect of training using modules on cadre skills ( $p = 0.000$ ), and there is an effect of training using videos on cadre skills ( $p = 0.000$ ). There is a difference. These results show that module media is more effectively used in training than video. Both forms of training exert the same effect. However, module-based training is more effective than video, this is because module media builds interaction among cadres.

Keywords: Training, Cadre, Knowledge, Skills, Toddler

### Key Messages:

- Nutrition education is considered as a tool to improve the level of public health through training and education efforts
- The presence of cadres is considered to be very helpful in implementing community health center activities through promotive and preventive efforts

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### 1. Introduction

The Ministry of Health of the Republic of Indonesia defines a toddler as a child aged 0–59 months [1]. Toddlers need proper and balanced nutrition because healthy foods contain important components that the body

needs to support their growth and development. Toddlers are particularly prone to the problem of nutritional deficits. One of the often endless nutritional problems is stunting [1]. Stunting often called stunted or short is a sign of failure to thrive in children due to chronic malnutrition so that children are too short of their age [2]. Stunting is diagnosed by measuring the anthropometric index of height based on a person's age [1]. Children are said to be stunted if the results of height measurement according to age are below -2 standard deviations of child growth and development based on WHO [3]

Stunting is one of the major nutritional problems experienced by toddlers in the world today [4]. Globally, in 2019 it was reported that around 144 million children under five (21.3%) were stunted. Of the world's 144 million children under five who are stunted, more than half are from low- and middle-income countries and only a quarter are from low-income countries. More than half of the world's stunted children live in Asia (54%) and more than a third (40%) live in Africa [5]. Poor nutrition in childhood hinders a child's physical and mental development, giving rise to a vicious cycle of intergenerational malnutrition [6]. Inadequate child nutritional status is a significant public health problem in low- and middle-income regions (LMICs) worldwide [7]

Indonesia is one of the developing countries that has a high prevalence of stunting [8]. Basic Health Research (2018) reported a national stunting prevalence of 30.8% [9]. This shows that 1 in 3 children under five are stunted [5]. Based on the Indonesian Nutritional Status Survey report for 2019, 2021 and 2022, the total stunting toddlers in Indonesia are 27.7%, 24.4%, and 21.6% respectively [10]. The figure has decreased from year to year but is still high based on the WHO standard of 20%. In East Kalimantan Province, based on the Indonesian Nutritional Status Survey (2022), stunting is 23.9% stunted, 9.1% wasted, 20.4% underweight, and 4.0% overweight. Meanwhile, Samarinda the capital of East Kalimantan reported total stunting of 25.3%, wasted 9.3%, underweight 20.7%, and overweight 3.3%.

Stunting refers to the retardation of linear growth due to chronic malnutrition in the long term which manifests as stunted growth [6]. Stunting increases high morbidity and mortality rates, in addition, stunting is associated with poor school performance in children and low work productivity as adults. This would threaten broader resources because it hinders the developmental potential and human resources of an entire society due to its long-term impact on cognitive function and economic productivity in adulthood. Therefore, it is considered the best surrogate marker of child health disparities [4][11]. Stunting in children is associated with an increased likelihood of being overweight and chronic diseases such as type 2 diabetes, cardiovascular disease, diabetes and cancer, as well as mental health problems later in life [7].

Many studies have proven that the factors that can influence the occurrence of stunting in children are family size, health services, sanitation, the use of latrines, clean water, healthy and clean living practices, exclusive breastfeeding, low birth weight, parental knowledge, parental education, attitudes and behaviours of each parent have been proven in this study [2] [12] [5] [13]. These findings point to the need for education and training-based strategies for growth and development monitoring as well as balanced and integrated nutrition that combine nutrition-specific interventions (focus on nearby factors) as well as nutrition-sensitive interventions (focus on underlying factors) implemented in the regions. We see that the empowerment of Integrated Healthcare Center cadres is stated to be important to be implemented. As far as researchers understand, training in cadres is still very minimal.

The principle of community empowerment is applied in health development programs, one example is the Integrated Service Post (Integrated Healthcare Center). According to the Ministry of Health (2012), an Integrated Healthcare Center is an activity managed and organized from, by, for and with the community. The existence of an Integrated Healthcare Center can provide convenience in obtaining basic health services including Family Planning (KB), Maternal and Child Health (MCH), Nutrition, Immunization and diarrhea management [14]. Recent studies in West Lombok show the effect of Integrated Healthcare Center cadre training on increasing

knowledge and attitudes [15].

Stunting is still a global health emergency, and this is a burden for developing countries including Indonesia. Based on the report, Indonesia is the country with the 5th largest contributor to stunting worldwide. The empowerment of cadres is considered very helpful in monitoring children's growth and development. This study aims to determine the training of cadres on knowledge and skills in monitoring the growth of toddlers in the working area of the Samarinda City Health Centre.

## 2. Methods

Research is quasi-experimental design. Pseudo-experimental designs have experimental classes and control classes, but control classes cannot fully control outside variables that affect the conduct of experiments. This research was conducted in July - August 2023 in the working area of the Samarinda City Health Center, East Kalimantan, Indonesia. The population in this study is all Integrated Healthcare Center cadres in the working area of the Samarinda City Health Center, whether they have received growth monitoring training or not. The number of cadres in the Samarinda City Health Center area is 185 cadres. While the sample involved 66 people based on the Slovin formula. Simple random sampling by taking into account inclusion and exclusion criteria. The inclusion criteria are Integrated Healthcare Center cadres who are permanent in the Puskesmas area, willing to be respondents, able to read and write, and willing to be respondents. The exclusion criteria are cadres who are not willing to be respondents, cadres aged > 55 years and are not in place during the study.

The independent variable in this study is cadre training in monitoring child growth and development which is seen in the development of toddler cadre performance with an emphasis on mastery of the ability to monitor toddler growth. The dependent variable is the knowledge of cadres' understanding related to monitoring the growth of toddlers in the Integrated Healthcare Center. The skills in question are Growth Monitoring practice activities carried out by cadres before and after training.

Data analysis is carried out with the help of computer software using the SPSS 25 program. The data analysis used was univariate and bivariate. Univariate analysis aims to explain or describe the characteristics of each research variable. In general, this analysis only produces frequency distributions and the percentage of each variable is an analysis carried out on each variable in the research results. The bivariate analysis was carried out to determine the effect of training on changes in the level of knowledge and skills of cadres, namely the level of difference in cadre knowledge and skills before and after treatment was given to the cadre training group with the Toddler Growth Monitoring module and the cadre training group with the Toddler Growth Monitoring video. The Wilcoxon test is used on data that is not normally distributed and continued with data processing using a two-sample difference test paired with the Wilcoxon Signed Ranks Test (Non-Parametric Test). The Wilcoxon test is also used to determine whether there is an average difference between two paired samples. To determine the difference in the level of knowledge and skills after intervention in the cadre training group with the Toddler Growth Monitoring module and the cadre training group with the Toddler Growth Monitoring video, a follow-up test was carried out, namely the Mann Whitney U Test. The Mann-Whitney U Test is a non-parametric test used to determine the median difference of 2 independent groups if the dependent variable data scale is ordinal or interval/ratio but not normally distributed.

## 3. Results

Characteristics of respondents.

Respondent characteristics are inherent characteristics of respondents. Characteristics of respondents include age, education level, length of time in cadre, and training status. Table 1 shows the age category of respondents in the cadre training group with the highest Toddler Growth Monitoring module is 40 - 49 years old at 63.64% and in the cadre training group with Toddler Growth Monitoring video at 57.58%. The education level

of respondents in the cadre training group with the highest Toddler Growth Monitoring module was high school which was 24 people (72.73%) and in the cadre training group with Toddler Growth Monitoring video which was 23 people (69.70%). Long as cadres, namely respondents in the cadre training group with the 5-year-old Toddler Growth Monitoring module  $\leq 5$  years as many as 17 people (51.51%) and the cadre training group with Toddler Growth Monitoring videos as many as 21 people (63.63%), for a long time being cadres  $> 5$  years in the cadre training group with the Toddler Growth Monitoring module as many as 16 people (48.48%) and cadre training groups with Toddler Growth Monitoring videos as many as 12 people (36.36%). Respondents who had attended toddler growth monitoring training in the cadre training group with the Toddler Growth Monitoring module were 24 people (72.73%) and the cadre training group with Toddler Growth Monitoring videos were 20 people (60.60%).

**Table 1 Characteristics of Respondents**

Characteristic	Experiment		Control	
	n	%	n	%
<b>Age (years)</b>				
≤ 39 Enough	5	15.5	12	36.36
40 – 49	21	63.64	19	57.58
≥ 50	7	21.21	2	6.06
<b>Education</b>				
Primary school	7	21.21	7	21.21
High School	24	72.73	23	69.70
D3	2	6.06	3	9.09
<b>Long Cadre</b>				
≤ 5 Years	17	51.51	21	63.63
> 5 Years	16	48.48	12	36.36
<b>Have Attended Training</b>				
Yes	24	72.73	20	60.60
Not	9	27.27	13	39.39
<b>Total</b>	<b>33</b>	<b>100</b>	<b>33</b>	<b>100</b>

Table 2 shows that the average knowledge score of cadres using the training module before and after the intervention increased to 76.09 and Hasil Wilcoxon test analysis on pretest and post-test knowledge scores showed a value of  $p = 0.000$ . While the video training before and after the intervention also experienced an increase of 70.64 with a value of  $p = 0.000$ ,  $H_a$  was accepted and  $H_o$  was rejected which means that there was a significant effect on the level of knowledge before and after the cadre training was carried out with the provision of growth monitoring videos.

The average skill score in the cadre training module group before and after the intervention increased to 77.82 and the result of the Wilcoxon test analysis on the skill score of the observation sheet before and after showed a value of  $p = 0.000$  which means there was a significant influence on the level of knowledge of cadres. While in the training group using video, the average score increased to 61.67. Based on the Wilcoxon test on the Skill score, the observation sheet before and after showed a value of  $p = 0.000$  which means that there is a significant influence or difference in skill level before and after cadre training is carried out by providing growth monitoring videos.

Table 3 shows the results of the *Mann-Whitney* Analysis test on knowledge scores in the Cadre Training group with the Toddler Growth Monitoring Module and the Cadre Training group with the Toddler Growth Monitoring Video showing a value of  $p = 0.008$ .  $H_a$  was accepted and  $H_o$  was rejected, which means that there is a significant difference between cadre training and the provision of growth monitoring modules and growth monitoring videos on cadres' level of knowledge. There is a difference in the mean variable value of knowledge of

the Cadre Training group with the Toddler Growth Monitoring Module of 39.48 and the Cadre Training group with the Toddler Growth Monitoring Video with a mean value of 27.52.

**Table 2 Influence Between Module and Video Group Variables**

Variable	Training Modules			Video Training		
	Mean	SD	p	Mean	SD	p
<b>Knowledge</b>						
Pre-test	55,15	9,097	0,000	51,79	7,877	0,000
Post-test	76,09	6,903		70,64	7,578	
<b>Skills</b>						
Pre-test	59,12	5,098	0,000	53,61	6,093	0,000
Post-test	77,82	7,585		61,67	7,561	

Meanwhile, the results of the *Mann-Whitney* Analysis test on skill scores in the Cadre Training group with the Toddler Growth Monitoring Module and the Cadre Training group with Toddler Growth Monitoring Videos showed a value of  $p = 0.000$ .  $H_a$  was accepted and  $H_0$  was rejected, which means that there is a significant difference between cadre training and the provision of growth monitoring modules and growth monitoring videos on cadre skill levels. There is a difference in the mean variable value of skills of the Cadre Training group with the Toddler Growth Monitoring Module of 46.73 and the Cadre Training group with the Toddler Growth Monitoring Video with a mean value of 20.27.

**Table 3 Differences in Variables in Module and Video Groups**

Variable	Mean rank	p
<b>Knowledge</b>		
Toddler Growth Monitoring Module	39,48	0,008
Toddler Growth Monitoring Videos	27,52	
<b>Skills</b>		
Toddler Growth Monitoring Module	46,73	0,000
Toddler Growth Monitoring Videos	20,27	

#### 4. Discussion

##### The Effect of Growth Monitoring Training on Cadre Knowledge

Training means changing behaviour patterns because training will eventually lead to behaviour change. Training is a part of education that concerns the learning process, useful for acquiring and improving skills outside the prevailing education system, in a relatively short time and the method prioritizes practice over theory [16]. The results of the study based on the Wilcoxon test showed a p-value of 0.000 which means  $H_a$  was accepted and  $H_0$  was rejected. It can be concluded that there is a significant influence between the use of training modules on increasing the knowledge of cadres of the Samarinda City health centre work area. This finding is in line with the study of Noprinda et al. (2022) which suggests that there is an effect of cadre training with increased knowledge [17]. This result was corroborated by the distribution of the frequency of the average value of cadres before the intervention was 55.15 while after the intervention rose to 76.09. The study of Wahyuni, Mose, and Sabarudin (2019) shows that training Integrated Healthcare Center cadres with integrated modules is proven to increase respondents' knowledge and attitudes, but not better in increasing cadre participation

Modules are teaching materials that are arranged as a whole and structured, in which they contain a set of planned learning experiences and are made to help master structured learning objectives. Modules are said to be good and interesting if there are characteristics of self-instruction, self-standing, independent, adaptive, and friendly [18]. The module used is a set of written and structured information about the growth and development of children. In the module, the procedures for measuring children's growth and development are described. Researchers assess that the increase in cadre knowledge in the experimental group can occur because of the

education provided to cadres using the growth monitoring module because the media is proven in theory to increase knowledge. Modules are one of the effective media in providing education and the methods used are lecture and question and answer methods, many cadres ask about toddler growth. In addition to lectures and questions and answers, increasing knowledge is also carried out with practice and discussions carried out during training so that cadres increasingly understand how to monitor growth in toddlers. This research is in line with the study of Silitonga et al (2023) which shows a change in knowledge after a person gets an intervention [19].

Notoatmodjo, (2007) Knowledge is the result of knowing, and this occurs after people sense a certain object. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste and touch. Most human knowledge is acquired through the eyes and hearing [20]. The knowledge possessed by respondents before training is good, looking at the characteristics of respondents' age and marital status allows respondents to have good knowledge. The respondents' experience of having children and visiting the Integrated Healthcare Center is the basis for forming good knowledge. Experiences are events that have been experienced, lived and felt by someone, whether it has happened for a long time or have just happened. Experience is one of the factors that shape a person's knowledge, so many people say experience is the best teacher in life. In addition, media exposure is also one of the factors that can affect one's knowledge, considering that nowadays many advertisements are promoting Integrated Healthcare Center services [14].

Training using video monitoring of toddler growth and development in cadres obtained the mean value of cadre knowledge before and after intervention with the results of *Wilcoxon* test analysis showing a value of  $p = 0.000$ , there was a significant influence on the level of knowledge before and after cadre training with growth monitoring videos. This finding was corroborated by univariate results obtained 51.79 pre-test scores and 70.64 post-test scores. This finding is in line with the study of Elsanti and Sumarmi (2023) which shows a significant influence of providing audio-visual video education on pregnant women's knowledge about nutritional intake [21].

The growth monitoring video given during the training is 30 minutes long and only carried out once, the video displays the stages of growth monitoring sequentially and each stage is practised and explained so that cadre knowledge increases. This is in line with Notoatmodjo's theory, 2017 that knowledge is the result of knowing and this occurs after people sense a certain object. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste and touch. Part of human knowledge is acquired through the eyes and ears.

Based on the level of knowledge, a higher mean value for the Cadre Training group with the Toddler Growth Monitoring module is 39.48 and the value of the Cadre Training group with the Toddler Growth Monitoring video is 27.52 with a  $p$ -value of 0.008. Researchers assess that training using modules is more effective in increasing knowledge than just providing videos because there is direct practice carried out by cadres accompanied by discussions so that cadres' skill knowledge increases around monitoring toddler growth. This study is in line with the findings of Munawaroh et al. (2019) showing that nutrition education with pocketbook media is quite effective in increasing knowledge in pregnant women [22]. Educational interventions will change a person's perspective for the better [23].

Both training modules and video-based training have advantages and disadvantages, and their feasibility and cost-effectiveness for wider implementation in healthcare centers may vary depending on the specific context. Training modules Advantages: 1) Can be tailored to the specific needs of the healthcare center and the cadres being trained, 2) Can provide opportunities for interaction and hands-on learning, 3) Can be delivered by experienced trainers or by the cadres themselves. Disadvantages: 1) Can be time-consuming and expensive to develop, 2) Can require specialized equipment and resources, 3) May not be accessible to cadres in remote areas. Video-based training Advantages: 1) Can be developed and disseminated relatively quickly and cheaply, 2) Can be accessed by cadres at any time and from any location, 3) Can be used to deliver training on a variety of topics.

Disadvantages: 1) May not be as effective as training modules for teaching complex skills or concepts, 2) May not provide opportunities for interaction or hands-on learning, 3) May require cadres to have access to computers or other devices with internet access. In general, training modules may be more effective for teaching complex skills or concepts, while video-based training may be more accessible and cost-effective for wider implementation in healthcare centers. However, the best approach will vary depending on the specific needs of the healthcare center and the cadres being trained

### **The Effect of Growth Monitoring Training on Cadre Skills**

Based on the results of the study, it is known that the average skill level of cadres before and after being given intervention in the Cadre Training group with the Toddler Growth Monitoring module has increased with the results of the *Wilcoxon* test analysis showing a value of  $p = 0.000$ , which means  $H_a$  is accepted and  $H_o$  is rejected which means There is a significant influence or difference in skill level before and after cadre training with the Growth Monitoring module. This result was corroborated by univariate analysis which showed the average value of cadres before and after the intervention was 59.12 and 77.82 respectively, which means that it has increased. This research is supported by recent research that found that training provides positive value that can improve skills [24]

Researchers assessed that cadre skills increased along with increasing cadre knowledge, cadre training with modules accompanied by practice improving group skills Training with Toddler Growth Monitoring modules. In the Cadre Training group with the Toddler Growth Monitoring module, direct practice was given using anthropometric tools and bringing toddlers to be measured directly. During the practice participants carry out weighing and measurement, discussion and question and answer so that cadres are more skilled.

Pratiwi (2012) stated that training is a teaching and learning process for certain knowledge and skills as well as attitudes to be more skilled and able to carry out their responsibilities better and follow standards [16]. We also found the motivation and resilience of cadres in participating in this training. According to theory, participation or participation can be realized if the following conditions are met, including the invitation and opportunity for community members to participate in activities or programs, the benefits that can be immediately felt by the community, the example and example of community leaders and leaders, especially in paternalistic communities [14].

Knowledge gained through the learning process is called learning knowledge so it fosters one's belief in an object and influences the formation of Action. Bloom's theory in the revision of Krathwohl's taxonomy (2002) states that there are 6 stages of knowledge, namely remember, understand, apply, analyze, evaluate, and create [16]. The role of cadres includes providing counselling so that cadres with good knowledge will be able to convey important messages about health to the community to encourage the formation of clean and healthy living behaviours. In addition, cadres are implementers of Integrated Healthcare Center activities who record and report the results of Integrated Healthcare Center activities, it is very important to have good knowledge so as not to be mistaken in entering data and concluding the results of Integrated Healthcare Center activities.

Based on the results of the study, it is known that the average skill level of cadres before and after the intervention was given to the Cadre Training group with the video Monitoring Toddler Growth increased with the results of the *Wilcoxon* test analysis showing a value of  $p = 0.000$  which means  $H_a$  is accepted and  $H_o$  is rejected which means There is a significant effect or difference in skill level before and after cadre training with growth monitoring videos. This research is in line with the research of Damayanti et al. (2021) in Bandung which shows the influence of training with skills [25]. This result was corroborated by univariate analysis which showed a mean value of 53.61 pre-test and post-test 61.67. There was an increase of 8.06.

Learning video media is a media that is a combination of audio and visual that contains learning and uses a tool to display it. Videos make a huge contribution to changing people's behaviour, especially in the aspects of

information and persuasion. Video media has two elements, each of which has a power that will synergize into a great strength. This media provides stimulus to hearing and vision so that the results obtained are maximized. The influence of the media will make participants more responsive to understanding compared to other media because the video displayed is in the form of a focal point light that can influence one's thoughts and emotions. Video media is also able to make participants who are slow to receive messages easily understand the information conveyed because the video can unite visual (image) and audio (sound) [21]

Training with video media containing practices on how to monitor growth also improves the skills of cadres in the Cadre Training group with Toddler Growth Monitoring videos. Researchers consider growth monitoring videos that contain material on tool introduction, weighing and measuring methods and assess growth monitoring as an educational medium that contains sound and images (audio visual) so that it can improve skills because it can describe concepts more clearly. Nutrition education is expected to be one of the solutions to improve the nutritional status and health status of adolescents by conveying theories and information about nutrition to educational targets such as adolescents with teaching and learning methods [26].

The results of the Mann Whitney U Analysis test on skill scores in the Cadre Training group with the Toddler Growth Monitoring module and the Cadre Training group with the Toddler Growth Monitoring video showed a value of  $p = 0.000$  and the knowledge score showed a value of  $p = 0.008$ ,  $H_a$  was accepted and  $H_0$  was rejected which means There is a significant difference between cadre training and the provision of growth monitoring modules and growth monitoring videos on the level of knowledge and skills of cadres. Based on the skill level the Cadre Training group with the Toddler Growth Monitoring module had a higher mean value than the Cadre Training group with the Toddler Growth Monitoring video which was 46.73 with a control group value of only 20.27, this illustrates that cadre training with the Toddler Growth Monitoring module is more meaningful than just being given a video Growth Monitoring.

Finally, the results of this study were corroborated by Harna, Rahmawati, and Hosizah (2022) that there was an increase in cadres' knowledge after being given training. A person's knowledge will determine his attitude and skills. With their knowledge, they will be more free to develop their talents and potential. This research is corroborated by that increased knowledge strongly supports skill improvement in a person [24]. In summary, our findings point to the need for integrated interventions to reduce stunting in Indonesia. Intervention is not only on the target but also reaches something that can affect the target such as cadres. By using a multisectoral approach to address a range of factors from the community to the individual level [12].

One implication is that governments and other stakeholders should invest in programs that integrate nutrition, health, and WASH interventions. These programs can be more effective than single-sector interventions at reducing stunting, and they can also be more efficient. Another implication is that programs to reduce stunting need to be tailored to the specific needs of the community being served. This means understanding the root causes of stunting in the community, and designing interventions that address these causes. Finally, it is important to note that reducing stunting is a long-term investment. It takes time to change behaviors and improve health outcomes. Programs to reduce stunting need to be sustained over time in order to achieve their full impact.

## 5. Conclusion

We found there was an effect of training on monitoring toddler growth using modules on cadre knowledge. There is an effect of monitoring the growth of toddlers using videos on cadre knowledge. There is an effect of toddler growth monitoring training using modules on cadre skills and there is an effect of monitoring toddler growth using videos on cadre skills. Training on monitoring toddler growth and development using modules is much more effective because of the interaction than using video media. Both of these interventions influence improving the knowledge and skills of cadres. It is hoped that this activity will continue to be carried out to hone



skills and improve the knowledge of cadres.

The suggestion for further research is to explore the impact of training and growth monitoring on cadre motivation and job satisfaction. In addition to improving cadre knowledge and skills, training and growth monitoring may also have a positive impact on cadre motivation and job satisfaction. This could lead to improved job performance and retention, which would benefit both the healthcare system and the community.

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