# Effectiveness of Online Height Measurement Training for Parents

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## Abstract

**Background:** The incidence of stunting in Indonesia is high (30.8%), therefore, regular monitoring of children's height growth is needed. However, during the Covid-19 pandemic, the health service's checks are limited, as well as schools as a potential place to monitor children's growth are closed. This study aimed to assess the effectiveness of online height measurement training for parents.

**Methods:** This was a quantitative research with one group pre-and post-intervention design. It was conducted in a rural area in West Java, from August to November 2021. The parents of school students were included with a purposive sampling method. The training media was in the form of height measurement videos. The assessment of parents' skills was an online check sheet with a Likert scale of 1–5 using the WhatsApp application. Analyzes were performed with the Paired T-Test.

**Results:** In total, 86 parents were included, all of whom were mothers with the majority (51.2%) age range of 36–45 years. Parental education varied with most elementary school graduates (27.9%). Most mothers did not work (59.3%). As for the students, the majority were female students (60.5%) between 6–9 years old. The skill score before and after training was effective (d=2.04; p=<0.001).

**Conclusions:** Online height measurement training using video has high effectiveness in improving parents' skills to self-practice measurement at home.

**Keywords:** Height, online, skills, training

## Introduction

Stunting is the impaired growth and development experienced by children due to poor nutrition, repeated infections, and inadequate psychosocial stimulation. Stunting is a global nutritional problem, affecting 165 million children under the age of five worldwide.[1] As many as 80% of stunted children under the age of five live in 14 countries around the world, and Indonesia ranks fifth in the country with the highest stunting.[1] Early age is the golden age of child development because growth occurs very rapidly at this stage. Growth in height is very important because one of the indicators of children's health is indicated by growth in height.[2] Elementary school age (6–12 years) is known as the second highest peak of growth after three years, this is the most important stage in the development of physical qualities of adults. This can be done by measuring the height for a school-age child (*Tinggi badan anak baru masuk sekolah*, TBABS).[3] Based on the previous survey, the prevalence of stunting for elementary school children was found to be very high in rural areas (41.7%) than in urban areas (29.3%), with a prevalence of 35% for school-age children (6–12 years) classified as stunting.[4] This is caused by various internal and external factors. Parental education, occupation, and socioeconomic status have a weak relationship with the nutritional status of preschool children.[4]

Indonesia is experiencing a state of great public concern for Covid-19, so there is a need for a blockade by government policies to break the chain of spreading the Covid-19 outbreak.[5] However, the Covid-19 pandemic has affected maternal and child health services and resulted in schools being closed, even though schools are potential places to monitor children's growth and development. In March 2020, the World Health Organization (WHO) officially declared Covid-19 a pandemic. Furthermore, the Government has stipulated

Government Regulation Number 21 of 2020 concerning large-scale social restrictions (*Pembatasan sosial berskala besar,* PSBB) to facilitate the handling of Covid-19. Therefore, PSBB can indirectly lead to a reduction in stunting prevention monitoring programs.[6]

Monitoring children's growth and development during the pandemic cannot be done independently by parents at home due to limited motivation and knowledge about measuring height. Therefore, a training is needed to improve skills so that parents can carry out correct and accurate anthropometric measurements. Previous research suggested motivating mothers to use anthropometry at home and educating the people around them.[7] The purpose of this study was to assess the effectiveness of online height measurement training for parents so that parents can immediately check their children if they are stunted.

## Methods

This study has used pre and post-experimental methods in the form of one group design, namely research that only includes one group without a comparison group (control). This research was conducted in a rural area, namely Karangsembung Village, Jamanis District, Tasikmalaya Regency, West Java Province from August to November 2021. The subjects involved in this study were 86 parents of school children who met the inclusion criteria with purposive sampling method. The inclusion criteria in this study were parents of students aged 6–9 years who had Android-based smartphones and had an internet quota. The exclusion criteria were parents who were not willing to participate in the study.

Prior to the online height measurement training, respondents were given an explanation of the technical details of online research through the WhatsApp application. then the respondent signed the informed consent form as a sign of agreeing to participate in the study.

The initial step of the research was to assess the skills of parents before being given training, parents were asked to practice how to measure height according to what they know, then this assessment will be observed online via Whatsapp video calls. This assessment used a checklist containing 8 assessment items derived from standardized videos and had been tested for validity and reliability so that it can be used for research. Skill scores using a Likert scale of 1–5. The use of the Likert Scale made it easy to measure the opinions and attitudes of respondents, with 1=very poor, 2=poor, 3=fair/neutral, 4=good, 5=very good with a maximum of 40 points. After the pre-intervention assessment, respondents were given a video on how to measure height sourced from the WHO Training Course which had been translated into Indonesian, then it was suggested to watch and practice independently according to the video.

The time limit for self-study was a maximum of 1 week, then respondents were asked to contact the researcher to schedule a final assessment of measurement skills online. The final assessment used the same checklist as the initial assessment. The variables used in this study were skill scores before and after the intervention. Characteristics of respondents consisted of age, education, occupation, sex of the child, and age of the child. All data collected was kept confidential. Skill scores were analyzed with the STATA Version 14 application and then presented in percentages, numbers, and diagrams. Statistical analysis used was Paired T-Test because the results of the normality test of the respondents' skill
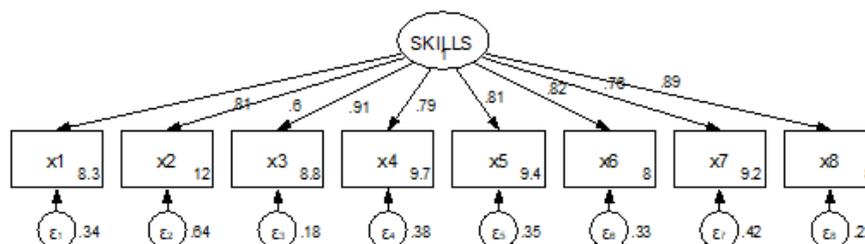


**Figure 1 Confirmatory Factor Analysis**

**Table 1 Reliability Test**

| Skill Variable | Cronbach's Alpha | Description |
|---|---|---|
| Take off your shoes and headdress | 0.926 | Reliable |
| Install measuring tools | 0.936 | Reliable |
| Position the child correctly | 0.919 | Reliable |
| Look straight ahead | 0.924 | Reliable |
| Child body fixation | 0.925 | Reliable |
| Move the tool until it touches the child's head | 0.927 | Reliable |
| Reading measurements results | 0.927 | Reliable |
| Record measurement results | 0.920 | Reliable |

**Table 2 Normality Test**

| Skills | w | V | Z | Prob>z | Description |
|---|---|---|---|---|---|
| Pre-intervention | 0.99343 | 0.476 | -1.620 | 0.94734 | Normal |
| Post-intervention | 0.95559 | 3.235 | 2.583 | 0.00490 | Not normal |
| Differential | 0.99347 | 0.476 | -1.635 | 0.94894 | Normal |

scores were normal. This research has been approved by the Research Ethics Committee of Universitas Padjadjaran with the ethical exemption number 750/UN6.KEP/EC/2021.

Data were collected by observing 86 respondents consisting of parents of school students aged 6–9 years. The method used to assess the validity of the questionnaire in this study was Confirmatory Factor Analysis (CFA). A good construct was if it had a load factor of at least 0.30. Thus, if the value was 0.30, then the indicator was valid.

Based on Figure 1, there were 8 assessment items which were research material, each of which had a value of more than 0.30 so the results of the analysis were valid.

The reliability test was used to measure a questionnaire or observation sheet which was an indicator of a variable or construct and to state whether a person's answer to a statement was consistent or stable from time to time. A variable was said to be reliable if it gave a Cronbach Alpha value >0.60. Based on Table 1, it can be seen that if each item had a Cronbach's Alpha value greater than 0.6 then the assessment sheet could be said to be reliable. The normality test method used to test the residual normality was the Shapiro-Wilk Test.

## Results

All respondents were mothers of 86 students from 2 elementary schools in Karangsembung Village. The age of the most respondents was in the range of 36–45 (51%). Education varied with most graduating from elementary school (28%). Most respondents did not work (59%). The male and female students measured in this study were 39% and 61%, respectively, with ages between 6–9 years, and the majority were 7 years (50%).

Before receiving the training, most of the respondents already knew the basics of measuring height. The average skill score before training was 31 whereas the average skill score after training was 37.9.

There was a very significant difference in the distribution of pre and post-height measurement training interventions (p<0.000). The effect of this training was categorized as large because d >0.8 according to Cohen's d effect size category (Figure 2).

## Discussions

This study involved 86 respondents consisting of mothers aged 36–45 years who were late adulthood but the skill score before and after training was effective. A similar study was conducted in Sukoharjo District, Pringsewu Regency[8] in 2016 involving 42 posyandu cadres aged ≥26 years with the results that there were 29 (69.0%) posyandu cadres who had good performance. In addition, the results of the chi-square test showed that there was a

**Table 3 Respondent characteristics**

| Category | Frequency (n) | Percentage (%) |
|---|---|---|
| Age (years old) | | |
| 26–35 | 31 | 36 |
| 36–45 | 44 | 51 |
| 46–55 | 10 | 12 |
| 56–65 | 1 | 1 |
| Level of education | | |
| No School | 2 | 2 |
| Elementary School | 24 | 28 |
| Primary High School | 14 | 16 |
| High School | 18 | 21 |
| Undergraduate | 22 | 26 |
| Postgraduate | 3 | 4 |
| Diplome | 3 | 4 |
| Occupation | | |
| Does not work | 51 | 59 |
| Trader | 5 | 6 |
| Government employees | 12 | 14 |
| Honorary teacher | 11 | 13 |
| Non-formal teacher | 3 | 4 |
| Midwife | 2 | 2 |
| Laborer | 1 | 1 |
| Entrepreneur | 1 | 1 |
| Child's gender | | |
| Male | 34 | 39 |
| Female | 52 | 61 |
| Child's age | | |
| 6 years old | 10 | 12 |
| 7 years old | 43 | 50 |
| 8 years old | 18 | 21 |
| 9 years old | 15 | 17 |

**Table 4 Respondent Skill Score**

| Skill Variable | Mean Pre-Intervention Skill Scores Using a Likert Scale | Mean Post-Intervention Skill Scores Using a Likert Scale | P-value |
|---|---|---|---|
| Take off your shoes and headdress | 4.8 | 5.0 | <0.001 |
| Install measuring tools | 4.9 | 5.0 | <0.001 |
| Position the child correctly | 3.4 | 4.7 | <0.001 |
| Look straight ahead | 3.7 | 4.7 | <0.001 |
| Child body fixation | 2.6 | 4.3 | <0.001 |
| Move the measuring tool until it touches the child's head | 3.6 | 4.7 | <0.001 |
| Reading measurements results | 3.6 | 4.6 | <0.001 |
| Record measurement results | 4.2 | 4.6 | <0.001 |
| Mean | 31 | 37.9 | <0.001 |

**Figure 2 Effect Size based on Mean Comparison**

relationship between age and the performance of the elderly posyandu cadres (p=0.027).[8]

Although the education level of most respondents is elementary school with 24 respondents and 51 respondents are not workers, this is not a limitation in understanding and practicing the material in the video. This is in line with another research. which states that there is no relationship between age, marital status, level of education, and length of time being a cadre on the level of activity of posyandu cadres.[9] However, this is inversely proportional to the research conducted in Sukoharjo District, Pringsewu Regency, the results showed that there was a significant relationship between age, knowledge, attitude, motivation, rewards, leadership with the performance of elderly Posyandu cadres.[8]

The age of the children who were the target of the study was 6–9 years. More than half of them are female students (60.5%), with the majority age being 7 years (50%). To achieve optimal growth and development since pre-adolescent, namely the age of 10–12 years, it is necessary to prepare the child's body in advance from the aspect of health status, and the factors that affect growth and development by looking at the previous age, namely 6–9 years, which is a sloping time in the child's growth phase so that at this age, children's growth monitoring can be done independently by parents at home.[10]

Skills assessment was carried out using a check sheet containing 8 items adapted from the height measurement video from the WHO training course which had been modified into Indonesian. In the video, the measuring instrument used is a stadiometer[11] while in this study a tape meter that has been validated can be used to measure height. The lowest score before training with an average of 2.6 was found in the respondents who were less skilled in fixing the child's body and most of the respondents did not push the child's stomach slowly, while the highest score with an average point of 4.9 was the respondent's score on the ability to attach a tape measure on the wall in an upright position. There was a change in the score after the training, namely the highest point with an average of 5 on the assessment of the respondent's ability to install measuring instruments and remove footwear and headdress for children, the lowest point was the respondent's ability to fix the body and slowly push the child's stomach at 4.3. However, there was a significant change between the skill results before and after training in the height measurement.

Changes in the respondent's skill score increased convinced to be due to receiving information by providing audiovisual training. Practices and simulations make it easy to remember what they have to do and can see it live.[12] It takes a faster time to capture information through the involvement of many senses. After receiving the height measurement video, the improvement in skill scores increased due to the time lag for the respondents to learn and practice independently. This self-practice helps parents better remember what they are learning and practicing. The results of a study showed that video-based training was very effective in

improving the cognitive skills of trainees.[13]

Significant differences in skill scores on pretest and posttest anthropometric measurements before and after training also occurred in other studies.[14,15] In addition, this significant difference is also influenced by audiovisual media, where the use of video was more effective in changing behavior.[16,17] In general, it can be concluded that training with audiovisual media can significantly increase knowledge compared to respondents who do not participate in training activities.[18,19] In contrast, another study has shown that training has no significant effect on performance.[20]

This study has several limitations. Data collection was carried out in a pandemic situation, so the research socialization process became very difficult, besides, kindergarten and elementary schools had implemented limited face-to-face learning so that good time arrangements were needed to disseminate information and scheduling between researchers and respondents. However, this research was helped by the good coordination and relationship between teachers and researchers so that information could be disseminated through the WhatsApp group of parents. Although the height measurement training activity is carried out online, it is expected to have many benefits for increasing parents' awareness in monitoring their child's growth and development which can be done independently at home, thus, they can immediately check their children if there are growth problems.

To conclude, online height measurement training is proven to be effective in monitoring height measurements that can be done at home. Online training method can also be developed as an educational tool in socializing how to monitor children's growth and development using electronic media in the form of videos.

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