

Anthropometry Measurement Video Improve Knowledge of Cadres in Nganjuk City: A Single Group Pre-Post Test Design Study

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ARTICLE INFO	ABSTRACT
ORCHID ID Author 1: https://orcid.org/0000-0001-5646-0661 Author 2: https://orcid.org/0000-0001-6513-0744 Author 3: https://orcid.org/0000-0002-5115-0311 Author 4: https://orcid.org/0000-0003-3799-0928 Author 5: - Author 6: - Author 7: - Author 8: - Author 9: -	High quality anthropometric measurements are important for nutritional assessment in children. In Indonesia, anthropometric measurement of children performed by cadres in child center called posyandu as a child growth monitoring. However error measurements are found, especially on length or height measurement of children affecting precision and accuracy of data. This will lead to misinterpretation of child nutrition status. Education and training for cadres using media are important to improve their knowledge and skill related to anthropometric measurements. This study aimed to assess the effect of anthropometry measurement training using videos on Cadre's knowledge. This study used one group pre-post test design with twenty cadres from Jekek and Mabung Village, Nganjuk City were recruited to this study. Intervention given to cadres was training using video anthropometry measurement. Knowledge score are measured before and after intervention. Statistical test was performed using paired t-test. The result of the study showed that there were significant different (p less than 0.05) of cadres's knowledge score before (74.25 more or less than 7.48) and after training (78.75 more or less than 7.75). Anthropometric measurement training using video has effective in improving cadres knowledge of anthropometric measurement. Further study also needs to investigate skill improvement of anthropometric measurement for cadres.
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1. Introduction

Children malnutrition are still become the main issues in Indonesia. Ministry of Health of Indonesia data showed that around 30.8% children in Indonesia were stunting in 2018 (WHO, 2021) Indonesian Nutritional Status Survey 2022 shows that there has been a decrease of stunting prevalence each year start from 2018, and it reach 21.6% in 2022 (Kemenkes, 2023). However this figure is still below the national target that must be achieved by 2024 (Bappenas, 2015). Nganjuk is one of the city in East Java Provinces which has a stunting prevalence more than 20% (Indriani et al., 2018). Puskesmas Baron is a Community Health Center located in Nganjuk is reported to have 134 children with stunting

In Indonesia, monitoring of child growth is performed by health volunteers called cadres in Integrated Service Center called Posyandu (Ohyvera et al., 2017). Posyandu run by health volunteer in the community that provides services including child growth monitoring, mother and child health service, immunization, education on nutrition related health, and supplemental feeding both for pregnant mothers and children. Posyandu is held monthly at every village level and the operation is supported by health workers including medical doctor or midwives and cadres as a village health volunteer (Anwar et al., 2010). Posyandu implement basic health screening and observation as a form of community participation under Departement of Health. The activity of posyandu is determined by the cadres. Thus the cadres as a health volunteer hold the important part in children growth monitoring (Muntafiah et al., 2021).

Anthropometry measurement has an important place in nutritional assessment and growth monitoring. Growth monitoring includes measurement of height/length and weight for children and interpretation of those measurements is obtained by comparing the measurement result relative to the growth of a large sample population of children represented on a selected growth chart. This anthropometric measurement helps to ensure the healthy growth and development of children and identify potential nutrition problems as soon as possible so health professionals can provide appropriate interventions before child's nutritional status is seriously compromised (Dietitians of Canada et al., 2010). Anthropometry is a relative quick, simple and cheap method of nutrition assessment, however, measurement error can related to misinterpretations of nutritional status (Ulijaszek & Kerr, 1999). Building up experience with anthropometry measurement and handling children is also be important. Standardization of anthropometric measurement conditions and techniques is also very crucial, as every cadres have a different background, there will be great variation in years of practice between cadres, training and education, which may lead to considerable measurement variation (Vegelin et al., 2003). To avoid the variability and reduce error in measurement, there are few recommendation from World Health Organizations to guarantee quality assurance measure including intense training and frequent and effective equipment maintenance and calibration (Viviani et al., 2018).

Accuracy of anthropometric measurement in Posyandu is related to cadres knowledge and skill to perform children anthropometric measurement. Previous study showed that almost 40.9% of the cadres had insufficient knowledge regarding anthropometry measurement (Rahayu, 2019), another study also showed that 97.5% cadres were innacurate at weight measurement (Indriaty, 2003) and more than half of the cadres did not performed weigh measurement according to standart procedures (Sukiarko, 2007). Based on preliminary study was performed, it found that an error also occurred in the process of measuring the height carried out by cadres in Nganjuk City. In 2022, error in height measurement found almost in 50% children from 130 children in Jekek and Mabung Village, nganjuk city. Cadre skills and knowledge in measuring anthropometric can be improved by providing training anthropometric measurements according to standard procedures however cadres have received basic training with conventional approach. This research develop anthropometry measurement using video media to help cadres improve their knowledge related to anthropometric measurement. The objective of this research is to assess the effect of anthropometry measurement training using videos on Cadres knowledge in Nganjuk City.

2. Method

This study was a quantitative with pre-experimental study using one group pre-post test design. The Intervention used was anthropometric training using video for cadres in Baron Primary Health Center area. Anthropometric measurement video was developed with shooting technique using two talents as a measurer, one year and four year children measurement model. Anthropometric measurement video consist of standard procedure of weight, height and length measurement of children. The video consist of 14 minutes audio and visual based instruction with Indonesian language about preparation component including setting up the equipment and measurer preparation include removing footwear and head accessories attached to children. The following component were about standardized procedure of anthropometric measurement. Procedure of weight measurement used digital weight scale, height measurement used stadiometer with proper position of subject, length measurement used infantometer also with proper position of the subject. Twenty Cadres from Jekek and Mabung Village are recruited to this study with voluntary participation. Jekek and Mabung are the village that belong to Baron Primary Health Center area. The inclusion criteria of cadres who joined this study have a comitment to take part in the research by signing informed consent and being cadres for at least 6 months. This study was held in Baron Primary Health Center area, Nganjuk City on July-August 2023. Training session is a one day activity consist of education on standardized anthropometric measurement using power point material and continued with group viewing of antropometric video followed by anthropometric measurement practice. Data collection included knowledge of anthropometric measurement of cadres that measured before and after in the same day training session using questionnaire. The questionnaire consist of twenty multiple choice question about the theory of standard antropometry measurement in children. The correct answer was given 5 point while the wrong answer was given 0 point out of a total score of 100. Normality test was performed using Shapiro wilk test and it showed that the data was normally distributed. Statistical test was perform using paired t-test using STATA 14 and study was approved by ethic committee of Airlangga University, Faculty of Dental Medicine Health Research Ethical Clearance Commission No. 1280/HRECC.FODM/XI/2023.

3. Result and Discussion

Most of respondent (45%) were in the age range of 31 – 40 years and only 15% of cadres were in the age range of > 50 years, up to 50 % of the cadres had a high school education while 15% cadres had Bachelor education. Out of the twenty responden, only one respondent has been a cadres for less than a year and the rest already became cadres for more than 3 years.

Table 1. Cadre’s Knowledge Score Before and After Intervention Training

Variable	n	Min-max	Average	p
Knowledge Score	Before	20	55-85	74,25±7.48
	Intervention training			0.0071
	After	20	65-95	78.75±7.75
	Intervention training			

Source: Primary Data, 2023

This study show that average knowledge score increased after intervention gave to cadres. Before the training session, average of knowledge score was $74,25 \pm 7,48$ and after training session the score was $78,75 \pm 7,75$. Minimum score of the pre-test was 55 and increased to 65 at post test while the maximum score of the pre-test session was 85 and increased to 95 in post test. The result of the paired t-test explain that there was a significant difference of knowledge score before and after intervention ($p=0.0071$)

Posyandu is a community-based health effort that is run by and for community as form of health development. Posyandu provide maternal and child health services as a five function of services including growth monitoring, nutrition and health education, immunization, family planning service and basic health service (Dewi & Anisa, 2018). The operational activities of Posyandu involves cadres from the community itself who empowerment training from Puskesmas (Bidayati, 2017). The roles of cadres in Posyandu was monitoring of nutritional status by performing anthropometric measurement so knowledge and skill of anthropometric measurement of cadres is important. Improving knowledge and skill of anthropometric measurement in cadres can be done through training. In this research, we develop video as a media to train cadres performing standardized anthropometric measurement in children. This study showed that there are significant improvement of knowledge cadre related to anthropometric measurement. The previous study also gave the same result, experimental study proved improvement of knowledge of cadres after training related to growth monitoring. The proportion of good level of knowledge was increase from 5% to 39% after weight measurement training (Octavia & Laraeni, 2017). Another study also found that was significant improvement of cadres knowledge after training (Lubis, 2015).

Improvement of knowledge after training was influenced by various factors including term of communications, communicants and educational media (Broom, G., & Cutlip, 2006). This study using video as a media for anthropometric training. Video as an educational media that provide instruction with voice over, can improve accuracy. Video based education using instruction in audio and visual format can improve the effectiveness of working memory. Previous study also showed that using video tutorial for teaching self-measurement of waist circumference are reliable and effective compared with technician measurement. Video instruction has been shown to improve performance, skill and understanding in a range of applications (McEneaney & Lennie, 2011). Carefully design educational video is an effective way to spread information to greater audience. A video can be stored and used to educate learners in the future without instructor. It can be used to train learners in multiple place at the same time (Mondal et al., 2017). Multiple studies have shown that video can be a highly effective tools for educational activity (Kay, 2012);(Lloyd & Robertson, 2012); (Stockwell et al., 2015).

Knowledge is a result from knowing and this happens after people sense particular object. Sensing occurs through the human senses including sense of sight, hearing, smelling tasting and touching. Most human knowledge is obtained through the the sight and hearing (Notoatmodjo, 2007). Knowledge is the most important things for the formation of a person's actions, therefore behavioural based on knowledge will last longer compare to behavioural not based on knowledge (Notoatmodjo, 2003). In this study result, improvement of cadres knowledge related to anthropometric measurement after training using video could be minimize error of measurement and increase data accuracy. Valid anthropometric

measurement data guarantee quality for accurate monitoring of children growth to avoid error in data interpretation.

4. Conclusion

In conclusion, using video based training for anthropometric measurement for children nutrition assessment is effective to improve cadre's knowledge related to anthropometric measurement. Further study is need to investigate the effect of video based training on anthropometric measurement skill of cadres.

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