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IDENTIFYING THE BENEFITS OF SIMULATION VIDEOS ON THE KNOWLEDGE AND SKILLS OF ANTHROPOMETRIC MEASUREMENTS OF POSYANDU CADRES AS AN EFFORT TO PREVENT STUNTING

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ABSTRACT
Stunting has a negative impact on children's quality of life, such as impaired brain and cognitive development, failure to thrive, and low immune system. One of the efforts to primary prevent stunting is to provide education to increase the knowledge and skills of posyandu cadres in carrying out anthropometric measurements. Objective This research identifies the educational benefits of video simulations on cadres' knowledge and skills in anthropometric measurements of toddler posyandu cadres. Method the method used in this research is a pre-experimental study, with a one-group pre-post test design approach. The sample was recruited using purposive sampling technique. Result the results of research based on the Wilcoxon analysis test explain that video simulation education is effective in increasing the knowledge and skills of toddler posyandu cadres in anthropometric measurements with a p value of 0.000 (α <0.05). Data was taken using a knowledge questionnaire and skills observation sheet for 25 respondents through a pre-post test. Data distribution based on univariate analysis illustrates that there was an increase in the knowledge and skills of respondents who received the educational intervention of video simulations of anthropometric measurements for toddlers. Conclusion Simulation video education is useful in increasing the knowledge and skills of posyandu cadres in anthropometric measurements. The results of this research can be recommended for application in improving basic knowledge and skills in anthropometric measurements of posyandu cadres and health workers in primary health care facilities and pediatric nursing practice in hospitals.

Keywords: anthropometric; DTPK; posyandu cadres; stunting; video simulation

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INTRODUCTION

Stunting is the failure of growth of children under five years of age caused by chronic malnutrition so that children have a height that is not age-appropriate. Management of stunting to improve nutritional and cognitive status is needed to reduce the negative impact of stunting on children (R. Putri et al., 2019). Stunting in developing countries occurs in children under 5 years of age, the factors that cause stunting in children are caused by three things, namely nutritional intake, infectious diseases, and mother and child interactions (Syahrul et al., 2016). The incidence of stunting in children is influenced by several variables, namely the level of education and knowledge of the mother, the number of family members, early breastfeeding initiation, exclusive breastfeeding, age, weaning, supplementary feeding, and Vitamin A administration. (Bustami & Ampera, 2020).

Stunting prevention is not only the responsibility of the health sector but also involves cross-sectoral convergence (Tobing et al., 2021). This effort is very important because the first 1000 days of life is the golden period of child growth, where there is a rapid increase in the number and capacity of cells. (Kementerian PPN/ Bappenas, 2018). The Indonesian Nutrition Status Survey (SSGI) in 2021 describes data on the prevalence of underweight toddlers as 7.1% and

stunting toddlers as 24.4%. The prevalence of stunting in North Sulawesi province has increased by 0.4% in 2021, namely 21.6% compared to data in 2020 of 21.18% of stunted toddlers. Meanwhile, the prevalence of stunted toddlers in Kab. Kepl. Talaud itself experienced an increase of 0.2% in 2022 compared to 2021 with a stunting prevalence of 25.8%. (Kemenkes, 2022). The government can control risk factors for stunting by creating or modifying regulations and policies to direct community health workers to optimize family planning programs, the role of posyandu and low birth weight infant care programs. (Sk et al., 2021). Integrated service post (Posyandu) is part of the village community institution/kelurahan community institution as a forum for community participation which is a partner of the village/kelurahan government in planning, implementing and supervising development and improving village services. The posyandu organizational structure includes administrators and cadres who are appointed and determined by the village head. Posyandu has duties in the fields of education, health, public works, public housing, public order, community protection and social affairs. Posyandu tasks in the health sector include health services targeting mothers, infants, toddlers, preschool age children, school age, adolescents, adults and the elderly (Kemendagri, 2024).

Child health service efforts in the village are carried out through posyandu activities for toddlers under the coordination of the Community Health Center (Puskesmas). Puskesmas is a health service facility that organizes public health efforts and first-level individual health efforts by prioritizing promotive and preventive efforts in its working area (Kemenkes, 2019). The district / city government provides guidance and supervision of the implementation of Child Health Efforts in health service facilities in the region through monitoring and evaluation, and can increase the knowledge of health workers through education and training. (Kemenkes, 2014). One of the education and training that can be provided to toddler posyandu cadres in an effort to prevent and control stunting is anthropometric measurement. The low knowledge and skills of posyandu cadres in anthropometric measurements, starting from how to install and mark measuring instruments, weighing, measuring body length, and height of toddlers to recording the measurement results have an impact on inaccurate data collection and reporting of nutritional status. One of the contributing factors is the lack of counseling and training for posyandu cadres. (Fitriani & Purwaningtyas, 2020).

Anthropometry is a method used to assess the size, proportion, and composition of the human body. Child Anthropometry Standard is a collection of data on size, proportion, body composition as a reference for assessing nutritional status and growth trends of children based on body weight and length/height parameters consisting of 4 indices, including: a) Body Weight by Age (BB/U); b) Length/Height by Age (PB/U or TB/U); c) Body Weight by Length/Height (BB/PB or BB/TB); and d) Body Mass Index by Age (IMT/U). (Kementrian Kesehatan, 2020). Based on the guidelines for stunting management, there are several interventions that can be carried out, one of which is anthropometric examination. Anthropometric criteria for stunting are based on an index of body length or height according to age and sex (PB/U or TB/U) <-2 SD based on the 2006 WHO curve for children 0-5 years. Anthropometric examination in stunting is very important to be carried out according to standard measurement procedures including techniques, weighing and measuring tools, plotting and interpretation of results. Inappropriate measurement methods will lead to measurement bias which affects the invalidity of diagnosis and management. (Kemenkes RI, 2022). Posyandu cadres who have good knowledge of anthropometry become skilled and produce valid data from anthropometric measurements. (Maysaroh et al., 2023)..

One of the efforts to prevent primary stunting is starting from anthropometric measurements according to standards at the posyandu cadre level. Cadres conduct growth monitoring, measuring body length or height (PB or TB) and body weight (BB) using standardized measurement tools and methods, as well as providing education to parents/caregivers regarding exclusive breastfeeding and complementary foods with complete nutritional content, especially animal protein (Kementerian Kesehatan RI, 2021). Posyandu cadres who have high knowledge and skills in anthropometric measurements are those who have attended training. (Mimi et al., 2021). This is in line with the anthropometric measurement training activities for toddlers can increase the knowledge of rose posyandu cadres in anthropometric measurements as an effort to prevent early stunting. (P. M. S. Putri et al., 2022).. Providing education and training to 42 posyandu cadres in Cipacing Jatinangor village using a deductive model approach has been shown to be effective in increasing the knowledge and skills of posyandu cadres in identifying risk factors that cause stunting. (Megawati & Wiramihardja, 2019).

The development of digital technology today provides many innovations, conveniences and various choices of technology-based educational methods that are practical, easy to obtain and attract the attention of educational beneficiaries of various ages. Health education currently still uses many conventional methods such as leaflets, booklets, flip sheets and power points which are sometimes only used during the implementation of educational activities. In contrast to digital technology-based educational methods with audiovisual approaches such as videos that are interesting, practical and can be accessed at any time. (Aisah et al, 2021). This is in line with research on teaching methods using virtual simulators and training videos proven to increase knowledge and self-confidence. (İsmailoğlu et al., 2020). Training methods using videos and hands-on demonstrations by performing anthropometric measurements on children can improve the knowledge and skills of posyandu village heads so as to produce accurate data and correct interpretation of nutritional status. (Hafid et al., 2024). Therefore, the presentation of material in the form of simulation videos will increase the motivation of participants to learn because the information is presented in an attractive and innovative visual form and brings participants in real conditions with simulations on human objects.

The Talaud Islands Regency is an archipelago and Indonesia's northern border with the Philippines. As a border and archipelago region, Kepl. Talaud is one of the Remote Border Islands (DTPK) areas with 19 sub-districts that have difficult access to transportation and information. so that health service efforts often experience obstacles in various sectors such as limited facilities, human resources and even funding. This condition is the cause of the lack of training of posyandu cadres, which has an impact on the low knowledge and skills of posyandu cadres in Kepl. Talaud. Based on the above phenomenon, aggressive efforts are needed in the prevention and control of stunting in DTPK areas, namely in Kepl. Talaud through primary prevention efforts, namely increasing the knowledge and ability of posyandu cadres in taking anthropometric measurements. The aim of this research is to identify the benefits of video simulations on the level of knowledge and skills of posyandu cadres in anthropometric measurements in several villages in the working area of the Tule Health Center, East Melonguane District.

METHOD

This research uses a pre-experimental quantitative research design with a one-group pre-post test design approach. Pre-experimental research design aims to reveal the causal relationship by involving one group of subjects and observed before and after the provision of the intervention (Polit & Beck, 2017). The data collection process was carried out in October

2024 with the pre-test implementation method carried out before providing educational interventions using video simulations of anthropometric measurements. After giving the simulation video educational intervention, it was followed by a post test using the same questionnaire and time as the pre-test. The instruments used in this study consisted of: demographic data questionnaire, knowledge questionnaire and anthropometric measurement skills observation sheet. The demographic data questionnaire contains the identity, education and work experience of respondents as toddler posyandu cadres. The knowledge questionnaire contains 20 questions consisting of 5 questions with answer choices and 15 statements consisting of 10 positive statements and 5 negative questions. All questions used a guttmen scale, namely "right" and "wrong" answers. Each number is given a point "5" for the correct answer and "0" for the wrong answer. Furthermore, the researcher made scoring for the total points as follows: Poor knowledge = score 0 - 55; sufficient knowledge = score 60 - 80; good knowledge = score 85 - 100. The knowledge questionnaire has been tested for construct validity and reliability with a Cronbach's alpha value of 0.80. While the observation sheet measuring the skills of cadres in carrying out anthropometric measurements consists of 4 assessment components, namely 1) measuring the height/length of infants and toddlers < 2 years using a lenghtboard / infantometer; 2) measuring the height of toddlers aged > 2 years using a stadiometer; 3) measuring the weight of infants using a baby scale; 4) measuring the weight of toddlers using a toddler scale. Measurement of body weight of toddlers using toddler scales. Skills are divided into two categories: 1) good if performing correctly ≥ 80% of the measurement stages or achieving a score of 40; 2) less if performing correctly < 80%. (Muthia, 2023).

The population of this study was all toddler posyandu cadres in the working area of the Tule health center spread over 6 villages. The sample was recruited from the population using a purposive sampling data collection technique where the sample was determined based on the objectives of the innovation project and established criteria (Polit & Beck, 2017). The criteria set in this study are inclusion criteria: namely 1) cadres of posyandu toddlers in the working area of the Tule health center 2) can read and write 3) do not have visual and hearing impairments. The study exclusion criteria were cadres who were not present during data collection. This study has also applied five ethical principles of research, namely: self determination means that before the intervention is carried out the researcher provides an explanation of the purpose of the study, the benefits of the study, the time of the study, the research procedure, the respondent is given the opportunity to ask questions. Privacy and dignity where researchers respect the privacy of respondents in carrying out interventions without forcing respondents. Anominity and confidentiality, namely researchers maintain the confidentiality of information by using initials on the questionnaire and observation sheet of each respondent. Fair treatment where each respondent has the right to receive the same intervention by researchers without discrimination. The last ethical principle is to provide protection form discomford and harm, meaning that researchers pay attention to aspects of respondent comfort both physically, psychologically and socially, provide opportunities to express feelings about interventions openly, protect respondents from possible dangers that arise and provide freedom without intimidation if the respondent decides to withdraw in the ongoing research process. (Yadav, 2023).

RESULT

Data characteristics of research respondents include age, gender, education and experience as cadres which will be presented in a frequency distribution table. The study respondents amounted to 25 people of the female sex because the available population did not have male

toddler posyandu cadres in 6 villages in the working area of the Tule Health Center. Data on the characteristics of respondents can be seen in table 1 below.

Table 1.
Respondents' data characteristics (n=25)

Variables	f	%
Age		
< 50 years	22	88
≥ 50 years	3	12
Gender		
Male	0	0
Female	25	100
Education		
SD	0	0
SMP	4	16
SMU	21	84
Higher education	0	0
Jobs		
Housewife/Not working	25	100
Work	0	0
Experience as a cadre		
< 3 years	11	44
3 - 5 years	14	56
> 5 years	0	0\
Anthropometry Training		
Yes	4	16
No	21	84
Knowledge		
Pre test		
Less	11	44
Simply	11	44
Good	3	12
Skills		
Pre test		
Good	3	12
Less	22	88
Knowledge		
Post test		
Less	0	0
Simply	2	8
Good	23	92
Post test skills		
Good	24	96
Less	1	4

Based on the distribution of data in the table, the age of respondents is divided into two categories, namely posyandu cadres aged < 50 years with an age range of 33 - 49 years and age ≥ 50 years, there are 3 people aged 50 - 54 years. All research respondents have a secondary education level, there are no respondents who have a higher education background. The experience of being a posyandu cadre is dominated by respondents with work experience < 3 years, namely 11 respondents (44%). The lack of knowledge and skills of respondents in anthropometric measurements is also supported by the lack of training that has been attended by respondents, where there are only 4 (16%) respondents who have attended training.

The distribution of the level of knowledge and skills of respondents before and after providing simulation video-based educational interventions has increased. The level of knowledge of respondents during the *pre-test* was dominated by poor and sufficient knowledge with the

same percentage of 11 respondents (44%) while the level of knowledge of respondents after being treated by watching simulation videos became 22 respondents with good knowledge (92%) and there were only 2 respondents with sufficient knowledge (8%). Likewise, the skills of cadres in anthropometric measurements before and after the provision of simulation video education interventions have increased with a percentage of 3 respondents (12%) being able to take anthropometric measurements properly and 22 respondents (88%) have not been able to take anthropometric measurements according to standards or have poor skills when the *pre-test* is conducted. While the results of the *post test* implementation show that the data in the table shows a high increase in respondents' skills in anthropometric measurements, namely 24 respondents (96%) can take anthropometric measurements according to standards and there is only 1 respondent (4%) who cannot take anthropometric measurements according to standards. The results of statistical analysis using the Wilcoxon test to see the effect of providing simulation video education interventions on respondents' knowledge and skills in anthropometric measurements are described in table 2.

Table 2.
Benefits of Simulation Video Education on Cadres' Knowledge and Skills in Anthropometric Measurement

Variables	*Mean rank*	*z*	*pValue*
Knowledge	11,50	-4,244	0,000*
Skills	11,00	-4,583	0,000*

From the results of the bivariate analysis test using Wilcoxon as described in Table 2, a *pValue* of 0.000 ($\alpha < 0.05$) was obtained for the level of knowledge of respondents, meaning that there is an effect of providing simulation video education on increasing respondents' knowledge in anthropometric measurements on children in posyandu activities. Likewise, the skills of cadres experienced a significant increase with a *pValue* of 0.000, meaning that the provision of simulation video education significantly improved the skills of toddler posyandu cadres in making anthropometric measurements

DISCUSSION

Efforts to prevent and overcome stunting cannot be separated from the active role of posyandu cadres. Posyandu cadres are a vital part in improving the nutrition of mothers and toddlers. One of the responsibilities of cadres in posyandu activities is to conduct early detection of the risk of deficiencies and improve the nutritional status of toddlers. This is one of the strategies that can have a direct impact on efforts to prevent and control stunting in the village. (Nugraheni & Malik, 2023). The roles and responsibilities of posyandu activity cadres are identical to mothers and toddlers. In fact, almost all educational targets in posyandu activities are women because the companion of toddlers who come to the posyandu is the child's mother or female caregiver. This is one of the reasons why posyandu cadres for toddlers are generally female, such as the 25 female posyandu cadre respondents involved in this study. The same condition also occurred in Tapa village, Sipatama sub-district, Gorontalo Province where there were 20 posyandu cadres with female gender involved in educational activities for early detection of child growth disorders with the stunting mat method. (Apriana et al., 2023).. In line with the motivation to become a posyandu cadre expressed by 3 of the 4 case study research participants was "to better understand how to care for, maintain health, monitor children's growth and development". (Turrahmi et al., 2022)..

The age of respondents in this study was dominated by early and middle adulthood < 50 years old, 22 respondents, while late adulthood ≥ 50 years old only had 3 respondents. Posyandu cadres who have early adulthood are more active in assisting mothers and toddlers because at this age a person will strive to be useful to others and society. (Faridi et al., 2020). Adulthood

is a period of commitment that begins with responsibility, it is easier to socialize than adolescence, so that age cadres are expected to be able to become cadres who have a high social spirit to the community and are responsible for leading posyandu and providing health information to the community. (Mimi et al., 2021). Supported by the employment status of all respondents is a housewife who does not have other additional duties outside the home or other permanent jobs, further providing opportunities for respondents to perform the role of posyandu cadre for toddlers. In line with research conducted on 53 posyandu cadres 43 people have the work status of housewives explaining that cadres with housewife status have free time and are more flexible than working posyandu cadres (Rohmani & Utari, 2020).

The education level of posyandu cadres is at least basic education because a toddler posyandu cadre must read and write Indonesian (Afifa, 2019). In line with the level of education of research respondents who were dominated by secondary education (high school) 21 respondents and there were only 4 respondents with a junior high school education background. Educational background can affect the knowledge, attitudes and communication of posyandu cadres in receiving training materials in the intervention group (Ekayanthi et al., 2022). The experience of research respondents was dominated by respondents with 3 - 5 years of experience as cadres, 14 respondents, almost the same as the number of cadres with work experience < 3 years, 11 respondents, which became a supporting factor for the low knowledge and skills of posyandu cadres. This condition occurs because the determination of posyandu cadres is the authority of the village head so that every time there is a change of village head there is a risk of changing posyandu cadres. The length of time a person has been a cadre can support knowledge, attitudes, skills and self-efficacy in carrying out duties as a posyandu cadre ((Hanifah & Hartriyanti, 2023). In line with community service activities by providing counseling to posyandu cadres who concluded that the longer they work as posyandu cadres, the knowledge and skills in carrying out tasks during posyandu activities will increase, so that cadre participation in posyandu activities will be better (Purnamasari et al., 2020). The number of respondents who had attended anthropometric measurement training was only 4 respondents (16%). The lack of training of posyandu cadres leads to low knowledge and skills of respondents in anthropometric measurements. This was explained by Prodyanatasari et al., (2024) in their research using the case study method with a performance assessment sheet explaining that poyandu cadres can use anthropometric measuring instruments correctly and skillfully after the third and fourth stages of assessment. Thus it can be concluded that the level of knowledge and skills of posyandu toddler cadres in anthropometric measurements can be influenced by the lack of training provided (Prasetyowati, 2024).

The results of the Wilcoxon bivariate analysis test stated that there was an effect of anthropomentry measurement simulation video education on the knowledge and skills of posyandu cadres in making anthropometric measurements with a pvalue of 0.000 ($\alpha < 0.05$) for the variable knowledge and skills of respondents. Educational methods using videos are one of the effective and efficient learning media in increasing audience knowledge and skills in anthropometric measurements. Therefore, research has been carried out on the design of a digital anthropometric measurement system to make it easier for users to take anthropometric measurements on humans. (Sajid et al., 2023).. Other research that supports the results of this study is the making of educational videos on anthropometric measurements in infants, which is a collaboration of pediatric specialist experts, public health and communication science, which has proven effective in increasing the audience's basic knowledge and skills in anthropometric measurements in infants. (Andriani, 2023). The use of simulation videos as educational media in the nursing field is not only applied in nursing practice but also in

nursing education to increase the knowledge and skills of nurses and students. The Alladin project is one of the simulation videos in an effort to detect early stunting that has been tested in research with a pre-experimental study method so that it can be recommended for use in nursing education, pediatric nursing practice in hospitals as well as in primary care. (Akhmad et al., 2022). Likewise, in anthropometric measurements in infants there is a NurtureNet simulation video which is a multi-task video-based approach to anthropometric measurements of newborns that can be accessed easily and economically using a smartphone (Khandelwal et al., 2024).. Therefore, the results of this study can be a positive value in further research to develop simulation video educational media in anthropometric measurements in infants and toddlers that are practical, economical and can be used in DTPK areas that are difficult to access transportation and information. In the data collection process, researchers also found obstacles in anthropometric measurements in some infants and toddlers who were uncooperative or fussy during measurements, which made children forced to take anthropometric measurements. This may traumatize the child. This can be a future research phenomenon by developing anthropometric measurement procedures with an atraumatic care approach. And this research design can be developed with a higher experimental research design for better and more accurate results by controlling confounding variables and biases that can be caused.

CONCLUSION

The benefits of education using simulation video media can increase the knowledge and skills of posyandu cadres in taking anthropometric measurements of infants and toddlers. So that it can be recommended to be carried out in posyandu activities, primary health care facilities as well as in the practice of measuring anthropometry in children in hospitals

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