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The Relationship Between Anthropometry Training and the Improvement of the Village Health Workers' (Cadres) Competence in Detecting Stunting in Wara Public Health Centre, Palopo City

Hubungan Pelatihan Penggunaan Antropometri dengan Peningkatan Kapasitas Kader dalam Mendeteksi Stuntingdi Wilayah Kerja Puskesmas Wara, Kota Palopo

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ABSTRACT

Background: Stunting is one of the chronic malnutrition health problems in children during the early growth period due to lack of nutrition given over a long time and not the adequacy of the nutrition needed. It occurs since the fetus or the First 1000 Days of Life (HPK) and will appear when the child is two years old.
Objective: To determine the relationship between Anthropometry training and improving the village health workers' (cadres) competence in detecting stunting.
Method: This study was quantitative observational research with a cross-sectional design. The study sample was 65 people. With the inclusion criteria, cadres are willing to become respondents and are still actively carrying out their duties as Integrated Service Post (Posyandu) cadres. A purposive sampling technique was done. The primary data were obtained from interviews through the online questionnaire and direct interviews. The bivariate analysis was a chi-square test.
Result: There is a relationship between anthropometry training and the six variables studied, the namely cadre's knowledge (p=0.001), the skills of a cadre of measuring the body length of the baby (p=0.001), the skills of using micro toise (p=0.001), the skills of cadres using baby scales (p= .004), the skills of cadres using a manual scale (p<0.001), and the skills of cadres using the weight scales (p<0.001).
Conclusion: The anthropometry training correlates with the knowledge of the cadres, the skills of a cadre of measuring the length of the bodies of babies, the skills of cadres using micro toise, the skills of cadres using the baby scales, the skill of cadres using a manual scale, and the skills of cadres using the weight scales in detecting stunting.

INTRODUCTION

Stunting is one of the chronic nutritional health problems in children during the early growth period due to a lack of nutritional intake given for a long time and not following the nutritional adequacy needed. Stunting occurs from the first 1000 days of life (HPK) and will appear when the child is two years old[1]. The causes of stunting can occur either directly or indirectly, such as nutrients obtained from birth, socio-economic conditions, and inadequate living conditions[2]. If not addressed early, the impact of stunting can cause a decrease in human resources capacity in Indonesia, reduce productivity, reduce the nation's competitiveness, disrupt brain development, interfere with physical growth, and result in a high risk of non-communicable diseases[3].

UNICEF, WHO & World Bank Group data for 2019 show that the prevalence of stunting in the world in 2017 was 22.4%, and in 2018 it was 21.9% or around 149.0 million children under five[4]. More than half of stunting toddlers in the world come from Asia, as much as 55%, and Africa, as much as 39%, and Indonesia is the third country with the highest prevalence in the Southeast Asia region, as much as 36.4%[5]. According to the report on basic health research in Indonesia (Riskesdas) in 2018, the nutritional status of children who were short and very short by province was 30.8%. However, the proportion of concise nutritional status in 2018 was 11.5%, and short nutritional status was 19.3% based on the height-for-age index (TB/U)[6]. The number of stunting incidents in Palopo City, Indonesia, in 2017 was 26.21%, and in 2018 was 25.9%. There were 704 cases, which consists of several Public Health Centers (Puskesmas), including the working area of the Mungkajang Health Center with 35 cases, Wara Selatan with 62 cases, Wara Barat with 72 cases, Maroangin with 76 cases, Sendana with 77 cases, Wara Utara with 78 cases, Benteng with 127 cases, and Wara with 177 cases[7].

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As for the cadres' duties in carrying out their functions in Integrated Service Post (Posyandu) activities so that they run optimally, cadres must communicate well. Cadres must be skilled in recording and reporting correctly to identify all health problems experienced by the community. Cadres must have the knowledge and understanding of health and nutrition[8]. The ability of cadres can be assessed by looking at their participation in training activities. Efforts to improve cadres' knowledge, skills, attitudes, and behavior to improve their quality and performance are through continuous training and coaching so that the information and practice obtained can increase the knowledge and skills of cadres about the use of anthropometry[9]. South Sulawesi Province, the second province with the highest stunting incidence in 2018 among all provinces on the island of Sulawesi, is of concern to researchers conducting research in South Sulawesi, especially at the Wara Health Center, Palopo City, Indonesia[7].

This study aimed to determine the relationship between training in using anthropometry and increasing cadres' capacity to detect stunting in Palo City, Indonesia. Moreover, it is helpful to increase knowledge and information and additional references to the research literature on the relationship between training in anthropometry and increasing cadres' capacity to detect stunting for future researchers.

METHODS

This study was a quantitative observational study with a cross-sectional design intended to find the relationship between training in the use of anthropometry and the capacity of cadres to detect stunting. This research was conducted in the working area of the Wara Health Center in Palopo City, Indonesia. The population in this study were all Posyandu cadres recorded in the working area of the Wara Health Center in Palopo City in 2020, totaling 95 people. A total of 65 people were from the results of sample calculations using the Lameshow formula with a purposive sampling technique were the samples. The inclusion criteria included cadres who were willing to be respondents and were still actively carrying out their duties as Posyandu cadres, while the exclusion criteria were not willing to be respondents and those who were sick.

The researcher used an online questionnaire sheet research instrument with questions in the form of procedures for cadres taking measurements on infants/toddlers at the Posyandu by following predetermined procedures as in the questions for the dependent variable (knowledge and skills), namely removing headgear and baby socks, whether the cadre did it/not, as well as a statement of knowledge namely growth disorders characterized by not increasing weight and height with right/wrong answer choices, with a total number of questions of 50 points consisting of two variables which were used to measure the relationship between training on the use of anthropometry and the knowledge and skills of cadres in detecting stunting. Validity testing, in this case, was done by comparing the value of the r count with the r table. In this case, the sample was 65, then r table = 0.244. If the r count was more significant than the r table, then the question items were declared valid, namely, 0.409 > 0.244. The reliability test is reliable if it gives a Cronbach alpha value > r table of 0.666 > 0.244, so the question is declared reliable.

Data was collected by contacting the cadres via the messenger application (WhatsApp), which was obtained from the Wara Health Center, and then asked for the cadres' availability to fill out the online questionnaire page that was sent. They were filling out the Google form page sent via WhatsApp messages owned by 60 cadres and guided for filling in which they did not understand. The distribution of questionnaires was carried out face-to-face with five people for cadres whose telephone numbers could not be contacted by using the same questions as online interviews, namely about knowledge and how cadres use anthropometric tools. This research has received permission from the Head of the PTSP Licensing Review and Processing Division for Palopo City with Number: 787/IP/DPMPTSP/IX/2020, September 21, 2020.

RESULTS AND DISCUSSION

Based on the results of the distribution of the characteristics of respondents according to age, the highest percentage of respondents in the age group was the age group of 46-55 years, 24 respondents (36.9%), and the least was the age group <25 years, three respondents (4.6%). Based on their last education, the highest number of respondents was high school, 41 respondents (63.1%), while the lowest was Elementary School, 0 respondents (0%). Based on the number of respondents who did not work, more than the number of respondents who worked, namely, out of 65 respondents, there were 57 respondents (87.7%) who did not work and eight respondents who worked (12.3%). Based on the highest number of respondents in the group of old Posyandu cadres <5 years, 25 respondents (38.5%), and the least were the group of respondents who had been Posyandu cadres >20 years, three respondents (4.6%).

Table 1. Characteristics of respondents

Characteristics of Respondents	Frequency (n)	Percentage (%)
Age		
<25	3	4.6
26 – 35	13	20.0
36–45	21	32.3
46 – 55	24	36.9
> 56	4	6.2
Education		

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Characteristics of Respondents	Frequency (n)	Percentage (%)
Sd	0	0.0
Junior High School	9	13.8
Senior High School	41	63.1
Academy/University	15	23.1
Job-status		
Work	8	12.3
Does not work	57	87.7
How Long to Be a Cadre (years)		
< 5	25	38.5
6 – 10	15	23.1
11–20	22	33.8
>20	3	4.6

Based on the results of univariate analysis of the independent and dependent variables, based on the highest number of respondents who had attended training in the use of anthropometry (weighing and measuring height), there were 44 respondents (67.7%), and those who had never attended the training were 21 respondents (32.3%). Based on the number of respondents who had good knowledge, more respondents had less knowledge, namely, 47 respondents who had good knowledge (72.3%), and as many as 18 respondents (27.7%) had less knowledge. Based on the number of respondents who had good skills in measuring the baby's body length at the Posyandu, there were 34 respondents (52.3%), and those with fewer skills 31 (47.7%). Based on the number of respondents who had good skills in measuring children's height at the Posyandu, there were 33 respondents (50.8%), and those who had fewer skills, 32 respondents (49.2%). Based on the number of respondents who had good skills in measuring weight using baby scales at the Posyandu, there were 34 respondents (52.3%), and those with fewer skills 31 (47.7%). Based on the number of respondents who had good skills in measuring weight using a weighing scale (Dacin) at the Posyandu, there were 58 respondents (89.2%), and those who had fewer skills were seven respondents (10.8%). Based on the number of respondents who had good skills in measuring body weight using a stepping scale at the Posyandu, there were 54 respondents (83%).

Table 2. Univariate analysis of independent and dependent variables

Variables	Frequency (n)	Percentage (%)
Independent Variable		
Training		
Never	21	32.3
Once	44	67.7
Dependent Variable		
Knowledge		
Not enough	18	27.7
Good	47	72.3
Skills in measuring the length of the baby's body		
Not enough	31	47.7
Good	34	52.3
Skills in measuring height using a microtoise		
Not enough	32	49.2
Good	33	50.8
Skills in measuring body weight using baby scales		
Not enough	31	47.7
Good	34	52.3
Skills in measuring body weight using a weighing scale (Dacin)		
Not enough	7	10.8
Good	58	89.2
Skills in measuring body weight using a stepping scale		
Not enough	11	16.9
Good	54	83.1

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The results of the bivariate analysis show a relationship between training in the use of anthropometry and increasing the knowledge of cadres and the skills of cadres in making measurements using anthropometric tools, which can be seen in the following table.

The Relationship Between Training on the Use of Anthropometry and Increased Knowledge of Cadres in Detecting Stunting

Table 3 shows that training in using anthropometry for cadres can increase knowledge based on statistical test results with a p=0.001. This finding is due to the information obtained by cadres who often take part in training on anthropometry to the maximum compared to cadres who have never attended the training. So the study results showed that the number of respondents who had good knowledge because they had attended the training, was 38 respondents (86.4%), while those who had less knowledge because they had never attended training were six respondents (13.6%).

Table 3. Relationship between training on the use of anthropometry and increased knowledge of cadres in detecting stunting (N=65)

Training on the Use of Anthropometry	Cadre Knowledge				Total		p-value
	Not enough		Good				
	n	%	n	%	N	%	
Never	12	57.1	9	42.9	21	100	0.001
Once	6	13.6	38	86.4	44	100	

Source: continuity correction test, 2020

Based on the results of interviews with respondents, apart from the factor that the cadres did not attend training which caused a lack of knowledge, there were also other factors, namely the cadres did not know anthropometric tools such as microtoise and were also unable to monitor the status and growth and development of toddlers at the Posyandu. Thus toddlers who are wrong in monitoring their nutritional status can cause errors in the subsequent intervention.

This study is in line with research conducted in Mataram, showing that there is an effect of increasing the knowledge of cadres after participating in anthropometric training in the form of body weight measurements. The results before training/refreshment were 55% after training/refreshment, and 87% obtained by looking at the results of distributing knowledge questionnaires before and after the training was given[10]. Other studies also stated similar results that there was an increase in knowledge before and after being given anthropometry training by asking questions using a questionnaire before and after training. Providing information using practice and direct demonstrations during training also increases the knowledge of the cadres[11].

Relationship Between Training on the Use of Anthropometry and Cadre Skills in Measuring Baby Length in Detecting Stunting

Table 4 shows that training in anthropometry for cadres can improve skills in measuring the length of the baby's body. (p=0.001). This finding is because the skill level of cadres who have attended training is better than those who never have. The study showed that the total number of respondents who had fewer skills in measuring the length of babies and who had attended the training was 14 respondents (31.8%), while those who had good skills in measuring the length of babies and had attended training in the use of anthropometry were 30 respondents (68. 2%).

Table 4. Correlation between training on the use of anthropometry and increasing the skills of Posyandu cadres in measuring the length of a baby's body in detecting stunting (N=65)

Training on the Use of Anthropometry	Skills of Cadres in Measuring Baby's Body Length				Total		p-value
	Not enough		Good				
	n	%	n	%	N	%	
Never	17	81.0	4	19.0	21	100	0.001
Once	14	31.8	30	68,.	44	100	

Source: continuity correction test, 2020

Respondents stated that errors in measuring the baby's length could occur when the cadre did not meet the standards in carrying out the measurement, such as not removing the baby's headgear and socks when measuring the body's length. Based on the interview results, the respondents also explained that health center staff usually only carried out body length measurements.

This result is in line with a study which stated that there was an effect of the training provided to cadres in measuring body length to interpret the results of height/age. Interpretation of nutritional status results is very much determined based on height/age to get further intervention[11]. Similar to research conducted in the city of Surakarta, there was an increase in skills after being given training in the use of anthropometric tools, such as an infantometer to measure the length of babies under

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two years old, by looking at the results of the instruments used, such as lists of dots[11].

The Relationship Between Training in the Use of Anthropometry and the Skills of Cadres in Measuring Height Using Microtoise in Detecting Stunting

Table 5 shows that training on anthropometry for cadres can improve skills in measuring height using a microtoise, based on the results of the continuity correction test showing that the value of p=.001. This finding is because cadres get more practice when participating in training in making anthropometric measurements. This study showed that the number of respondents who had fewer skills in measuring height using a microtoise and who had attended training was 15 respondents (34.1%) as for those who have good skills in measuring height using a microtoise and have attended training in the use of anthropometry as many as 29 respondents (65.9%).

Table 5. Correlation between training on the use of anthropometry and improving the skills of cadres to measure height using a microtoise in detecting stunting (N=65)

Training on the Use of Anthropometry	Skills for Cadres Measuring Height Using Microtoise				Total		p-value
	Not enough		Good				
	n	%	n	%	N	%	
Never	17	81.0	4	19.0	21	100	0.001
Once	15	34.1	29	65.9	44	100	

Source: continuity correction test, 2020

Lack of cadre skills in measuring height using a microtoise can be caused by cadres who do not pay attention to standard procedures in measuring height, such as not removing headgear, shoes, and socks, and not paying attention to the back of the head, back, buttocks, calves, and the child's heels must be attached on the wall, so the measurement results obtained are not accurate. Similar to the research conducted by Diah, it was shown that there was an increase in skills in measuring height using a microtoise after training in anthropometric tools. This skill increase can be seen from measuring instruments using anthropometry from 16.1% to 74.2%.[11].

Relationship between Training on the Use of Anthropometry and Cadre Skills in Measuring Body Weight Using Baby Scales in Detecting Stunting

Table 6 shows that training on anthropometry for cadres can improve their skills in measuring weight using baby scales, based on their participation in anthropometric measurement training, as seen from the value of p = 0.004. This shows that respondents have fewer skills in measuring weight using baby scales, and who have attended the training are 15 respondents (34.1%). There were 29 respondents (65.9%) who had good skills in measuring body weight using baby scales and had attended training in anthropometry (65.9%).

Table 6. Correlation between training on the use of anthropometry and increasing skills of cadres in measuring weight using baby scales in detecting stunting (N=65)

Training on the Use of Anthropometry	Skills of Cadres in Measuring Weight Using Baby Scales				Total		p-value
	Not enough		Good				
	n	%	n	%	N	%	
Never	16	76.2	5	23.8	21	100	0.004
Once	15	34.1	29	65.9	44	100	

Source: continuity correction test, 2020

Weighing carried out by cadres can be one of the references for further intervention, so the wrong weighing results will also affect determining the child's nutritional status. Cadres usually make a mistake when measuring a baby's weight using a baby scale by placing the baby on the scale but not removing the baby's clothes to a minimum to get more accurate results. Similar to the research conducted in Banyumas Regency, it was shown that there was an increase in skills in measuring baby weight using baby scales, as seen from the results before being given the training, there were still four less skilled cadres but decreased after being given training to 1 person. However, it has not followed the standard procedures set, so errors in weighing still occur[12]. This research also supports the theory that body weight represents the amount of fat, protein, water, and minerals in the body. Body weight is a combined measure of all body measurements, so it is used as the weight of anthropometric parameters because changes in body weight are easily visible in a short time, can describe the current nutritional status, weighing tools are easy to obtain, and measurements are also easy to do[13].

The Relationship Between Training in the Use of Anthropometry and the Skills of Cadres in Measuring Body Weight Using a Dacin in Detecting Stunting

Table 7 shows that training in the use of anthropometry for cadres can experience an increase in

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skills in measuring body weight using a Dacin, as seen from the results of Fisher's exact statistical test with a value of p<0.001. This study showed that 0 respondents (0.0%) had attended training with less skill in measuring body weight using a Dacin, as for those with good skills in measuring body weight using a Dacin and who have attended training in anthropometry, as many as 44 respondents (100.0%).

Table 7. Correlation between training in the use of anthropometry and increasing skills of cadres in measuring body weight using a dacin in detecting stunting (N=65)

Training on the Use of Anthropometry	Skills for Cadres in Measuring Body Weight Using a Dacin				Total		p-value
	Not enough		Good				
	n	%	n	%	N	%	
Never	7	33.3	14	66.7	21	100	<0.001
Once	0	0.0	44	100.0	44	100	

Source: Fisher's exact test, 2020

Inaccurate weighing results occur due to cadres not following standard procedures, such as the eye of the scales not parallel to the position of the Dacin rod, not balancing the Dacin before the toddler is weighed, and the pendulum's position is not at zero. So an error occurred when giving the subsequent intervention. In line with research conducted in Mataram, the effect of increasing the skills of cadres in measuring body weight using a Dacin. Where before training/refresher, the results obtained were 81% of cadres in the skilled category, and after being given training/refresher, 100% were included in the category of skilled in using dacin[8]. This research is also in line with research conducted in the City of Aceh that the skills of cadres in measuring body weight using Dacin can increase with the training they have attended, compared to cadres who have never attended the training, with the skill level possessed by cadres of 100%[14].

The Relationship Between Training on the Use of Anthropometry and the Skills of Cadres in Measuring Body Weight Using a Stepping Scale in Detecting Stunting

Table 8 shows that training on anthropometry for cadres can improve skills in measuring body weight using a stampede scale, as seen from Fisher's exact statistical test results showing that the value of p<0.001. This study showed that two respondents (4.5%) had fewer skills in measuring body weight using a stepping scale, and 42 respondents (95.5%) had good skills in measuring body weight using a stepping scale. The training carried out by the cadres is very supportive of improving their skills so that there are no more cadres who have fewer skills in measuring body weight using stepping scales, such as not placing the scales on a flat floor, not taking off the jacket, shoes, and head cover that children use before being weighed.

Table 8. Correlation between training on the use of anthropometry and improving the skills of cadres in measuring body weight using a treadle scale in detecting stunting (N=65)

Training on the Use of Anthropometry	Cadre Skills in Measuring Body Weight Using a Stepping Scale				Total		p-value
	Not enough		Good				
	n	%	n	%	N	%	
Never	9	42.9	12	57.1	21	100	<0.001
Once	2	4.5	42	95.5	44	100	

Source: Fisher's exact test, 2020

This research aligns with research conducted in the Bireuen District, which shows a relationship between the training received and the quality of cadres in weighing. This finding can be seen from the skills of cadres who have never participated in training and good skills of 10.5%, while for cadres who have good skills and have attended the training, 57.1%[15]. Other studies have also stated similar results that there is an increase in the skills or abilities of cadres after being given training/refreshment on anthropometric measurements with a maximum evaluation result of 100%. However, cadres still do not minimize clothing before taking anthropometric measurements[16].

Weaknesses in this study were the difficulty of contacting respondents who do not activate their telephone numbers and do not have WhatsApp, so researchers cannot send pages to fill out online questionnaires, and respondents do not know how to fill out online questionnaires with the Google form. The strengths of this study are that the time spent filling out the questionnaire is more effective and makes it easier for researchers to input data from online questionnaire filling results.

CONCLUSIONS

There was a relationship between training in using anthropometry and increasing the capacity of cadres to detect stunting. The anthropometric training that the cadres have received is in the form of skills in measuring the length of a baby's body, skills in using a microtoise in measuring height, skills in using baby scales in measuring body weight, skills in using a dating, and skills in using a tread scale to measure body weight in detecting stunting.

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