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The Effect of Nutrition Status Assessment Training on Cadres' Knowledge in Early Stunting Detection

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ABSTRACT

Stuntingis one of the major challenges in public health in Indonesia, including in West Kalimantan.Stunting, which is characterized by a condition of failure to thrive due to chronic malnutrition and recurrent infections in early childhood, has long-term impacts on a person's physical, cognitive and productivity development. Based on the 2023 Indonesian Health Survey (SKI) report, the prevalence of stunting at the national level reached around 21.6%. This study aims to determine the Nutritional Status Assessment (PSG) of cadres' knowledge in conducting early detection of stunting in the community. PSG training is expected to improve cadres' knowledge in conducting early detection of stunting. The method used in this study was the Quasi Experiment One Group with a pre-test and post-test design. A total of 30 health cadres from the village were the samples in this study. Before the training, cadres' knowledge in early detection of stunting was tested using observation. The analysis used a paired sample t-test to determine any significant differences between cadres' knowledge before and after education on nutritional status. The results showed that there was a significant increase in cadres' knowledge in conducting early detection of stunting after participating in PSG training, with a p-value of 0.000. This shows that PSG training has a significant effect on increasing cadres' knowledge in detecting stunting. The conclusion of this study is that PSG training is effective in improving cadres' knowledge in early detection of stunting. It is recommended to strengthen the capacity of cadres in overcoming stunting in the community.

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1. Introduction

Stungtingis one of the major challenges in public health in Indonesia, including in West Kalimantan. Stunting, which is characterized by a condition of failure to thrive due to chronic lack of nutritional intake and repeated infections in early childhood, has long-term impacts on a person's physical, cognitive, and productivity development (Laily & Indarjo, 2023). The government and health institutions continue to strive to reduce the prevalence of stunting through various interventions, including training for Posyandu cadres. Based on the 2023 Indonesian Health Survey (SKI) report, the prevalence of stunting at the national level reached around 21.6%. This figure shows a decrease compared to previous years, but is still a priority to be reduced according to the government's target of below 14% in 2024. The prevalence of stunting in West Kalimantan is still recorded as being above the national figure. Data from 2023 shows a figure of around 27-30%, which places this province as one of the areas with a high

prevalence in Indonesia. This condition requires special attention to improve the quality of nutrition and health services. As one of the districts in West Kalimantan, Kubu Raya also faces the challenge of stunting with a prevalence of around 26-29% (Ministry of Health of the Republic of Indonesia, 2023). Community-based interventions, such as training cadres in early detection, are key to reducing stunting rates in this area. Nutritional Status Monitoring (PSG) training is important in strengthening the capacity of cadres to conduct early detection of stunting, which is greatly needed in the West Kalimantan region (Asparian et al., 2023). This training aims to improve the knowledge of cadres in measuring, recording, and analyzing indicators of children's nutritional status, as well as providing education to families about healthy nutritional practices. With increased skills, cadres can detect the risk of stunting earlier, provide appropriate interventions, and prevent stunting before its impact becomes permanent (Hida & Mardiana, 2011). With this background, training cadres in conducting early detection of stunting not only plays a role in increasing the capacity of local human resources, but also becomes a strategic step in supporting national policies to reduce stunting rates, especially in areas with high prevalence rates such as West Kalimantan and Kubu Raya.

Cadre training empowers individuals to take an active role in monitoring and improving nutritional status in their environment. Thus, training also equips individuals with practical knowledge to monitor and improve nutritional status in the community. This is an important step in efforts to overcome malnutrition problems and improve public health as a whole. In assessing nutritional status, tools are always needed to facilitate the measurement of nutritional status. The measurement method used is by looking at the nutritional status index of toddlers, very short <-3 SD, short -3 SD - <-2 SD, Normal -2SD - 3SD, Tall> 3SD. The nutritional status of toddlers is assessed from weight according to age (BB/A), Height according to age (TB/A), Weight According to Height (BB/TB) (Ratumanan et al., 2023). Field study resultsshow*P Value*which is less than 0.05 (i.e. 0.000) indicates that the changes that occurred in the knowledge score. After being given training in measuring toddler height, the cadres were able to install and perform measurements properly. PSG training for cadres was conducted to see if there was a difference between before and after the training. Training provided in the form of education about the meaning of PSG, how to measure it properly and correctly and introduction of tools with power point and flipchart media. Measurement is done by giving questions before (pre-test) given education about determining nutritional status (PSG) and after 1 month the cadres are given an evaluation by filling in the same questions (post-test) (Nurul Azizan et al., 2023).

2. Methods

This research is a quantitative research conducted directly with a Quasi Experiment One Group pre-test and post-test design. The research was conducted in Sungai Malaya and Mega Timur Villages, Sungai Ambawang District, Kuburaya Regency, West Kalimantan Province, implemented in October-November 2024, Due to the high number of stunting cases in Sungai Ambawang District of 12.3%. Sampling technique using Purposive Sampling techniquewhich method selects samples. The research sample was cadres from Sungai Malaya and Mega Timur Villages with a total of 30 respondents. The respondents we selected were health cadres who were actively involved in health activities in the village and had a basic understanding of health issues, including stunting and nutritional status. Selecting cadres who already had this basic knowledge made it easier to receive training materials on PSG. Thus, educational interventions were more effective in increasing their knowledge, which in turn could have an impact on improving their skills in measuring community nutritional status. Then, cadres who were already involved in village health programs were more likely to have the readiness and ability to understand the materials provided in the training, such as how to measure nutritional status correctly. Given that the training involved the use of tools and methods that might be new to them, cadres with this basic knowledge would find it easier to apply the materials and techniques taught. Furthermore, the selected cadres had the commitment and readiness to attend all training sessions and fill out the pre-test and post-test questionnaires. Full participation in this training is essential so that changes in knowledge can be measured appropriately through the pre-test and post-test.

Therefore, cadres who are directly involved in village health activities and are willing to spend time for training are very relevant to achieving valid and consistent results. By selecting cadres who already have basic knowledge, the effectiveness of the training will be higher because they can more quickly understand and apply the information on nutritional status measurement provided. Their motivation and basic knowledge will facilitate the learning process, which will affect the quality of data obtained through the pre-test and post-test questionnaires. The selection of cadres from Sungai Malaya

and Mega Timur Villages is relevant to the local social and health context. The high number of stunting cases (12.3%) in Sungai Ambawang District indicates a need to improve cadres' knowledge about nutritional status and stunting management. By selecting cadres from these villages, this study can have a direct impact on stunting control efforts in the area. The ethical procedures applied in this study are: Before participating in the study, all cadres selected as respondents were given a detailed explanation of the purpose of the study, the procedures to be undertaken (including training and filling out questionnaires), and the benefits and risks that may arise. Cadres were informed in advance that they had the right to withdraw at any time without negative consequences to their relationship with the researcher or their work as cadres. Cadres must provide voluntary consent after understanding the purpose, procedures, and risks involved in this study. This consent will be recorded in a consent form signed by the respondent. Cadres were informed that the data obtained from the pre-test and post-test would only be used for the purpose of this study, namely to measure changes in cadre knowledge regarding nutritional status measurement and the implementation of the intervention provided. All information collected through the pre-test and post-test questionnaires will be kept confidential. Respondents' personal data (such as their names or information that can identify them) will not be published or shared with other parties. The data collected will be analyzed anonymously, using codes or identification numbers that do not directly link to individual respondents. Cadres will be informed that the data obtained from the pre-test and post-test will only be used for the purpose of this study, namely to measure changes in cadre knowledge regarding nutritional status measurement and the implementation of the intervention provided. All data will be stored securely, using a system that prevents unauthorized access. Only researchers have access to the data for further analysis.

The training materials provided to cadres are delivered in a way that is easy to understand and relevant to their tasks. The use of PowerPoint and flipchart media will be attempted to be clear and understandable to all participants. The duration of the training will be adjusted so as not to burden the cadres, with training sessions held twice a month, ensuring that the training time remains effective and fits the cadres' work schedule. Researchers inform cadres that the risks associated with this study are very minimal, only related to filling out the questionnaire which does not cause significant physical or psychological stress. Despite the minimal risks, researchers continue to monitor the comfort of cadres during training and filling out the questionnaire. If any obstacles or problems arise, cadres will be given the opportunity to express their obstacles. The results of this study are used to improve cadres' knowledge of nutritional status measurement and can have a direct impact on strengthening cadres' abilities to address stunting problems. Therefore, cadres must be informed of the practical benefits they will get after participating in the study. After the study is completed, the cadres involved are informed of the results of the study and how this information will be used to improve knowledge and efforts to prevent stunting in their villages. If the results of the study are published or used for other reports, cadres will be informed that their data will be used without revealing their personal identities. Publication of the results of the study will be carried out while maintaining anonymity and confidentiality of personal information. Cadres were given the right to stop participating in this research at any time without any consequences or negative impact on their relationship with the researcher or their duties as cadres. This ensures that participation remains voluntary throughout the study. The ethical procedures applied in this study follow the guidelines set by the research ethics committee and the regulations in force in Indonesia and in the field of public health. The researcher ensures that all steps in the study comply with ethical principles that protect the welfare of respondents. The method provided is in the form of education about the meaning of PSG, how to measure it properly and correctly and introduction to the tool with power point media and flipcharts. The instrument used is a questionnaire to determine the level of knowledge of cadres, which is measured by giving questions before (pre-test) education is given about determining nutritional status (PSG) and after 1 month the cadres are given an evaluation by filling in the same questions (post-test). The data analysis used is the Paired T Test (Pairet T Test) carried out with the knowledge of cadres before and after the intervention. Data processing was carried out in October-November 2024 with a research sample of cadres in Sungai Malaya Village and Mega Timur Village.The training was conducted in 2 sessions, each 2 weeks in 1

month. This study was conducted by selecting samples which were given information about the material to be delivered.

3. Results and Discussion

Data processing was carried out in October-November 2024 with a research sample of cadres in Sungai Malaya Village and Mega Timur Village.

Characteristics of Frequency Distribution of Research Respondents

Table 1
Characteristics of Research Respondents

No.	Characteristics	Frequency	Percentage (%)
	Age		
1.	23 – 30 Years	7	23.3
2.	31 – 40 Years	13	43.3
3.	41 – 58 years	10	29.8
	Education		
1.	SD	7	23.3
2.	JUNIOR HIGH SCHOOL	9	30.0
3.	SENIOR HIGH SCHOOL	7	23.3
4.	D3	2	6.7
5.	S1	5	16.7
	Ethnic group		
1.	Madura	17	56.7
2.	Malay	4	13.3
3.	Java	7	23.3
4.	Bugis	2	6.7

Based on the research results, it can be seen in table 1 on the characteristics of the respondents' age showing that the majority of respondents are in the age group of 31 - 40 years (43.3%). This age group is a productive age that is likely to have sufficient work experience and financial stability. The age group of 41 - 58 years is also quite significant (29.8%), indicating that older respondents also participated in this survey, which could reflect the opinions or preferences of individuals with broader experience. Meanwhile, the age group of 23 - 30 years recorded the lowest percentage (23.3%), which could mean that this group may be less involved in the topic or issue being studied (Tumenggung et al., 2023).

In the characteristics of respondents' education, it shows that the majority of respondents have junior high school education (30%) and elementary school (23.3%). This shows that many respondents have elementary and secondary education. High school education recorded the same figure (23.3%), which also indicates that most respondents have not continued to higher education. Only a few respondents have D3 education (6.7%) and S1 (16.7%). This could indicate limited access or interest in higher education among most respondents (Nurul Azizan et al., 2023).

In terms of the characteristics of the respondents' ethnic groups, it shows that most respondents come from the Mandura ethnic group (56.7%), followed by the Javanese (23.3%), and Malay (13.3%). Meanwhile, the Bugis ethnic group only recorded 6.7%. The dominance of the Mandura ethnic group in this sample may reflect a population or group that is more represented in the area or community that is the object of the survey. Variations in other ethnic groups such as Javanese and Malay show cultural diversity, although in smaller numbers (Mulyasari et al., 2020).

On the characteristics of working status, it shows that the majority of respondents (70%) are not working, which indicates that many of them may be involved in other activities such as Posyandu cadres or volunteer work. Only 30% are working, indicating that many respondents have social involvement outside of formal employment (Tumenggung et al., 2023)The number of respondents

present at each Posyandu shows that Posyandu Sekar Melati has the largest number of cadres (23.3%), while other Posyandus have a smaller proportion. This reflects the diversity of cadre participation in various Posyandus (Tumenggung et al., 2023).

In terms of the length of time as a cadre, it shows that most cadres (39.9% and 36.7%) have had experience between 1-20 years. This shows that many Posyandu cadres are experienced, with only a few having only been involved in the last 0-3 months (Purnamasari et al., 2020).

The characteristics of PSG training show that only 23.3% of cadres have ever attended PSG training, while the majority (76.7%) have never attended training. This shows the need to expand access to training so that cadres are better trained in providing counseling on nutrition and health (Purnamasari et al., 2020).

Frequency distribution Analysis Before Being Given Early Detection Education for Stunting

Table 2
Analysis Results Before and After Early Detection of Stunting Education

Variables	Mean	Standard Deviation	Standard Mean Error	N	P-Value
Knowledge					
Pre-test	50.17	16.108	2,941	30	0.000
Post-test	69.17	15,091	2,755	30	

Based on the research results, it can be seen in table 2 from the results of the Analysis before and after being given early detection education on stunting, it shows that there was a significant increase in the knowledge scores of participants after the learning intervention, from 50.17 in the pre-test to 69.17 in the post-test. This shows that the learning materials or methods applied have a positive impact on participants' understanding (Mulyasari et al., 2020).

Variations in pre-test and post-test scores can be seen from the fairly large standard deviations. Despite the increase in the average, variations between individuals also remain, which may be due to differences in participants' initial ability levels, how they process information, or how effectively they apply the learning (Asparian et al., 2023).

*P-value*which is less than 0.05 (i.e. 0.000) indicates that the changes that occurred in the knowledge score were not caused by chance. This strengthens the conclusion that the intervention or learning carried out succeeded in significantly increasing participants' knowledge (Asparian et al., 2023).

Based on the results data and discussion above, it can be concluded that there is a significant increase in participant knowledge after participating in the learning or intervention carried out, which is proven by the difference in scores between the pre-test and post-test. This increase shows the effectiveness of the intervention applied, which is indicated by a very low p-value (Nurul Azizan et al., 2023)

Frequency Distribution Analysis of Cadre Skills Knowledge in Early Detection of Stunting

Table 3
Item Analysis of Questions on Cadre Skills Knowledge in Early Detection of Stunting in Sungai Malaya and East Mega

Question	Timetable			
	Pre Test		Post Test	
	Correct(%)	Wrong(%)	Correct(%)	Wrong(%)
What is PSG?	14 (46.7)	16 (53.3)	28 (93.3)	2 (6.7)
Low Birth Weight?	23 (76.7)	7 (23.3)	26 (86.7)	4 (13.3)
Understanding Stunting.	29 (96.7)	1 (3.3)	26 (86.7)	4 (13.3)
Understanding Nutritional Status	10 (33.3)	20 (66.7)	11 (36.7)	19 (63.3)
The nutritional status of toddlers is assessed based on 3 measurement indices,	18 (60.0)	12 (40.0)	26 (86.7)	4 (13.3)

Question	Timetable			
	Pre Test		Post Test	
	Correct(%)	Wrong(%)	Correct(%)	Wrong(%)
namely?				
to find out the nutritional status of stunting in toddlers, using the measurement index?	8 (26.7)	22 (73.3)	24 (80.0)	6 (20.0)
Name of the tool for measuring toddler height?	3 (10.0)	27 (90.0)	6 (20.0)	24 (80.0)
How to measure the height of a toddler except?	19 (63.3)	11 (36.7)	23 (76.7)	7 (23.3)
How to weigh a toddler except?	14 (46.7)	16 (53.3)	19 (63.3)	11 (36.7)
What is the name of the weighing tool for toddlers aged 0-2 years?	19 (63.3)	11 (36.7)	26 (86.7)	4 (13.3)
If a toddler cannot stand up straight, then measuring height/length using the following tools except?	9 (30.0)	21 (70.0)	13 (43.3)	17 (56.7)
Definition of growth?	15 (50.0)	15 (50.0)	23 (76.7)	7 (23.3)
If a toddler has a TB/U index of -3 to -2 SD Z score, what is the category?	16 (53.3)	14 (46.7)	16 (53.3)	14 (46.7)
TB/U index describes chronic nutritional problems.	14 (46.7)	16 (53.3)	17 (56.7)	13 (43.3)
name of tool for weighing babies aged 0-2 months	12 (40.0)	18 (60.0)	25 (83.3)	5 (16.7)
Name of the tool for measuring the height of toddlers aged 0-24 months?	17 (56.7)	13 (43.3)	20 (66.7)	10 (33.3)
Length board tool measures the body length of children. What age?	17 (56.7)	13 (43.3)	24 (80.0)	6 (20.0)
Stadiomet is used to measure the height of children over the age of?	19 (63.3)	11 (36.7)	28 (93.3)	2 (6.7)
What is the name of the tool that uses a weighing sheath and a scale?	20 (66.7)	10 (33.3)	25 (83.3)	5 (16.7)
dacin scales for children age?	11 (36.7)	19 (63.3)	19 (63.3)	11 (36.7)

Based on the research results, it can be seen in Table 3 which shows the results of the pre-test and post-test related to the increase in participants' understanding after being given intervention with the following description.

In the Understanding of PSG, the results of the Pre-Test were 14 people (46.7%) answered correctly, while 16 people (53.3%) answered incorrectly. In the Post-Test results, 28 people (93.3%) answered correctly, and only 2 people (6.7%) answered incorrectly. There was a significant increase, indicating that the intervention was successful in increasing understanding of the meaning of PSG (Caesar & Dewi, 2018).

In Low Birth Weight, the Pre-Test results were 23 people (76.7%) answered correctly, and 7 people (23.3%) answered incorrectly. In the Post-Test results, 26 people (86.7%) answered correctly, while 4 people (13.3%) answered incorrectly. Although it was quite good in the pre-test, understanding increased further in the post-test (Caesar & Dewi, 2018).

In the Symptoms related to physical and mental development, the Pre-Test results were 29 people (96.7%) answered correctly, while only 1 person (3.3%) answered incorrectly. In the Post-Test results, 26 people (86.7%) answered correctly, and 4 people (13.3%) answered incorrectly. Understanding decreased slightly in the post-test, perhaps due to the difference between clearer and broader concepts (Caesar & Dewi, 2018).

In the Balance of Nutrient Intake and Body Needs, the Pre-Test results were 10 people (33.3%) answered correctly, while 20 people (66.7%) answered incorrectly. In the Post-Test results, 11 people (36.7%) answered correctly, and 19 people (63.3%) answered incorrectly. Although there was a slight improvement, most participants still had difficulty understanding the concept of nutritional balance (Caesar & Dewi, 2018).

In the toddler nutritional status measurement index, the Pre-Test results were 18 people (60%) answered correctly, and 12 people (40%) answered incorrectly. In the Post-Test results, 26 people (86.7%) answered correctly, and only 4 people (13.3%) answered incorrectly. A significant increase indicates that participants better understand how to assess toddler nutritional status after training (Caesar & Dewi, 2018).

In the stunting nutritional status measurement index, the Pre-Test results were 8 people (26.7%) answered correctly, and 22 people (73.3%) answered incorrectly. In the Post-Test results, 24 people (80%) answered correctly, and 6 people (20%) answered incorrectly. A very significant increase, indicating that the training helped increase knowledge on how to find out the nutritional status of toddlers related to stunting (Caesar & Dewi, 2018).

On the name of the toddler height measuring tool, the Pre-Test results were only 3 people (10%) who answered correctly, and 27 people (90%) answered incorrectly. On the Post-Test results, only 6 people (20%) answered correctly, and 24 people (80%) answered incorrectly. Although there was a slight improvement, participants still had difficulty recognizing the toddler height measuring tool, which may require further explanation (Caesar & Dewi, 2018).

In the toddler weight weighing, the Pre-Test results were 14 people (46.7%) answered correctly, and 16 people (53.3%) answered incorrectly. In the Post-Test results, 19 people (63.3%) answered correctly, and 11 people (36.7%) answered incorrectly. There was an increase, although there were still some errors, which indicates that the weighing material needs to be further strengthened (Caesar & Dewi, 2018).

On the toddler height measuring tool, the Pre-Test results were 19 people (63.3%) answered correctly, and 11 people (36.7%) answered incorrectly. On the Post-Test results, 23 people (76.7%) answered correctly, and 7 people (23.3%) answered incorrectly. There was an increase in understanding even though there were still participants who did not fully understand the toddler height measuring tool (Caesar & Dewi, 2018).

In general, the table above shows that overall, there was a significant increase between the pre-test and post-test. In most questions, the percentage of correct answers increased after participants received the intervention, indicating the effectiveness of the materials or training provided. Some topics, such as nutritional balance and certain measuring tools, still showed significant difficulty for some participants. Therefore, materials related to measuring tools or more technical concepts may require additional approaches or explanations (Caesar & Dewi, 2018).

4. Conclusion

Based on the results of the study, the characteristics of the respondents showed that the majority were in the age group of 31-40 years (43.3%) and had education up to junior high school (30%). Most respondents came from the Mandura tribe (56.7%) and the majority were unemployed (70%), with involvement in social activities such as Posyandu cadres. Most Posyandu cadres had experience

between 1-20 years, but only 23.3% had attended PSG training. The average knowledge score of the participants increased from 50.17 in the pre-test to 69.17 in the post-test, indicating a positive impact of the intervention provided in the form of education with Power Point and Flipchart media. Although there was variation in scores between individuals, a p-value smaller than 0.05 (0.000) confirmed that the change in score was significant and did not occur by chance.This study can be expanded with a questionnaire to determine the level of knowledge of cadres, education on determining nutritional status (PSG) and after 1 month the cadres are given an evaluation by filling in the same questions (post-test). Thus, educational interventions are more effective in increasing their knowledge in measuring the nutritional status of the community. Then, cadres who have been involved in village health programs are more likely to have the readiness and ability to understand the material provided in the training, such as how to measure nutritional status correctly. Which can then have a direct impact on reducing stunting status.

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