

Training on Anthropometric Measurements and Nutritional Status Assesment for Posyandu Cadres

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Abstract

The prevalence of stunting in Jember Regency is on the rise, surpassing the national stunting average. Posyandu (Integrated Service Post) cadres play a crucial role in stunting prevention by facilitating basic health services like regular weighing of children. However, in Sukosari Village, these cadres lack the know-how to accurately plot children's height on growth charts, focusing solely on weight measurements. This deficiency hampers the identification of stunted children. To address this gap, a community service program was conducted, involving educational sessions on stunting and hands-on training in anthropometric measurements and nutritional assessment for 30 Posyandu cadres. Following the training, there was a notable improvement in the cadres' competence in conducting anthropometric measurements and interpreting weight and height data in relation to age and gender. Continuous training to enhance cadres' proficiency in early stunting detection is recommended across Jember Regency to optimize stunting prevention.

Keywords: anthropometric measurements, nutritional status assessment, cadres

Introduction

Indonesia continues to grapple with nutritional issues like stunting, despite numerous governmental initiatives aimed at addressing them. The approach to tackling stunting in Indonesia is outlined in Presidential Regulation Number 72 of 2021, which emphasizes both specific and sensitive interventions. Specific interventions primarily target health-related aspects, such as providing additional food for pregnant women and underweight children, distributing iron tablets to teenagers and women of reproductive age, promoting breastfeeding and offering counseling on infant and child feeding, as well as efforts to control infectious diseases. On the other hand, sensitive interventions encompass non-health-related measures, such as ensuring access to clean drinking water, delivering nutrition and health services, promoting education, fostering behavioral change, and improving food accessibility (Badan Pemeriksa Keuangan, 2021). Obstacles to implementing the stunting alleviation program include inaccurate perceptions regarding the causes of stunting. Moreover, there persists a belief that stunting is commonplace and inherited (Widaryanti et al., 2023). Furthermore, insufficient parental awareness and understanding contribute to limited support and awareness in eradicating and preventing stunting.

The rate of stunting in Indonesia continues to decrease. According to the 2022 Riskesdas data, the prevalence of stunting in Indonesia was 24.4% in 2021, which then dropped to 21.6% in 2022 (Ministry of Health, 2022; Statistics Indonesia, 2019). Despite a notable decrease in stunting prevalence nationwide, Jember Regency has experienced a sharp increase, with rates soaring to 34.9%. According to weight measurements in February 2023, Sukowono District was one of the areas in Jember Regency with the highest stunting rates (Dinas Kesehatan Kabupaten Jember, 2023).

Preventing stunting necessitates collaboration among multiple stakeholders, including healthcare facilities and active involvement from the community, particularly health cadres and parents. Posyandu cadres play a vital role in volunteering to facilitate posyandu programs and engaging the community to access essential health services, aiming to decrease maternal and infant mortality rates (KEMENKES, 2011). In terms of preventing stunting, posyandu cadres must be skilled in carrying out anthropometric measurements and be able to interpret the measurement results correctly as a step in assessing nutritional status (Candarmaweni & Rahayu, 2020). However, it was found that many posyandu cadres lacked skills in anthropometric measurements (Novianti, 2018). The inadequate knowledge and proficiency of posyandu cadres in anthropometric measurements, including instrument setup, weighing, measuring children's body length and height, and recording measurement outcomes, result in inaccurate data collection and reporting of nutritional status (Fitriani & Purwaningtyas, 2020). A study conducted by Sovitriana et al. (2023) shows that only half of the cadres have precision in measuring anthropometry and none of the cadres have accuracy in measuring anthropometry.

Identification of Problems

Based on findings from a preliminary investigation involving five posyandu cadres in Sukosari, it was revealed that these cadres lacked the proper technique to plot height measurements accurately on the appropriate growth curve. They were unaware that the KIA (Mother and Child Health/MCH) book contained multiple growth curves other than weight curve, resulting in failure to plot children's heights on the appropriate curve. Additionally, the cadres struggled to interpret height measurement results, hindering their ability to assess whether a child's height

corresponded appropriately with their age. One contributing factor to the cadres' limited skills is their lack of experience in conducting anthropometric measurements and inadequate training support (Fitriani & Purwaningtyas, 2020; Nurul Azizan et al., 2023). Regular monitoring of children' height in accordance with their age is a compulsory component of monthly posyandu activities, aimed at screening for stunting in children (Khasanah et al., 2019). Therefore, it is crucial for posyandu cadres to possess thorough knowledge and proficiency in conducting anthropometric measurements, particularly in measuring children' height and accurately evaluating children's growth status. Given this context, community service in the form of training sessions for posyandu cadres are deemed essential to enhance their skills in anthropometric measurements and nutritional status assessment of toddlers in Sukosari Village, Sukowono District, Jember Regency.

Implementation Methodology

This community service activity involved 30 posyandu cadres in Sukosari Village. Activities were conducted face-to-face at Posyandu 12 in Sukosari Village. Community service activities, in the form of training on anthropometric measurements and growth status assessments, were conducted in June 2023 over the course of 3 meetings.

Preparation Stage

This community service activity starts with submitting a permit to BAKESBANGPOL (National and Political Unit) of Jember Regency. Upon obtaining the activity permit from BAKESBANGPOL, permit applications were also submitted to the Head of Sukowono District and the Head of Sukosari Village. After receiving approval for the activity from all relevant officials, the community service organizer coordinates with midwives and cadre representatives to finalize the time and location of the activity.

The preparation of measuring instruments for community service activities was also developed during the preparation stage. Two measuring tools were utilized: a knowledge level questionnaire to assess posyandu cadres' understanding of stunting, anthropometric measurements, interpreting growth curves, and an observation sheet to evaluate cadres'

proficiency in conducting anthropometric measurements, particularly height and weight, plotting height and weight measurement outcomes according to age, and interpreting the results of height and weight measurements.

The knowledge level questionnaire comprises 25 questions: 10 on stunting, 10 on anthropometric measurement methods, and 5 on interpreting growth curves. Each correctly answered question earns a score of 4, while incorrect answers receive a score of 0. Thus, the highest score achievable on the knowledge level variable is 100 when all questions are answered correctly.

The observation sheet for cadre skills includes 9 evaluation criteria adapted from the Growth Monitoring Guidelines provided by the Ministry of Health of the Republic of Indonesia (KEMENKES RI, 2021) and research of Fitriani & Purwaningtyas (2020) which are described as follows:

1. Weigh the child's weight using a baby scale. This measurement consists of 6 steps.
2. Weigh the child using a hanging scale (dacin). This process involves 12 steps, with seven steps for tool installation and five steps for measurement.
3. Weigh the child using a step scale involves 7 steps, with one step for tool installation and six steps for measurement.
4. Measure the body length of child who cannot yet stand using a length board. This measurement consists of 10 steps
5. Measure the height of child who can stand using a microtoise involves 14 steps, divided into 5 steps for tool installation and 9 steps for measurement.
6. Plot the results of weight measurements consists of 6 steps
7. Plot the results of height measurements consists of 5 steps
8. Interpret the results of plotting a child's weight consists of 3 steps
9. Interpret the results of plotting a child's height consists of 2 steps

The evaluation of cadre skills entails summing up the various stages performed by cadres across nine indicators. The maximum score achievable for the cadre skills variable is 65. These assessment tools have been validated in settings distinct from the location where community service activities occur.

Implementation Stage

The implementation of this training is detailed as follows:

1. **Initial Meeting:** At the outset, a pretest was conducted to assess the knowledge and skills of posyandu cadres in anthropometric measurements and growth status assessment. This involved administering a questionnaire on stunting and anthropometric measurements, alongside an observation sheet. Following the pretest, training activities commenced, focusing on educating posyandu cadres about stunting, its causes and impacts, strategies for prevention, the cadre's role in prevention efforts, anthropometric measurements of children, and interpretation of child's growth curves. Counseling sessions were conducted utilizing PowerPoint presentations. Subsequently, question and answer session followed to address any queries regarding the provided material.
2. During the second meeting, a demonstration was conducted to illustrate how to measure toddler anthropometry (weight, height, head circumference, and upper arm circumference), plot the results of weight and height measurements on the growth curve in the KIA book, interpret growth charts, and address problematic anthropometric measurement results. The media used during the demonstration included a baby phantom, midline, microtoise, baby scale, baby length board, and stepping scales. Following the demonstration, participants were given the opportunity to individually re-demonstrate the steps taught, with guidance from the resource person.
3. During the third meeting, a posttest was conducted to evaluate the knowledge and skills of cadres following the training implementation. The assessment of cadre skills was performed individually, with each posyandu cadre completing nine activities outlined on the observation sheet.



Figure 1. Practice of Anthropometric Measurements and Interpretation of Weight and Height Growth Charts

Statistical Analysis

The collected data encompassed the demographic profiles of the cadres, alongside pretest and posttest scores assessing their knowledge and skill levels. Analysis was conducted using SPSS for Windows version 22. Univariate analysis was employed to present the demographic characteristics of the cadres in tabular format. To examine disparities in knowledge and skills before and after training, bivariate analysis was conducted utilizing a paired t-test, given the normal distribution of the data.

Results

Table 1. Demographic Characteristics of Participants

Variable	Frequency (%)
Age	
25-34	10 (33.3)
35-44	14 (46.7)
44-54	4 (13.3)
>55	2 (6.7)
Educational Background	
Elementary School	8 (26.7)
Junior High School	12 (40)
Senior High School	10 (33.3)
Length of Being a Cadre	
<1 year	5 (16.7)
1-3 years	18 (60)
>3 years	7 (23.3)
Frequency of Joining Training	
1-2x	16 (53.3)
3-4x	11 (36.7)
≥5x	3 (9.6)

Table 1 shows that the majority of participants in this activity were aged 35-44 years, comprising 46.7% of the total. Most of the cadres have a junior high school education background (40%) and have accumulated 1-3 years of experience as cadres (60%). None of the participating cadres hold a diploma or bachelor's degree. However, all cadres have undergone training. The training attended by Sukosari Village posyandu cadres includes recording posyandu cohort data, weight measurement, promoting clean and healthy living behaviors, preparing complementary foods for breastfeeding, and monitoring larvae. Nonetheless, the majority of currently active cadres (53.3%) have only participated in training 1-2 times.

Table 2. Pre-test and Post-test of Knowledge and Skill Level of Cadres

Variable	Pretest (Mean±SD)	Posttest (Mean±SD)	p value
Knowledge	58.8±8.6	84±8	0.000
Skill	37.4±6.6	64.5±5.4	0.000

Table 2 illustrates an increase in knowledge among cadres following training, rising from 58.8 to 84, signifying a 25.2-point average score improvement. Additionally, cadre skills improved

from 37.4 to 64.5, reflecting a 19.2-point average score increase. Statistical analysis using the paired t-test revealed significant differences in both knowledge and skills before and after training in anthropometric measurements and nutritional status assessment for cadres.

The variations in cadre skills pre-and post-training across nine skill indicators are elucidated in Figure 1. From Figure 1, it is evident that all indicators of cadre skills showed improvement post-training. Notably, in the seventh and ninth indicators—plotting height measurements and interpreting height plotting results—no cadres performed these tasks before training. However, after training, all were able to correctly plot height measurement results on a growth curve and interpret whether a toddler's height fell within the normal or stunted category, demonstrating the ability to plan follow-up actions for stunted children.

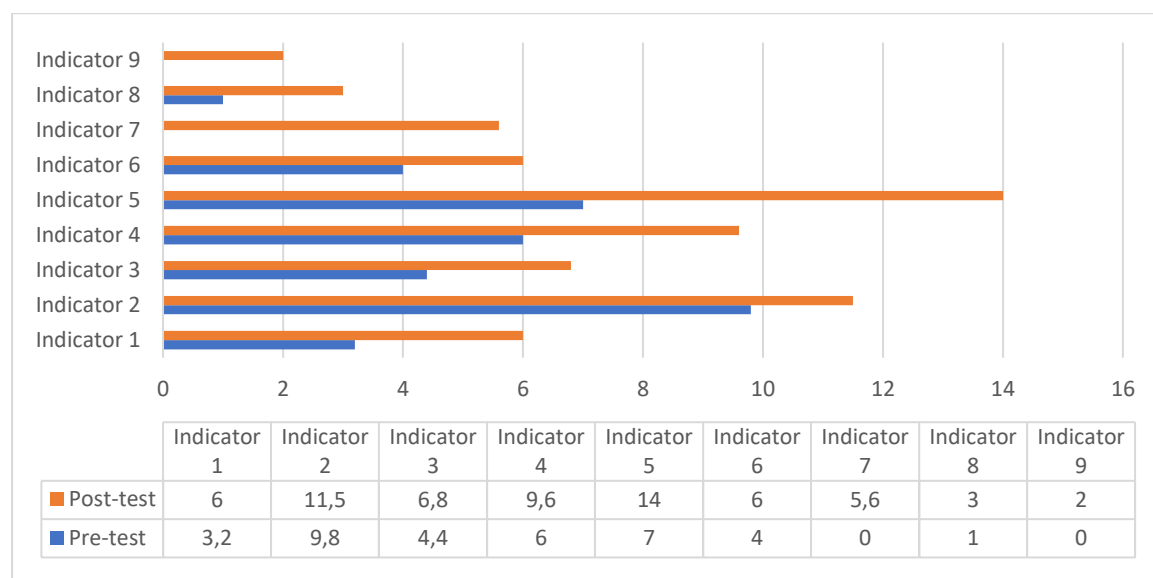


Figure 2. The Average Result of Respondent's Skill

Discussion

The training conducted for posyandu cadres in Sukowono Village on anthropometric measurements and nutritional status assessments has been found to enhance their knowledge and skills in preventing stunting. Previous training sessions for posyandu cadres, including measuring toddlers' height and weight, offering complementary foods for breastfeeding, and utilizing MCH books, have yielded positive outcomes in bolstering the cadres' knowledge and skills. These findings align with research conducted by Hasanah et al. (2023), which underscores the effectiveness of anthropometric measurement training in enhancing cadres'

abilities to assess stunting status. Similarly, Noprida et al. (2022) demonstrated that providing training significantly augmented the knowledge of posyandu cadres in screening toddlers' growth and development.

Based on Bloom's taxonomy as outlined in Nurul Azizan et al. (2023), there are six levels of knowledge: know, comprehension, application, analysis, synthesis, and evaluation. Following training on anthropometric measurements and nutritional status assessment, respondents' knowledge levels advanced beyond mere comprehension to the application stage. They demonstrated the ability to directly apply anthropometric measurement techniques, including height and weight measurements, as well as plotting and interpreting the results. Although not all respondents executed each skill indicator flawlessly, their skills improved overall after training, as evidenced by their proficiency in mastering more skill stages. The seventh and ninth skill indicators, plotting height measurement results and interpreting child's height plotting results, are particularly crucial competencies that cadres should acquire. Merely measuring a child's height is insufficient for determining stunting; it must be compared against a standard height chart based on the child's age and gender. Cadres must also comprehend the appropriate follow-up actions to take if a child is identified as stunted. Unfortunately, these skills are still inadequately mastered by cadres in Indonesia, resulting in the failure to detect and manage stunting at the earliest possible stage.

Training is an effective method for enhancing the competency of cadres in early stunting detection. During training sessions, cadres acquire crucial knowledge about stunting and learn how to conduct early stunting detection through anthropometric measurements and accurate nutritional status assessment. Benjamin Bloom's classification categorizes behavior into three domains: cognitive, affective, and psychomotor. The cognitive domain evaluates knowledge, the affective domain assesses attitudes, and the psychomotor domain evaluates actions. The development of behavior initiates in the cognitive domain, where individuals acquire prior knowledge about a stimulus, consequently generating new insights. Understanding plays a crucial role in shaping behavior (Sunaryo, 2004). A solid understanding prompts individuals to adopt a favorable stance, ultimately leading to the development of suitable stunting

prevention practices (Amri Yeni Putri et al., 2022; Mustikawati et al., 2023). In this context, proficient comprehension of anthropometric measurements and nutritional status evaluation enables cadres to conduct accurate assessments. Consequently, early and appropriate detection and management of stunting become feasible.

Conclusion

Training initiatives in Sukosari Village, Sukowono District, Jember Regency have been shown to enhance the proficiency of cadres in performing anthropometric measurements and evaluating the nutritional status of toddlers. These training sessions should be conducted on a regular and ongoing basis to continually augment the cadres' understanding. This continuous improvement is vital for preventing stunting in Sukowono Village at the earliest possible stage. Moreover, if any children are identified as stunted, it ensures that appropriate referrals and interventions can be promptly provided.

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