

Monitoring of nutritional status to children by Integrated Healthcare Center as stunting early detection

Monitoring status gizi balita oleh kader posyandu sebagai upaya deteksi dini stunting

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ABSTRACT

One of the strategic steps in the effort to deal with stunting nutrition is the use of Integrated Healthcare Center (Posyandu). Posyandu as the front line that can provide information to parents about the nutritional status of children, and Posyandu components that are no less important are cadres. The skills of cadres in determining nutritional status through anthropometric measurements are needed so that they can provide appropriate information for the community, but cadre education activities related to children under five nutrition have not been carried out for a long time. This service is carried out with the aim of providing re-education to cadres on monitoring the nutritional status of children under five through anthropometric measurement methods. The target of this activity is the cadres of the Posyandu in Tegallinggah Village, totaling 15 people. Through counseling and practicing anthropometric measurements, it is hoped that the knowledge and skills of cadres in determining the nutritional status of toddlers will increase. Evaluation of this activity was carried out through pre-test and post-test methods on cadres and the results were obtained after being given refresher on monitoring children under five nutrition, 80% of cadres had knowledge in the good category and 100% of cadres were able to measure Height (TB) and Weight (BB) correctly.

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1. INTRODUCTION

Children under five age is an age range that experiences rapid growth and development or is often known as the golden period, and this period will greatly determine the quality of subsequent growth and development. To be able to go through this period well, children under five need good nutrition to support the quality of their growth and development. Meeting the nutritional needs according to age will grow a quality generation and vice versa the lack of nutritional intake at this time will have an impact on the poor quality of the nation's generation later.

Nutritional problems can be caused by direct causes such as lack of nutritional intake and certain diseases, also indirect causes such as the lack of family ability to care for family members with nutritional

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problems and poor environmental sanitation (Afrinis et al., 2021). Therefore, it is highly necessary to monitor the nutritional status of children under five because this will be an important health indicator for children under five. Examination of nutritional status can be done by measuring the child's weight and height and then comparing them with the child's age then categorized based on WHO standards with the W/A (Weight/Age), H/A (Height/Age) and W/H (Weight/Height) ratios (Supariasa, 2012).

One of the nutritional problems that are of concern at this time both by the Government and us together is stunting. In 2013, the stunting prevalence rate in Bali reached 32.7% and in 2018 it managed to fall to 19.8%. Even based on the 2019 Indonesian Children Under Five Nutrition Status Study (SSGBI), the Bali Province stunting prevalence rate in 2019 has dropped to 14.4% (Dinas Kesehatan Prov. Bali, 2020). Implying that although the stunting rate has decreased compared to the previous year, this still needs attention.

Stunting is defined as impaired growth and development of children under five due to prolonged malnutrition which results in stunted growth in children's height according to age (TN2PK, 2017). Stunting can be caused by various factors such as lack of food availability, low socio-economic conditions of the community, family ignorance of child care patterns and poor environmental sanitation. Stunting actually does not just happen, but it can start from the mother carrying the fetus, the nutrition of pregnant women both before and after pregnancy will also affect the condition of the fetus they contain. Good nutrition for pregnant women will have a positive influence, such as appropriate fetal weight growth, but on the other hand, pregnant women with poor nutrition will cause low birth weight babies and can cause stunting (Khoeroh & Indriyanti, 2017).

In line with this, the government has established a National Movement for Nutrition Improvement both in the pre-natal and post-natal period for mothers with the main focus on the first 1000 days of life. To implement this program, Integrated Healthcare Center (Posyandu) plays important roles in overcoming stunting problems in accordance with the vision of the Ministry of Health, namely to create a healthy, independent and just society by improving the health status of the community, through efforts from, by and for the community (Kemenkes RI, 2013). Posyandu is a form of Community Based Health Business (UKBM) whose management comes from the community, by the community and for the community to get easy access to health services for mothers, babies and children under five (Kemenkes RI, 2013). Additionally, Posyandu is also a place for pregnant, lactating mothers, infants and children under five to receive services, including services for mothers and children such as monitoring growth and development, immunization, giving vitamin A capsules as well as counseling about nutrition and family planning. To carry out activities at the Posyandu, the cadres are the main driving figures (Megawati & Wiramihardja, 2019).

Posyandu cadres are community members who voluntarily dedicate themselves to be ready to serve and carry out Posyandu duties (Erawati, 2020). The success of the programs in Posyandu will be mainly determined by the role of the cadres themselves because they are the ones who really understand the characteristics of the people in their area. One of the roles of cadres is to provide factual information, especially health, to the local community (Arundhana et al., 2018). The service system at the Posyandu is through 5 desks and cadres are assigned to each of these desks. The cadre's duties include starting from the registration desk, measuring weight and height desk, health service desk, counseling desk, and recording and reporting desk. Examination of the nutritional status of children under five as an effort to detect early stunting is conducted at the second desk (Erawati et al., 2021). In addition to providing health services, cadres also play a role in delivering health information to the community, including education about nutrition, the health of pregnant women, including pregnant women who are at risk, up to Supplementary Feeding (PMT). The cadres also remind the public the schedule for their next visit to the Posyandu. Posyandu cadres also remind adolescents and women of childbearing age to always maintain their nutritional intake to avoid chronic energy deficiency (KEK) and anemia, because if they experience chronic energy deficiency and anemia during pregnancy, they can potentially give birth to

babies with low birth weight (WLR) and disproportional baby height. This can trigger stunting *in the long term* (Kosasih et al., 2018). *Therefore, monitoring of weight and height in children is needed as an indicator of nutritional status assessment. It is said that if at least 80% of children under five in each district/city are weighed every month, it can be said that the children under five are growing healthy* (Restusari, 2019).

Monitoring the nutritional status of children under five at the Posyandu has been carried out by cadres, although there are still some obstacles such as cadres' turnover causing some cadres to have no experience in taking measurements, resulting in inaccurate measurements and cadres do not understand how to analyze and interpret the nutritional status of children under five in Kartu Menuju Sehat (KMS). Nevertheless, cadre training has been conducted by the local Health Office through the Public Health Center (Puskesmas), but its implementation is still limited (Noprida et al., 2022). This can have an impact on the validity of information regarding the nutritional status of children under five due to errors of cadres in providing interpretations of nutritional status to the community. From these problems, it is necessary to provide additional education on how to determine the nutritional status of children under five using the anthropometric method. Anthropometric method is a measurement of body dimensions and body composition from various age levels including weight, height, upper arm circumference and fat under the skin. In this community service program, the measurements used are weight and height measurements because anthropometric standards of children can be categorized into 4 parameters, namely: (1) Comparison of body weight according to age (W/A); (2) Height or body length according to age (H/A); (3) Body Weight by Height or Body Length (W/H); and (4) Body Mass Index (BMI) (Sormin & Siagian, 2022). Cadres who are equipped with good knowledge and skills are the main capital in providing services at Posyandu, so that they can provide the right information to the community (Puspita & Amar, 2018).

Considering the significant role of cadres in efforts to prevent and early detection of stunting nutrition in children under five, this service program will carry out additional education activities for Posyandu cadres on measuring the nutritional status of children under five using the anthropometric method. It is hoped that by understanding how to carry out anthropometric measurements of cadres, they can provide an accurate assessment of the nutritional status of children under five to the community, thus earlier detection of stunting could be achieved.

This community service targets 7 Posyandu cadres in the Tegallingsah Village area, but in its implementation, 2-3 cadre representatives from each Posyandu are invited so that the number of cadres who attend education is 15 people and is accompanied by 1 regional midwife. This service was carried out at the Tegallingsah Village Hall, Sukasada I Health Center (*Balai Desa Tegallingsah, Wilayah Kerja Puskesmas Sukasada I*). Tegallingsah Village was chosen as the location of the service because the village has the same characteristics as Kayuputih Village which is included in the category of village or locus stunting area. From the results of research conducted by Sugandini et al. (2020) stated that the prevalence of stunting in this region was 23.37%. Tegallingsah village has seven Posyandu, and each Posyandu has five active cadres. From the results of field observations at one Posyandu and interviews with local village midwives, it was stated that partners still had difficulties in carrying out anthropometric measurements and nutritional status assessments and some of the equipment was damaged. The midwife also said that activities such as training for cadres related to the assessment of the nutritional status of children under five were very important and previously there had never been such training for cadres. Through training, it is believed to be able to increase the knowledge and skills of cadres (Zaki et al., 2018). With this community service, it is expected to increase the knowledge and skills of cadres in assessing nutritional status in children under five so that they can make early detection efforts on stunting events in the community. Early detection of malnutrition and stunting is expected to be handled properly so as to minimize the problems it can cause in the long term (Surtiningsih & Yanti, 2019). The following is the documentation of activities during observation (Figure 1 and 2).

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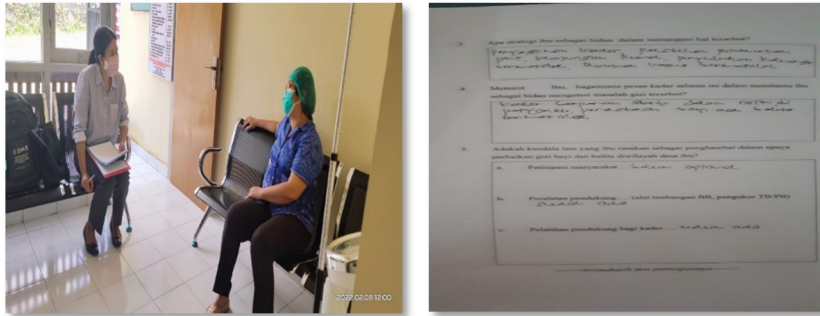


Figure 1. Interview with the regional midwife regarding the nutritional problems of infants/children under five in Tegallinggah Village

Figure 2. Guidelines for Interviews with regional midwives

From the results of observations in the field at one of the Posyandu in Tegallinggah Village, there are still some cadres who do not understand well how to measure anthropometry, how to interpret it on KMS and some of the available measuring instruments are in a damaged condition. From these problems, it is necessary to provide additional education to cadres related to the method of anthropometric measurements used to determine the nutritional status of children under five.

2. METHODS

Troubleshooting Framework

This service activity was started by conducting field observations in several Posyandu which still had stunting rates in the working area of the Puskesmas in Buleleng Regency, one of which was in the Posyandu in Tegallinggah Village. After conducting initial tests and observations on cadres, it was found that there were obstacles in conducting education for cadres. The next activity is to submit an application for permission to the Head of the Sukasada I Community Health Center to carry out community service activities in his work area, especially at the Posyandu in Tegallinggah Village, then coordinate and communicate with partners in this case are midwives regarding the implementation of Posyandu as well as invite cadres to participate in anthropometric measurement techniques and assessment of the nutritional status of children under five.

Planning

The planning process begins with identifying the needs of the target community, in this case assessing the ability of cadres to assess the nutritional status of children under five in their area. The number of cadres who were given education was 15 people and carried out starting from providing material on nutritional status and how to determine the nutritional status of children under five through the anthropometric method, then the next stage was to look at the skills of cadres in measuring weight and height (H) according with the procedure. Cadres must have adequate knowledge and skills in measuring weight (W) and measuring height appropriately for children under five at the Posyandu in relation to determining the nutritional status of children under five. At this stage, an initial assessment will be carried out on the cadres by looking at their knowledge by giving initial tests and the skills of the cadres to measure weight (W) and height (H) with an observation sheet.

Implementation

At the implementation stage, the cadres will be given education regarding anthropometric measurement techniques including measuring weight and height in children under five and how to determine the nutritional status of children under five. At this stage of implementation, cadres will also be given educational materials and continue with the practice of measuring weight and height as well as discussions.

Evaluation

At this stage an evaluation is carried out in the form of tests and observations of cadres after being given education to see the knowledge and skills of cadres in measuring weight and height as well as assessing the nutritional status of children under five. In the next evaluation stage, monitoring of cadres is also carried out when assessing the nutritional status of children under five during Posyandu activities.

Activity Methods

In the implementation of this service, it is carried out by 3 methods including: (1) Lecture and discussion. Education to 15 cadres using lecture and discussion methods by presenting material on children under five nutrition, anthropometric measurement methods including measuring tools used to measure weight and height of children under five and how to determine the nutritional status of children under five. The presentation of information is given in stages and carried out regularly to increase the knowledge of cadres (Candra et al., 2021). Presenting education in the form of nutrition material counseling is carried out by 1 service team. At this stage the cadres seemed enthusiastic and asked a lot of questions related to how to properly measure children under five's weight and height; (2) Demonstration. After giving presentation to cadres about the nutritional status of children under five, the next step is to practice measuring anthropometry and determining nutritional status correctly, demonstrations are carried out by another service team and at the end of this activity, an evaluation will be carried out in the form of giving a test again to see the understanding of cadres and make observations on the skills of cadres in measuring weight and height and determining the nutritional status of children under five; (3) Evaluation using checklist. Monitoring is carried out when the cadres try anthropometric measurements themselves and assess the nutritional status of children under five during Posyandu activities. Assessment of the skills of cadres in weighing and measuring children's height is guided by the checklist that has been given. Evaluation of the skills of cadres in measuring height and weight was carried out by a team of 3 people at the time of Posyandu activities the following month.

Evaluation Framework

The success of this service activity is evaluated at the end of the activity based on the matrix presented in Table 1.

Table 1. Evaluation of community service activities

Outputs	Activities	Achievement
Increased understanding and skills of cadres in measuring weight and height and interpreting the nutritional status of children under five	Provide education to cadres about weight and height measurement techniques for children under five and interpret them	90% of cadres understand and can perform according to the procedure for measuring weight and height and assessing the nutritional status of children under five
Monitoring the assessment of the nutritional status of children under five at the Posyandu	Assist cadres when assessing the nutritional status of children under five at the Posyandu	90% of cadres are able to assess the nutritional status of children under five

3. RESULTS AND DISCUSSION

Planning

At the beginning of the activity the team made plans in coordination with the regional midwife, namely the Tegallingsah Village Midwife related to the monitoring and evaluation of cadres in carrying out anthropometric measurements of children under five. At this stage the partners agree on the goals and objectives of the service team agreeing on the time and location of the activity. Next, the team began to design operational activities and prepare the infrastructure needed for these activities, such as measuring instruments for measuring weight scales, instruments for measuring baby's height (microtoise) that will be used for this activity. At this stage, the team also coordinated with the Head of the Tegallingsah Village regarding the permit to carry out activities involving the community, especially the health cadres of Tegallingsah Village.

Implementation

The implementation phase of this community service activity was carried out on Tuesday, May 11, 2022 at the Tegallingsah Village Hall. This community service activity was carried out 2 times, in the first activity a pre-test was carried out for cadres related to the material, then continued with cadre education about anthropometric measurement techniques. The second activity is assisting cadres in carrying out anthropometric measurements of children under five at the Posyandu as well as evaluating the results of the activities. The activity begins with conducting an initial test on cadres before providing education on anthropometric measurements at the Posyandu. Finally, the cadres are given a final test with the same questions as the initial test related to the material that has been explained. This was done to see a change in the understanding of the cadres on how to assess the nutritional status of children under five using anthropometric measurement techniques. The following is documentation during pre-test activities and the media used during cadre education (Figure 3 and 4).



Figure 3. Pre-test on cadres

Figure 4. Anthropometric measuring tools and pocket books for cadres

Based on the results of the pre-test before the training, there were 6 cadres who still did not know about children under five nutrition, anthropometric methods and tools. The results of the pre-test showed that of the 5 open questions addressed to the cadres, not all of them could be answered by the cadres. The cadres obtained an average score of 60 for the cadre pretest, which is in the satisfactory category. However, after education in the form of training returned to cadres, the post-test results showed that knowledge of cadres about nutritional status and methods of measuring nutritional status through anthropometric methods increased. This can be seen from the average post test score is 80, which means that it is included in the good category. The following is a recapitulation of the results of pre-test and post-test assessments in service activities (Table 2).

Table 2. Distribution of Posyandu Cadre knowledge level

Category	Pre-test			Total	Post test			Total	
	Knowledge	Good	Adequate		Poor	Good	Adequate		Poor
Amount		1	8	6	15	12	3	0	15

During the educational presentation, the cadres seemed very enthusiastic about participating in the training, giving a positive response whenever a question was asked, discussions about the material being explained and the cadre's desire to be able to take anthropometric measurements according to the procedure. In this training, participants are taught theoretically about procedures for using anthropometric tools for weight, length or height, which in its use must also pay attention to whether the target is still categorized as an infant or toddler. Educational presentations on nutritional status and how to determine it through anthropometric measurements as a whole have been given to Posyandu cadres, and for the practice of measuring weight and height more emphasis is placed on what have been the weaknesses of Posyandu cadres so far, especially in terms of doing calibrate the tool before use, and pay attention to the condition of the target (forgetting to remove accessories or sandals). In general, the results of this cadre education show an increase in the understanding of cadres about the nutritional status of children under five and how to measure it when viewed from the pre-test and post-test scores. The results of other service activities targeting cadres also stated the same thing, namely the skills of Posyandu cadres had increased after being given assistance on how to monitor growth in infants 0-59 months (Entoh et al., 2021).

The second implementation phase of activities in the form of monitoring and mentoring cadres is carried out through visits to Posyandu to see the implementation of the results of cadre education. This activity was carried out to see the skills of cadres in carrying out anthropometric measurements on 10 of infants and toddlers and then interpret the measurement results. The results of the observations showed that the technique of measuring body weight by cadres was quite proper. Before weighing, the cadre first explains the purpose of measuring the weight and prepares the tools used. The scales used have been calibrated and placed on a flat surface. After that, prepare the child/toddler to be weighed, such as excessive clothes and accessories, which can be taken off first so as not to affect the measurement results. However, some cadres still forgot to take off the accessories when weighing. After the weighing results were recorded, then the cadres were asked to interpret the results into the MCH handbook (Mother Children Health handbook – *buku Kesehatan Ibu dan Anak*) and most of the cadres had already done so. The results of monitoring using the checklist guidelines for measuring body length or height have been carried out properly by cadres. It's just that on several occasions there are still some cadres who have not repeated the measurement of length or height and the results of the measurements sometimes are not interpreted. As an evaluation material for cadres, what is done is to remind cadres to immediately record the measurement results into the MCH book so that their nutritional status can be interpreted immediately. The following is a documentation of the service activities that have been carried out (Figure 5 and 6).

The picture above shows the process of implementing community service starting from providing educational materials about children under five nutrition and how to determine nutritional status using the anthropometric method, to the process of evaluating the skills of cadres when taking anthropometric measurements, especially in measuring weight.

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Figure 5. Documentation of cadre training on measuring H and W with Anthropometric Methods

Figure 6. Documentation of monitoring of nutritional status by cadres at Posyandu

Evaluation

To see the results of this activity, cadres are given an evaluation sheet in the form of a checklist form regarding the procedure for measuring weight, height or body length. This observation sheet is filled out by the implementer of community service activities and the following results are obtained.

Table 3. Assessing the cadres on their weight measurement methods

Assessment Aspects	Evaluation	
	Quantity	%
Preparing the tool (make sure the balance needle is right at zero, put the tool on a flat and easy-to-read place)	10	100
Preparing the child (remove excessive clothing/accessories, remove footwear)	10	100
Accurately read the scale needle	10	100
Recording weight measurement	10	100

Based on Table 3, it is known that as many as 4 cadres (40%) still do not remove clothes or accessories and have repeated 3 times in taking measurements. However, at the time of evaluation all cadres had done all the steps correctly.

Table 4. Assessing the cadres on their height measurement methods

Assessment Aspects	Evaluation	
	Quantity	%
Preparing the tool (make sure the balance needle is right at zero, put the tool on a flat and easy-to-read place)	10	100
Directing assistants in preparing H measurements correctly	10	100
Preparing the child (remove excessive clothing/accessories, remove footwear)	10	100
Positioning baby for measurement (supine position, straight posture, legs straight, assistant helps fixing the head)	10	100
Measuring height (knees are pressed so that they are straight, the soles of the feet are straightened 90°)	10	100
Accurately read the scale needle	10	100
Recording height measurement	10	100

Based on Table 4, it is known that most of the cadres have taken measurements well. At the time of mentoring, there were still some cadres who did not repeat the measurements 3 times, but at the time of evaluation all cadres had done all the steps correctly.

Discussion

Integrated Healthcare Center (Posyandu) is one of the community-based health businesses which is the most popular health service forum in the community. The continuity of this Posyandu activity cannot be separated from the role of cadres as the main personnel who take part in the planning, implementation and post-activity processes. It is also known that the Posyandu provides various kinds of health services and the most frequently encountered is health services for children under five. One of the activities commonly found in Posyandu related to this service for children under five is measuring the weight and height of children under five which are also the main indicators in determining nutritional status. This is very important to be understood by cadres to be able to carry out early detection related to nutritional problems in children under five as well as later to be able to educate families if nutritional problems are encountered in children under five. One of the most common ways to directly assess the nutritional status of children under five is by using anthropometric measurement techniques. From the results of field observations, it was found that cadres really need re-education regarding the technique of weighing and measuring height in children under five correctly as well as interpreting the measurement results. Technical errors during measurements such as adjusting the position of the pendulum scales, forgetting to reset the tool at zero again before use are one small mistake example but if they are not taken seriously, they will have an impact on measurement results and interpretation errors so that the information obtained regarding the nutritional status of children under five is wrong, even though we know together that it is the cadres who provide more information to the public. This is in line with service activities regarding cadre empowerment regarding the revitalization of Posyandu and education to cadres about health problems, especially nutrition, which is very important and needs support from the village government and Public Health Center (Puskesmas) both material and moral support (Kosasih et al., 2018).

Based on the service activities that have been carried out, there has been an increase in the knowledge of cadres about determining the nutritional status of infants and children under five using anthropometric techniques as well as in terms of skills. Therefore, it is very necessary to carry out similar activities on an ongoing basis and the Puskesmas is expected to always accompany the performance of Posyandu cadres, including in terms of measuring weight and height correctly. In general, the implementation of re-education activities and assistance with anthropometric measurement techniques in an effort to determine the nutritional status of children under five by cadres went well. Cadres are very enthusiastic while participating in activities and provide suggestions so that similar activities can be carried out again with more intensive assistance so that they can increase their knowledge. This community service served its purpose to increase cadres' knowledge and skill on the technique of measuring weight and height correctly as well as the skills of cadres interpreting the results correctly. The perceived impact of community service activities is the increased ability of cadres to provide accurate interpretation of nutritional status based on the measurement results obtained so that they can provide appropriate information related to nutritional problems in children under five so that cadres can carry out early detection of nutritional problems/problems in society.

4. CONCLUSION AND RECOMMENDATIONS

In general, the service activities in Tegallinggah Village by involving health cadres went well. Knowledge of determining the nutritional status of children under five with anthropometric techniques

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increases after education is carried out. The average comparison of the final score at the pre-test was 60 and the score at the post-test was 80. Likewise, the skills of cadres in measuring weight and height in Posyandu have increased. The results of the evaluation of weight and height measurements are 100% in accordance with the measurement steps/procedures.

Activities at Posyandu, one of which is anthropometric measurements of weight and height, is a routine activity carried out by cadres at Posyandu, for this reason, accompanying midwives or Public Health Center (Puskesmas) officers are expected to always monitor and assist cadres in carrying out their duties at Posyandu, to provide the best health services to society.

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