The Relationship Between Knowledge And Skills of Posyandu Cadres Through The Zero Triple Program For Stunting Prevention In Bubulak Village, Bogor City

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Abstract.

Background: Stunting remains one of the major nutritional problems affecting children's growth and development in Indonesia, including in Bogor City. Posyandu cadres play a crucial role in providing education and implementing stunting prevention efforts. However, limited knowledge and practical skills among cadres in carrying out these activities in the field remain significant challenges that need to be addressed. Objective: This study aims to determine the relationship between the level of knowledge and skills of Posyandu cadres through the implementation of the Zero Triple Program and their efforts in stunting prevention in Bubulak Subdistrict, Bogor City. Method: This study employed a quantitative descriptive method with a pre-experimental one-group pretest–posttest design. The program was conducted over four sessions involving 21 Posyandu cadres. The stages included preparation, socialization and program introduction, delivery of balanced nutrition materials through the Isi Piringku educational game demonstration, training on tilapia fish and hydroponic cultivation, demonstration of tilapia dim sum processing, as well as mentoring and evaluation through pre-test and post-test assessments. The data obtained were then processed and analyzed using Microsoft Excel Results: The average pre-test score increased from 17.0 to 19.4 for the stunting material, 18.0 to 19.5 for the balanced nutrition material, and 1.19 to 2.10 for the hydroponic cultivation and tilapia processing training. These results indicate a significant improvement in the knowledge and skills of respondents after participating in the zero triple program. Conclusion: There is a significant relationship between the implementation of the zero triple program and the improvement of Posyandu cadres' capacity in delivering education and practical stunting prevention efforts in Bubulak Village, Bogor City. Suggestion: Future studies are recommended to involve a larger number of respondents and include an evaluation of cadres' behavioral changes following the training program to strengthen the sustainability and impact of community-based stunting prevention initiatives.

Keywords: *Posyandu Cadres; Zero Triple Program; Knowledge; Skills and Stunting Prevention.*

I. INTRODUCTION

Nutrition problems in children under five are still a serious challenge for the country. Nutritional problems that often arise in this age group include stunting, wasting, and *overweight* (*World Health Organization*, 2020). According to (*World Health Organization*, 2023), childhood malnutrition is often characterized by linear growth stunts that affect around 478 million children under the age of five worldwide. This phenomenon shows that stunting is still a form of chronic malnutrition experienced by many developing countries such as Indonesia. Stunting conditions are generally characterized by a child's height that is lower than their age standard due to nutritional deficiencies and chronic infections (Galaresa, Putri, & Mulyati, 2024).Stunting is a condition caused by long-term malnutrition and infection, which is characterized by the height of children under five who are lower than the normal standard of their age (Fauziah, Trisnawati, Rini, & Putri, 2024). The impact of stunting not only causes impaired physical growth, but also affects brain development, cognitive function, and children's intelligence levels, which can ultimately reduce the quality of human resources (Solahuddin, Fitriani, Anggarani, Magdalena, Hasibuan, Munawaroh, Selananda Putra, Khairani, Fahry, & Pratiwi, 2024). Globally, WHO reports that around 22% of children under five or 149.2 million children under the age of five were stunting in 2020. Data released by UNICEF, WHO, and WBS in 2021 shows that around 27.4% of toddlers in Southeast Asia are stunted. In Indonesia, the prevalence reaches 24.4%, where this figure is not in line with the government's target of 14% in 2024 (Pakaya, Wulansari, & Hasanuddin, 2024).

Based on SSGI data in 2022, Bogor City showed an increase, from 16.9% in 2021 to 18.7% in 2022. This condition indicates that stunting prevention efforts still require attention, especially in the first thousand days of life (1000 HPK). The lack of nutrient intake during this period is exacerbated by access to health services, and an environment that does not support growth (Nurlaili & Pertiwi 2024). The lack of public understanding of the parenting of babies with stunting conditions causes these children to not be handled appropriately (Nurhadi, Febrina, & Erfan, 2024). Efforts to improve nutrition interventions require the collaboration of the government, academia, and the community. Posyandu cadres play an important role as spearheads in the field through education and direct monitoring to families. They are not only extension workers, but also drivers in changing people's nutritional behavior (Herawati, Briawan, Riany, & Ekayanti, 2025). However, the limited understanding of health cadres is still an obstacle in the implementation of the program (Ministry of Health, 2022). To overcome this problem, an education and training program is needed for posyandu cadres designed so that cadres have adequate knowledge and skills (Millati, Setyawati, Tyarini, & Daiyah, 2025). In addition, the provision of additional food based on local food is considered effective in increasing children's nutritional intake (Muniroh, Nadhiroh, Socadevia, Rahmah, Julia, & Tetasa, 2025). Local food is easy to find around the community and has more affordable prices. Therefore, this study aims to identify the relationship between snack habits, diet, and food consumption on the nutritional status of school-age children.

II. METHODS

This type of research uses a descriptive quantitative approach with *a pre-experimental one group pretest-posttest design*. The research was carried out in Bubulak Village, Bogor City in July-August 2025. The number of respondents was 21 posyandu cadres who were selected by *purposive sampling* and were willing to take part in the entire series of zero triple program training. This research has received permission from the United Nations Association of Indonesia, United Nations Association Indonesia with Number 025/STL/PRES/2025.Data collection is carried out through several stages, namely filling *out pre-tests* and *post-tests* using questionnaires.

In addition, field observations were carried out to assess the extent to which cadres were able to apply the skills acquired during the implementation of the program. The implementation of the program was carried out in four meetings which included several activities, namely socialization and introduction of the program, delivery of material on the principles of balanced nutrition through the demonstration of the game "Isi Piringku", training on tilapia cultivation and hydroponic plants, and demonstration of making tilapia dimsum.The data obtained then goes through the stages of coding, entry, and re-checking before the analysis is carried out Data processing is carried out using *Microsoft Excel* to analyze the knowledge and skills of cadres before and after the training and see the relationship between the knowledge and skills of cadres and stunting prevention efforts.

III. RESULT AND DISCUSSION

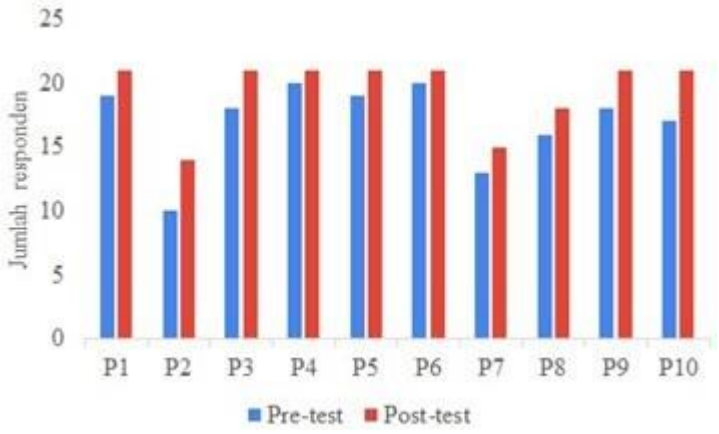

Fig 1. *Pre-Test* and *Post-Test* Scores of Participants Regarding Stunting

Figure 1 shows the results of *the pre-test* and *post-test* of the respondents' knowledge about stunting. Based on the results of the measurement of 10 questions, there was an increase in respondents' knowledge scores on all question items after the implementation of the zero triple program. The average *pre-test* score of 17.0 increased in the *post-test* by 19.4. The highest increase occurred in the second question point, which was from 10 to 14 respondents answered correctly, while the lowest increase was seen in the fourth, fifth, and sixth questions with a difference of 1 point each.

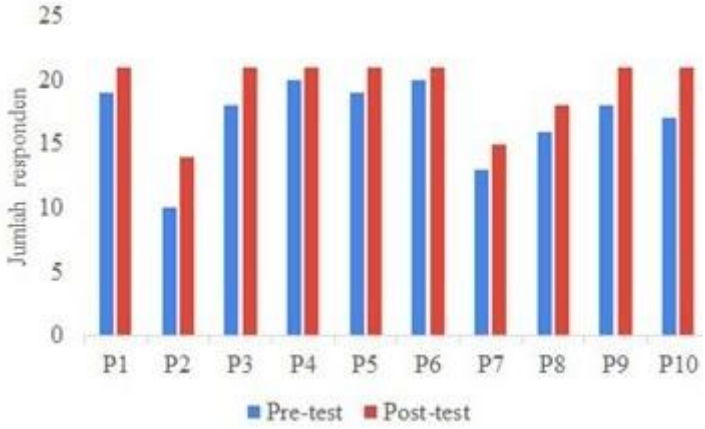

Fig 2. Participants *' Pre-Test* And *Post-Test* Scores On The Principles Of Balanced Nutrition

Figure 2 shows the results of *the pre-test* and *post-test of* the respondents' knowledge of the principles of balanced nutrition. Based on the results of the measurement of 10 questions, there was an increase in the scores of all question items after the activity. The average *pre-test* score of 18.0 increased to 19.5 in the *post-test*. The highest increase was found in the first, third, and eighth questions, up 2 points each, while the lowest increase was seen in the second, fourth, sixth, ninth, and tenth questions. with an increase of 1 point

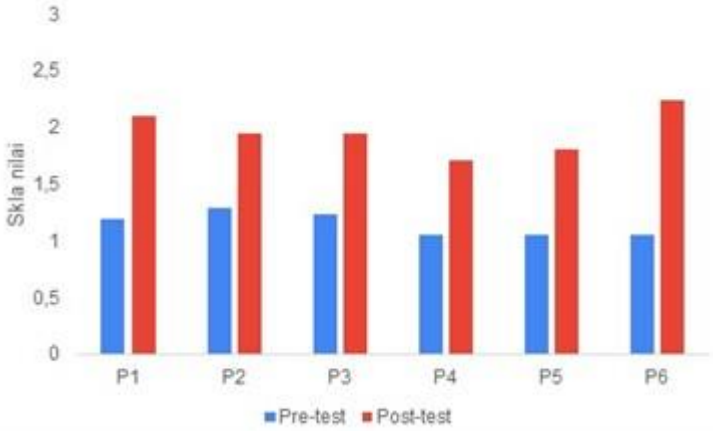

Fig 3. Pre-Test and *Post-Test* Scores of Participants Regarding Hydroponic Cultivation

Figure 3 shows the results of *the pre-test* and *post-test* assessments of the respondents' knowledge of hydroponic cultivation and tilapia. Based on the six questions, there was an increase in scores in all indicators after the training activities were carried out. The average *pre-test* score ranged from 1.05 to 1.29, while the *post-test* score increased to 1.71 to 2.24. The highest increase occurred in the sixth question point, which was from 1.05 to 2.24, while the lowest increase occurred in the second and third questions, which rose from 1.29 to 1.95 and from 1.24 to 1.95, respectively. Overall, there was an average score increase of 0.8 points.

Discussion

The zero triple training activity was carried out by involving cadre mothers aged 20-60 years. Participants who took part in this activity were representatives of cadres from 15 posyandu in Bubulak Village, Bogor City totaling 21 people. Based on the results of the research shown in Figure 1, the *results of the pre-test* and *post-test* show a graph of the increase in respondents' knowledge about stunting after the

implementation of the program which at this first meeting was carried out using the method of lectures and interactive discussions. Of the 10 questions given, all showed an increase in scores after the implementation of the activity. The average *pre-test* score of 17.0 increased to 19.4 in the *post-test*. The highest increase occurred in the second question, where the number of respondents who answered correctly increased from 10 to 14 people, while the lowest increase was found in the fourth, fifth, and sixth questions with a difference of one point. This shows that respondents have experienced an increased understanding of the definition, causes, and efforts to prevent stunting.The increase in test results provides an answer that the method applied is effective to be carried out. The interactive lecture and discussion method allows cadres to actively participate in the learning process, both through questions and answers and sharing experiences.The interactive lecture and discussion method improves the ability of cadres to understand the concept of stunting prevention through participatory learning (Triyani, Akib, Ratnasari, Setyaningsih, & Setyawati, 2024).

The learning process involving two-way interaction has been proven to be able to increase knowledge and understanding of nutrition concepts in respondents.The question items in the research instrument include the definition of stunting, short- and long-term impacts, and prevention strategies such as improving diet, parenting, and sanitation. The results of the score increase show that cadres are beginning to understand that stunting is not only caused by malnutrition, but there are also other contributing factors, namely environmental factors and family behavior. This is in line with the research of Rukmana, Fransiari, Damanik, & Nurfazriah (2024), which reported that increasing cadres' knowledge has a direct impact on the success of nutrition interventions in the community, especially in detecting the risk of stunting from an early age. In addition, these results are also in line with Aulia & Purnamawati (2025) who emphasized that participatory-based training is able to have a great influence on the ability of ponsyandu cadres to convey educational messages related to health and encourage behavioral changes in society related to child nutrition (Millati, Setyawati, Tyarini, & Daiyah, 2025). In addition, cadres are able to improve the ability of cadres to explain the concept of stunting contextually in the field. Cadres who receive training are more active in providing assistance to families (Chabibah & Agustina, 2023) Through this activity, respondents not only receive new knowledge, but also gain communication skills needed to provide education to pregnant and breastfeeding mothers.

Fig 4. Demonstration of The Contents of My Plate

Based on Figure 2, the results of *the pre-test* and *post-test* show an increase in the knowledge of Posyandu cadres about the principles of balanced nutrition after participating in educational activities using the demonstration method "Fill My Plate". The average *pre-test* score of 18.0 increased to 19.5 in the *post-test*, which showed an increase in respondents' understanding after receiving the training. The highest increase was found in the first, third, and eighth questions regarding balanced nutrition knowledge, the application of a healthy diet, and the introduction of plant-based protein sources such as tofu and tempeh. Meanwhile, the second, fourth, sixth, ninth, and tenth questions also showed improvement albeit in smaller margins.This educational activity was*designed* with an interactive demonstration approach "Isi Piringku",

where cadres directly practiced how to prepare a balanced meal plate consisting of 1/3 staple food, 1/3 side dishes, and 1/3 vegetables and fruits according to the recommendations of the Ministry of Health. This visual approach and hands-on practice helped respondents understand the principle of balanced nutritional proportions that should be given to babies. The demonstration method proved to be more effective because it provided a learning experience by direct practice. Respondents can see firsthand the appropriate portion of food, compare common mistakes in food presentation, and discuss to provide the best solution if under certain conditions.

This finding is in line with the research of Fatmasari, Sriatmi, Wigati, Suryawati, & Suryoputro (2024) who said that the implementation of the "Isi Piringku" method increased nutritional understanding by up to 17.4%, because respondents understood more easily through real visualization. The increase in scores on the fourth and sixth questions, regarding the role of protein in child growth and its sources, illustrates that respondents understand the important role of protein in building and repairing body tissues. These results are in line with Setiaarwati & Wahyudin (2024) who explained that animal and vegetable protein nutrients that are fulfilled in a balanced manner have an impact on the nutritional status of elementary school-age children. In addition, a healthy and nutritiously balanced diet is the main foundation of a healthy lifestyle. In today's context where modern lifestyles are filled with processed and fast food, the understanding of the importance of balanced nutrition is becoming increasingly prominent. Food is no longer just a biological need, but also plays a role in maintaining metabolic balance and immunity (Kamaruddin, Wibowo, Anto, Latif, & Wulandari, 2023).The increase in the ninth and tenth question items regarding the difficulty of providing nutritious food at home reflects the cadres' awareness of the importance of using nutritious and affordable local food. Balanced nutrition education training through educational game media and direct demonstrations is able to increase cadre nutrition literacy and encourage the implementation of a healthy diet at the family level (Herlianty, Sumidawati, & Bakue, 2024).

The success of this program is also supported by structured activity stages. Through steps such as identifying needs, developing educational materials, training implementing personnel, program implementation, and evaluation, this activity will succeed in having a real impact on improving respondents' knowledge and behavior (Nur, Nita, & Demu, 2023). Respondents not only understand the concept of balanced nutrition, but also develop practical skills such as choosing healthy ingredients, managing meal portions, and arranging family menus according to balanced nutrition principles.According to Uramako (2021), real practice-based training encourages the formation of *health life skills* such as cooking nutritious food, reading nutrition labels, and managing a balanced diet. Practice-based nutrition education is able to influence people's behavior in choosing healthy foods, increase awareness of nutrient composition, and strengthen healthy consumption behavior in the community. (Yagi, Nurmalasari, & Rafie, 2021) This is in line with the Balanced Nutrition Guidelines of the Ministry of Health of the Republic of Indonesia (2022) which emphasizes the importance of practice-based education in forming healthy eating habits and clean living behaviors. With the increase in respondents' understanding, it is hoped that education about meal portions, food diversity, and food hygiene will be more effective to be delivered to the community.

Fig 5. Processed Dimsum From Tilapia

Based on the results of Figure 3, there is an increase in respondents' understanding of hydroponic cultivation. The assessment using a scale of 1-3 (1 = not understanding, 2 = understanding, 3 = very understanding) showed an increase in the average score from 1.19 in *the pre-test* to 2.10 in *the post-test*. This shows that practice-based and demonstration-based educational approaches are effective in improving the understanding of Learning cadres through direct practice to provide experience and understanding so that respondents are able to better understand the stages of the process. They do not just receive material, but participate in planting, caring for, and observing plant growth so that information is easier to understand and remember.In addition to hydroponic cultivation practices, the target also participated in a demonstration of processing tilapia into dimsum processing.

The goal is for respondents to be able to utilize the results of fishery cultivation as a source of balanced nutritious animal protein. Tilapia was chosen because it is a type of fish with high nutritional content and low cholesterol levels, so it is safe and good for consumption (Muahiddah, Azhar, Affandi, Diniariwisan, & Diamahesa 2024). This fish contains quite high amounts of omega fatty acids and essential nutrients. In addition, tilapia has a rapid growth rate and is able to adapt to various environmental conditions, making it one of the potential fishery commodities to be cultivated (Sjahruddin, Hasmawati, Abu, Darman, & Farhan, 2022). Processed dimsum was chosen because it is simple, easy to accept, and has the potential to be a local food-based PMT. This activity shows that hydroponic products such as green vegetables can be combined with tilapia to produce a nutritious menu. The interactive demonstration method proved effective because it encouraged active participation, Practice-based hydroponic training improved respondents' skills in planting, care, and harvesting techniques (Istiqomah, Shoimah, Setiawan, Ardiansyah, & Sholikhatus, 2022).

IV. CONCLUSION

The average *pre-test* and *post-test scores* of 17.0 increased to 19.4 in stunting material, 18.0 to 19.5 in balanced nutrition principle material, and 1.19 increased to 2.10 in hydroponic cultivation training. These results show a positive correlation between the implementation of the Zero Triple Program and the increase in knowledge and skills of Posyandu cadres in the implementation of stunting prevention efforts in the community.

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