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**Community Health Volunteer Up skilling Increase Community-Based Early Detection Knowledge Stunting**

**Muhammad Jauhar 1**🖂**, Beautiful1, Fitriana Kartikasari1,Utami Rachmawati2**

1 Department of Nursing, University of Muhammadiyah Kudus, Indonesia

2Faculty of Nursing, University of Indonesia, Indonesia

 muhamadjauar@umkudus.ac.id, Tel: +6281223647360

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**Abstract**

Stunting is a problem of malnutrition in children under five in the world. The number of new cases of stunting increases every year. This is caused by poor nutritional status, lack of knowledge, barriers to access to health services, inability to meet nutritional needs. This causes a decrease in the quality of human resources in the future. Community-based activities are an alternative solution in stunting management. Health cadres as part of the community and an extension of health workers are expected to be able to carry out early detection and treatment of stunting in toddlers. Capacity building for health cadres is a necessity through regular coaching. This study aims to identify the effect of up-skilling health cadres on knowledge of community-based stunting early detection. The research design used a quasi-experimental type of pre and post-test with a control group. The sample was 33 health cadres for each intervention and control group through [[1]](#footnote-2)purposive sampling technique. The research was conducted in the work area of ​​the Undaan and Dawe Health Centers, Kudus Regency in October-November 2021. The research instrument used was a questionnaire on *health care workers' knowledge towards assessment and management of malnutrition in children* and a *knowledge scale about inpatient management of severely malnourished children* with a reliability value of = 0.83. Health cadres receive coaching in four sessions over two days with a duration of 45-60 minutes/session in the form of interactive lectures and demonstrations. Data analysis using Wilcoxon and Mann Whitney test. *Upskilling* of health cadres increased knowledge of community-based early detection of stunting with p-value = 0.001 (p <0.05). Increased knowledge of health cadres in finding new cases of stunting in the community can be integrated with child health service programs in primary health care facilities.

**Keywords:** **early detection; health cadres, knowledge; stunting; *upskilling***

**INTRODUCTION**

Stunting is one of the problems of malnutrition in children under five all over the world. The number of stunting under-five cases in the world in 2017 reached 150.8 million (22.2%). The number of stunting under-five cases in Asia was 55% and another 39% of stunting under-fives were in Africa in 2017. Indonesia became the country that contributed the highest cases of stunting under five in Southeast Asia at 36.4% in 2017. Based on Nutrition Status Monitoring Data, stunting ranks first in nutritional problems in children under five compared to malnutrition, obesity, and underweight in the last three years. The number of stunting under-five cases increased from 27.5% in 2016 to 29.6% in 2017 (Kemenkes RI, 2018).

Based on the 2018 Basic Health Research report, there were 17.6% cases of underweight toddlers, 30.8% cases of stunting toddlers and 9.3% cases of wasting toddlers. The World Health Organization (WHO) has set a tolerance for the number of stunting under-five cases at 20% whereas Indonesia reported 30% under-five stunting. Based on these data, it can be concluded that the number of stunting cases in Indonesia exceeds the tolerance number set by WHO (Kemenkes RI, 2018). Central Java Province reported 3.7% cases of malnutrition under five and 13.68% cases of undernourished children. Based on district/city health profile data, the prevalence of undernourished toddlers is 5.4% cases, very short toddlers are 31.15% cases, thin toddlers are 2.69% cases, and stunted toddlers are 20.06% cases in 2019 Kudus Regency recorded 3.6% of cases of under-five undernourished, 4.7% of cases of stunted under-five, and 2.9% of under-five cases (Central Java Health Office, 2019). There were 2,871 cases of stunting under five in the Kudus Regency Health Center work area (4.7%) (Kudus Regency Health Office, 2021). The trend of increasing the number of cases of undernourished children under five is a health problem that must get attention from all levels of society.

The increase in the number of stunting cases is caused by poor nutritional status in pregnant women, under-five nutritional status, limited knowledge of mothers about nutrition during pregnancy and after childbirth, access to maternal and child health services in health service facilities is limited, and the ability of the community to meet nutritional needs. balance is still low (Ministry of Development of Disadvantaged Regions and Transmigration, 2017). The negative impacts that arise due to the increase in stunting cases include low intellectual levels of children due to stunted brain development, decreased learning achievement, stunted physical growth, decreased body immunity so that the risk of various diseases, especially infectious diseases, and body metabolism disorders (Ministry of Village Development for Disadvantaged Regions) and Transmigration, 2017). Various strategies have been carried out to solve stunting problems such as situational studies, strategic nutrition interventions, stunting consultations, drafting regulations and data management systems, fostering human resource development cadres, case finding and reporting, as well as monitoring periodic program evaluations (Kudus, 2021).

Based on the results of a preliminary study at the Kudus District Health Office, several cross-sectoral programs and policies have been implemented, namely community empowerment in waste management and latrines, supplementary feeding for children and pregnant women, and maternal and child health checks. One indicator of the success of the stunting management program is the increasing number of new cases of stunting in the community. Improving the quality and quantity of health cadres is a necessity to achieve the target of finding new cases actively in the community. Puskesmas must be able to innovate in achieving the success indicators of stunting management programs in each work area. Health cadres are members of the community who are selected, trusted, willing, able, and have the time to find toddlers suspected of stunting in the community. Knowledge of health cadres about stunting early detection must be increased so that they can carry out the roles, functions, and tasks of community-based stunting management (Notoatmodjo, 2010).

Several previous studies explained that cadre development can increase the capacity of health cadres in handling stunting problems in the community. The development of health cadres can increase knowledge, self-efficacy, and skills in preventing stunting in toddlers (Purnamasari et al., 2020). (Adistie et al., 2018) explains that the training of health cadres increases knowledge and skills of early detection and stimulation of growth and development in toddlers. Another study stated that the implementation of the mentoring program for health cadres increased knowledge about stunting (Azizah & Wardhani, 2020). (Yuliani, 2019) reported that training increased the knowledge of health cadres about early detection of stunting. Increased knowledge and skills of health cadres in conducting early detection of stunting are obtained through the training of health cadres (Masyita Haerianti, 2018).

Based on this, increasing the knowledge of health cadres about early detection of stunting can be done through continuous coaching. Nurses collaborate with health cadres in the early detection of stunting in the community. The role of nurses in increasing knowledge of stunting early detection in health cadres shows the consistency and independence of nurses in community-based stunting management efforts. The results of the research are expected to improve science and nursing services. This study aims to identify the effect of *upskilling* health cadres on knowledge of community-based stunting early detection.

**METHOD**

The research design used an experimental quasi with the type of *pretest* *and posttest with a control group*. This research was conducted in September-November 2021 in the Undaan Health Center Work Area for the intervention group and the Dawe Health Center Work Area for the control group. The number of research respondents was 33 health cadres for each intervention and control group through the *purposive sampling technique*. The inclusion criteria of research respondents were active health cadres, never attended stunting early detection training, age 19-59 years, minimum education level of elementary school, able to read, write, and communicate in Indonesian. The independent variable is the *upskilling* of health cadres and the dependent variable is the knowledge of community-based early detection of stunting. The research instruments used were the *health care workers knowledge questionnaire towards assessment and management of malnutrition in children* (Tafese & Shele, 2015) and the *knowledge scale about inpatient management of severely malnourished children* (Mogre et al., 2017) with a reliability value = 0.83.

The intervention given to the intervention group was *upskilling* of health cadres in four sessions in two days with a duration of 45-60 minutes per session with the following details:

1. Session 1 was health education about the concept of growth and development and stunting in the form of interactive lectures, discussions, and question and answer
2. sessions. 2, namely health education on early detection of stunting and malnutrition in the form of interactive lectures, discussions, and questions and answers
3. Session 3, namely health education on communication, information, and education in the community in the form of interactive lectures, discussions, and questions and answers
4. Session 4, namely early detection of stunting and malnutrition community-based demonstration and *role play*.

Health cadres filled out the *informed consent* after reading the research information sheet, then took the *pretest* before and *posttest* after the intervention. Researchers compiled modules and educational videos for stunting early detection based on references as supporting media. The control group was only given community-based stunting early detection education modules and videos.This study used univariate and bivariate analysis. In univariate analysis, data are presented in terms of frequency and percentage on the variables of gender, marital status, education, occupation, income, and previous training experience. The data are presented in the form of mean and standard deviation on the variables of age, length of service as a health cadre, and knowledge of early detection of stunting. Based on the results of the normality test using the Kolmogorov Smirnov test, it was found that the knowledge variable was not normally distributed (p <0.05) so that the data analysis used the Wilcoxon test to test the mean difference between the two groups before and after the intervention. Whether or not there is an intervention effect can be seen from the results of the Mann-Whitney test. This research has passed the ethical test of the Health Research Ethics Commission of the University of Muhammadiyah Kudus No. 60/Z-7/KEPK/UMKU/X/2021.

**RESULTS AND DISCUSSION**

Table 1 explains that the average age of health cadres in the intervention group is 34.73 years with an SD of 7.509 and the control group is 43.09 years with an SD of 9.409. The average length of time being a health cadre in the intervention group was 5.88 years with an SD of 7.188 and the control group was 9 years with an SD of 9.196.

Table 1. Characteristics of health workers based on age and length into health volunteers (n = 66)

|  |  |  |
| --- | --- | --- |
| **Characteristics**  | **Intervention** | **Control** |
| **Mean** | **SD** | **Mean** | **SD** |
| Age  | 34.73 | 7.509 | 43.09 | 9.409 |
| Lama into health volunteers  | 5.88 | 7.188 | 9 | 9.196 |

Table 2 states entirely all cadres in the intervention and control groups were female or 33 people (100%). Most of the married health cadres in the intervention group were 32 people (97%) and the control group was 29 people (87.9%). Half of the health cadres had a high school education level/equivalent in the intervention group as many as 18 people (54.5%) and the control group as many as 19 people (57.6%). Most of the health cadres worked as housewives in the intervention group as many as 29 people (87.9%) and 18 people in the control group (54.5%). Most of the health cadres did not have a job in the intervention group as many as 27 people (81.8%) and the control group as many as 24 people (72.7%). Half of the health cadres or as many as 18 people (54.5) had attended training in the intervention group and most of the health cadres or as many as 28 people (84.8%) had attended the training.

Table 2. Characteristics of health cadres by gender, marital status, education, occupation, income, training experience (n=66)

|  |  |  |
| --- | --- | --- |
| **Characteristics of**  | **Intervention** | **Control** |
| **f** | **%** | **f** | **%** |
| **Gender** Female  | 33 | 100 | 33 | 100 |
| **Marital status** Not/unmarriedMarried Widow/widower  | 0321 | 0973 | 1293 | 387.99.1 |
| **Education level** SD/equivalent Junior high school/equivalent high school/equivalent college  | 510180 | 15.230.354.50 | 66192 | 18.218.257.66.1 |
| **Occupation** Not working Housewife Private employee Entrepreneur Trader Teacher/lecturer Others  | 12900300 | 387.9009.100 | 41834013 | 12.154.59.112.1039.1 |
| **Income** Do not have < Rp. 2.290.995,-\*Rp. 2,290,995, - \* |  |  | 27 4 2 81.8 12.1 6.1 24 6 |  |
| **Training Experience** Never Never  | 1815, | 54.545.5 | 285 | 84.815 2 |
| **Total**  | **33** | **100** | **33** | **100** |

Table 3 describes the average knowledge of health cadres about community-based early detection of stunting before the intervention of 73.33 with SD of 10,466 and after the intervention of 82.79 with SD of 6,556 in the intervention group. The average knowledge of health cadres about community-based early detection of stunting before intervention was 74.91 with SD 7,059 and after the intervention was 77.18 with SD 5,259 in the control group.

Table 4 states that there is a statistically significant difference in the knowledge of health cadres about community-based early detection of stunting before and after the intervention in both the intervention group with p = 0.000 (p <0.05). However, there was no statistically significant difference in the knowledge of health cadres about community-based early detection of stunting in the control group with p = 0.065 (p>0.05). Table 5 explains that there is a statistically significant effect of *upskilling* health cadres on knowledge about community-based early detection of stunting with p-value = 0.001 (p <0.05).

Table 3. Description of the knowledge of health cadres about early detection of community-based stunting in the intervention and control groups before and after the intervention (n=66)

|  |  |  |
| --- | --- | --- |
| **Variables**  | **Intervention** | **Control** |
| **Mean** | **SD** | **95% CI** | **Mean** | **SD** | **95% CI** |
| **Knowledge** Before  | 73.33 | 10.466 | 69.62-77.04 | 74.91 | 7.059 | 72.41 to 77.41 |
| After the  | 6.556 80,46-85,115.259 75,32-79,05 |  |  | 77.18 |  | 82.79 |

Table 4. Differences in knowledge about the health cadre of community-based early detection stunting in the intervention and control groups before and after intervention

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **variable**  | **Mean** | **SD** | **MD** | **p-value** |
| **Knowledge** **intervention** before after  | 73.3382.79 | 10.4666.556 | 9.46 | 0.000 |
| **control** before after  | 74.9177.18 | 7.0595.259 | 2.27 | 0.065 |

Table 5. Effect *upskilling* health workers to the knowledge of community-based early detection stunting

|  |  |  |  |
| --- | --- | --- | --- |
| **variable**  | **Mean** | **SD** | **p-value** |
| **knowledge** Intervention | 82.79 | 6.556 | 0.001 |
| Control | 77.18 | 5.259 |  |
| Difference  | 5,606 |  |  |

Around health workers, including in the older age groups. The results of this study are by (Adistie et al., 2017); (Handayani et al., 2019); (Martha et al., 2020); (Purnamasari et al., 2020); (Arsy, 2021) which states that all health cadres are included in the adult age group. Age affects the formation of the mindset of health cadres. As age increases, the knowledge of health cadres also develops. Health cadres who are more mature will find it easier to gain trust from the community because they have a longer life experience than the younger age groups.

Most of the health cadres have a high school education background. The results of this study are by (Adistie et al., 2018); (Handayani et al., 2019); (Martha et al., 2020); (Purnamasari et al., 2020); (Arsy, 2021), explained that the majority of health cadres have a high school education background. The educational background of health cadres affects their ability to receive and internalize all learning information provided by health workers. Health cadres who have a higher educational background are considered to be more capable of carrying out their roles and functions in the early detection of stunting in their respective regions. Health cadres with low educational backgrounds will find it more difficult to receive information and directions from health workers about community-based stunting early detection, so they do not believe in the importance of stunting early detection in the community.

The data shows that the majority of health cadres play or work as housewives. The results of this study are in accordance with research (Handayani et al., 2019); (Purnamasari et al., 2020); (Arsy, 2021). Health cadres are better able to manage their time between taking care of their family and society because the type of work they do is more flexible and dynamic. So that health cadres have more time to actively participate in solving health problems in the community. The average health cadre has more than five years of experience as a health cadre. This is following (Adistie et al., 2017); (Handayani et al., 2019); (Purnamasari et al., 2020); (Arsy, 2021), stated that health cadres have five to ten years of experience as health cadres. The desire to become a health cadre does not apply to all levels of society so that it affects the length of time being a health cadre. The regeneration process for health cadres is also a necessity so that the regeneration process for health cadres can run well. The longer a health cadre is, the better the understanding of the tasks that must be done and the better participation in activities.

Half of the health cadres have never received training on community-based stunting early detection. (Adistie et al., 2017) stated that health cadres who have never received training will tend to have less knowledge. The process of *upskilling* of health cadres is expected to increase the understanding of health cadres about early stunting detection, especially the active discovery of stunting cases in the community. Some of the characteristics of these health cadres directly affect their understanding of community-based stunting early detection.

The results of the intervention *upskilling* of health cadres in two sessions in two days statistically showed a significant difference in the knowledge of health cadres about community-based early detection of stunting before and after the intervention in the intervention group with p = 0.000 (p<0.05). This finding strengthens the results of research on Posyandi cadre training that can increase knowledge, self-efficacy, and skills in preventing stunting in toddlers (Purnamasari et al., 2020; Hariani et al., 2019). The intervention sessions given in this study were by conducting health education about stunting early detection, trigger case-based stunting assessment through demonstrations and *roleplay*, and community-based stunting early detection simulations at posyandu. So this answers the role of health education interventions, demonstrations, and *roleplays,* as well as simulations in increasing cadre knowledge. Similar research on assisting posyandu cadres in detecting child growth and development has proven to be able to increase knowledge about stunting among health cadres in Ringinpitu Village, Plemahan District, Kediri Regency (Azizah & Wardhani, 2020). Similar findings are also found in efforts to assist health cadres and their impact on increasing knowledge in Betteng Village, Pamboang District, Majene Regency (Masyita Haerianti, 2018).

This study also found that there was no significant difference in knowledge of health cadres about community-based early detection of stunting before and after intervention in the control group with p = 0.063 (p>0.05). This can be answered by the difference in the provision of interventions *upskilling* between the control and intervention groups. The control group only received information about stunting management in the form of modules and educational videos. Thus, this study further strengthens the role of intervention types and media in health education in the community. Research conducted in Shiraz, Iran showed the effectiveness of *role-playing* compared to lecture sessions in increasing the knowledge of health cadres regarding the Breastfeeding Promotion Program (Vizeshfar et al., 2019). The results of a similar study on the importance of educational methods were explained in the revitalization program for the role of cadres in stunting detection in the Bogor Regency. The study showed that the intervention group that received a series of training through group discussions, games, *role-plays,* and seminars had a better level of knowledge than the control group who only received observation activities (Rahmawati et al., 2020).

Table 5 explains that there is a statistically significant effect of *upskilling* health cadres on knowledge of health cadres about community-based early detection of stunting with p = 0.000 (p <0.05). These results strengthen research on cadre empowerment through a series of stunting detection and prevention training in the Bogor Regency area (Martha et al., 2020). The potential for increasing cadre knowledge through this knowledge is also similar to the training carried out in Luwigoong Village, Luwigoong District, Garut Regency through the use of the Stunting-Based Child (ABS) application (Handayani et al., 2019). Other studies have also shown an increase in knowledge of health cadres related to stunting prevention and management after training and empowerment of health cadres (Wijayanti & Sariani, 2020; Tampake et al., 2021). Thus, training and *knowledge-sharing* through a variety of learning/training methods obtained by health cadres during training are important to maintain the role of health cadres in the community. This is in line with research that shows the importance of the role *of knowledge-sharing* in shaping the motivation of health cadres (Singh et al., 2016).

**CONCLUSION**

The results of this study can be concluded that there is a statistically significant difference in knowledge about community-based early detection of stunting before and after the intervention in the intervention group. However, it did not show a statistically significant difference in knowledge about community-based early detection of stunting before and after intervention in the control group. *Upskilling* of health cadres increases knowledge about community-based early detection of stunting.

interventions for *Upskilling* health cadres can be integrated with the implementation of programs or activities for maternal and child health services at posyandu. Health cadres as part of the community and extension of health workers participate actively in handling stunting problems in their respective regions. Knowledge of health cadres about early detection of stunting is the basis or capital in increasing the number of new cases of stunting in the community. Early detection of stunting in toddlers can improve the management or good handling of stunting to prevent unexpected complications.

Further research can identify the effect of *upskilling* health cadres on other variables such as perceptions, readiness, attitudes, skills, self-efficacy, or community-based stunting early detection behavior. Further research can also identify other innovative community-based interventions that can increase knowledge of stunting early detection in health cadres according to the needs of the community. The development of health education media is a necessity as a supporter in the community-based intervention process.

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