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EMPOWERMENT OF ADOLESCENT CADRES THROUGH HEALTH TRAINING AND HEMOGLOBIN TESTING FOR STUNTING PREVENTION

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Abstrak

Kegiatan ini bertujuan untuk mencegah stunting sejak dini melalui pemberdayaan remaja sebagai kader kesehatan serta deteksi dini status hemoglobin (Hb) pada wanita usia subur. Metode yang digunakan adalah pendekatan Pengembangan Kapasitas (Capacity Development) yang dilaksanakan dalam bentuk penyuluhan, pelatihan keterampilan pemeriksaan tanda-tanda vital, serta pemeriksaan kadar Hb. Kegiatan dilaksanakan di Dusun Srunggo, Kalurahan Selopamioro, Kecamatan Imogiri, Kabupaten Bantul, selama Juli–Agustus 2024. Hasil menunjukkan bahwa pelatihan diikuti oleh 17 remaja yang berasal dari perwakilan tiap RT di dusun tersebut. Sementara pemeriksaan Hb dilakukan terhadap 72 wanita usia subur, dengan hasil menunjukkan bahwa 63% responden memiliki kadar Hb normal. Program ini berdampak positif dalam meningkatkan kesadaran dan pengetahuan remaja terkait kesehatan dasar serta kesiapsiagaan wanita usia subur dalam menghadapi kehamilan. Manfaat utama yang dirasakan subjek dampingan yaitu peningkatan kapasitas individu sebagai agen perubahan di masyarakat dalam upaya pencegahan stunting secara berkelanjutan.

***Kata kunci**: Stunting, Remaja, Kader Kesehatan, Hemoglobin, Pemberdayaan Masyarakat.*

Abstract

This activity aims to prevent stunting from an early age through the empowerment of adolescents as health cadres and early detection of hemoglobin (Hb) status in women of childbearing age. The method used is the Capacity Development approach which is carried out in the form of counseling, training in vital signs examination skills, and Hb level checks. The results showed that the training was attended by 17 teenagers from representatives of each Region in the hamlet. Meanwhile, Hb examination was carried out on 72 women of childbearing age, with results showing that 63% of respondents had normal Hb levels. This program has a positive impact on increasing adolescents' awareness and knowledge related to basic health and preparedness of women of childbearing age in dealing with pregnancy. The main benefit felt by the assisted subjects is the increase in the capacity of individuals as agents of change in society in an effort to prevent stunting sustainably.

Keywords: Stunting, Adolescents, Health Cadres, Hemoglobin, Community Empowerment.

INTRODUCTION

Stunting remains a critical issue in Indonesia. The government's efforts in dealing with stunting have not been resolved. Through the SDG's program, stunting has not been handled optimally (Erika, 2023). The government's efforts to deal with stunting consist of providing blood-boosting tablets for adolescents,

pregnancy checks, and additional feeding (Hapsari, 2024). The results of the latest survey of stunting cases in 2023 amounted to 21.5% (Benny, 2024). Of course, this has not reached the specified target. The government is very concerned about dealing with stunting because of the long-term effects that will be caused in the future (Martony, 2023). Stunting can cause vulnerability from various aspects in children. Physically, stunting causes growth disorders (Anggraini, 2024). Cognitively stunting can influence intelligence. In addition, there are those with stunting, who will be susceptible to disease (Rahmayanty, 2024). These problems will certainly become new problems if not handled properly.

Indonesia is the second-highest country with stunting cases in Southeast Asia (Ministry of Health, 2025). The number of stunting cases in Indonesia is 19.8 percent or equivalent to 4,482,340 children under five. This number is lower than the previous year, but each of the high stunting categories in Yogyakarta is in Gunung Kidul Regency, with a total of 22.2% (BPS-DIY, 2024). In the same year, namely 2023, stunting cases in Bantul Regency experienced a significant increase, 2022 from 14.9 percent to 20.05 percent in 2023 (Istanti, 2024). This increase in stunting cases is quite a heavy burden for Bantul Regency (Dwihestie, 2021).

Interviews conducted with local cadres found that the number of five-year-old babies (toddlers) with stunting in Srunggo Hamlet and Kalidadap Hamlet was 20 children. As an innovative solution, this program combines the training of adolescent health cadres with mass hemoglobin (Hb) screenings for women of childbearing age, an integrated approach that has never been implemented before in Srunggo Hamlet. The training is designed to equip local adolescents with practical skills in vital sign checking, peer health communication, and nutrition risk mapping, so that they transform into agents of sustainable change in their environment (Hilda, 2025). Meanwhile, Hb screening functions to detect anemia early as a stunting risk factor, as well as provide direct feedback for cadres to follow up on field findings (Siahaya, 2024).

This combination of adolescent empowerment and biomarker detection is believed to be effective because it utilizes adolescents' proximity to the community that facilitates routine counseling and family mentoring, provides immediate clinical evidence that increases health awareness and triggers behavior change, builds a simple referral system between cadres, health centers, and village governments, so that interventions can take place continuously and measurably (Triani, 202). Thus, the program not only tackles stunting preventively but also creates an empowerment model that can be replicated in similar regions.

This service program has a novelty that distinguishes it from similar community service activities, especially in terms of approaches, objectives, and sustainability of interventions (Trustisari, 2024). Most previous service programs focused on one-way education for pregnant women or toddlers without involving adolescent groups as the main actors in stunting prevention (Ayuningrum, 2024),

(Sari, 2023). Adolescents, especially young women, are a strategic group that plays a role in the life cycle towards a healthy pregnancy in the future. This service specifically fills the gap by involving adolescents as health cadres, equipped with basic health examination skills and nutritional knowledge. In addition, the combination of cadre training with direct examination of hemoglobin (Hb) levels for women of childbearing age has not been widely carried out in other service models, so this approach is more comprehensive and based on objective data. Thus, this service offers a new contribution to community empowerment, both in terms of prevention and promotive, which can be used as a model for early intervention in reducing the community-based stunting rate.

The purpose of this community service program is to prevent stunting from an early age through the empowerment of adolescents as health cadres in Srunggo Hamlet, Selopamioro Village, Imogiri District, Bantul Regency. In particular, this program aims to: improve adolescents' knowledge and skills in checking vital signs and understanding of basic nutrition through training activities, as well as conducting early detection of anemia in women of childbearing age through hemoglobin (Hb) level checks to support healthy pregnancy readiness.

MATERIALS AND METHODS

Community Service is carried out with a capacity-building approach (Jusriadi, 2019). The activity was carried out in Srunggo Hamlet, Selopamioro Village, Imogiri District, Bantul Regency, Yogyakarta, in July-August 2024. The activities carried out include counseling, training and health checks. Health checks are carried out to determine HB levels in Adolescents and Women of Childbearing Age. The target is divided into two groups, namely the Adolescent group and the Women's Group of childbearing age.

Health cadre training with 17 participants. The training carried out includes checking Vital Signs (TTV). The main target of the training was that 17 young women could understand the theory and be able to re-practice the procedures of the TTV examination. The TTV examination itself consists of checking Blood Pressure, Pulse Frequency, Breath Frequency, and Body Temperature. The tools used in the training are a sphygmomanometer and a stethoscope for blood pressure checks, stopwatches for pulse and breath rate checks. A thermometer for body temperature checking. Good hemoglobin levels in mothers will reduce stunting cases in their children (American Pregnancy Association, 2016). Normal Hb values in women are 12-14 g/dl, and in men are 14-16 g/dl (Basniati, 2023).

Community service began with a preliminary study to Srunggo Hamlet, identifying existing problems. The cases that have been found are sought to be resolved by the community service team. If the problem and handling have been found, the next step is coordination with the village government, Hamlet Heads, and Cadres. The licensing was carried out after an agreement between the community service team and

the Village Government. Technical discussion of activities with the village government is related to the core activities that will be carried out after taking care of licensing. The first community service is health cadre training for adolescents and hemoglobin examination. The data on the results of community service are tabulated to see the average, normal and abnormal values. After all the data is processed and the results are obtained, the next activity is discussion and concluding. The flow of this service activity is explained in Figure 1.

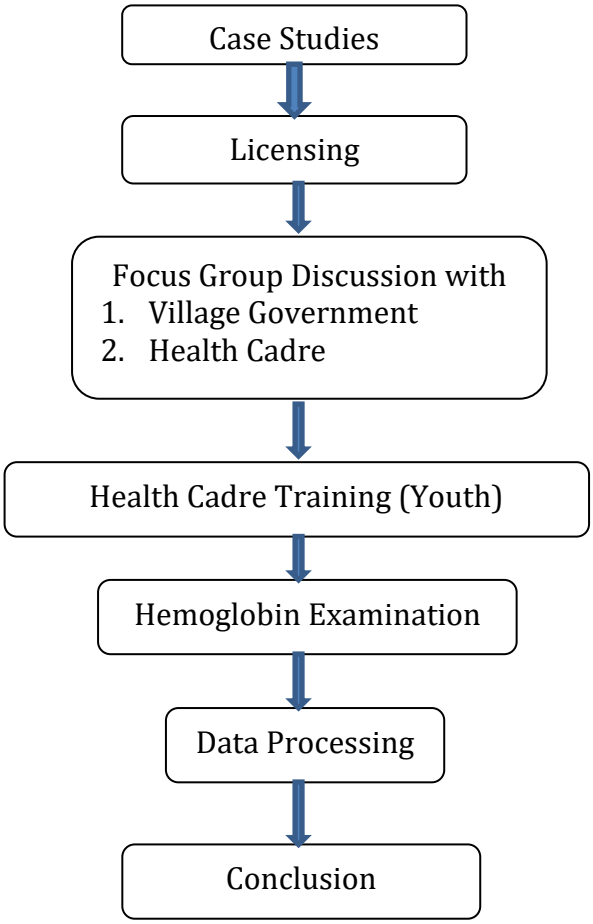

Figure 1. Community Service Flow

RESULTS AND DISCUSSION

Youth Cadre Training

The youth cadre training held in Srunggo Hamlet successfully involved as many as 17 participants who were representatives of each Neighborhood Pillar (RT). Participants consisted of 12 young women and 5 young men, who were selected based on active participation in the community and readiness to be involved as health cadres. This activity is a form of community-based empowerment that prioritizes a participatory and educational approach.

A total of 17 teenagers participated in health cadre training in Srunggo Hamlet, consisting of 12 young women (70.6%) and 5 young men (29.4%), so that

this activity was dominated by female participants, a group that is indeed strategic for stunting prevention education in the future. Judging from age, the majority are in the range of 18–20 years (12 people or 70.6%), followed by the age of 21–25 years (3 people or 17.6%) and 16–17 years (2 people or 11.8%). This composition suggests that the intervention is directed mainly to the end of adolescence, when they begin to prepare themselves for the adult and reproductive phases. In terms of education, most of the participants had a high school education (14 people or 70.6%), while the other three had taken a bachelor's degree (17.6%), and none had a diploma. This demographic picture confirms that the training has reached the target of high school teenagers who have the potential to be agents of change, while also including several college graduates who can strengthen the capacity of cadres through their academic experience. Distribution of adolescent health cadre training participants in Srunggo Hamlet. Includes Gender, age, and education described in Table 1.

Table 1. Data Characteristics of Cadre Training Participants

Characteristics		**Total**	**%**
Gender	Man	5	29,4
	Woman	12	70,6
Age	16 -17 Years	2	11,8
	18-20 Years	12	70,6
	20- 25 Years	3	17,6
Education	High School	14	70,6
	Diploma	0	0
	Bachelor	3	17,6

The training material is focused on two main aspects, namely the examination of vital signs and a basic understanding of nutrition for stunting prevention. Vital signs taught include blood pressure measurements, pulse rate, breathing rate, and body temperature. In addition, participants were also equipped with an understanding of the relationship between nutritional intake, anemia, and stunting risk during growth and pregnancy. The delivery of material is carried out in an interactive and applicable manner, so that it is easy to understand by the participants, most of whom are still in high school. The training activities are described in Figure 2.

Figure 2. Youth Cadre Training Activities

To support practical skills, participants were trained using simple tools such as sphygmomanometers, stethoscopes, digital thermometers, and stopwatches. The simulation is carried out in pairs, so that participants can directly practice the examination techniques and receive feedback from the instructor. The results showed that all participants were able to perform the basic examination independently and correctly, with an increased level of confidence from the beginning of the training. In addition to improving technical skills, this training also fosters participants' awareness of the importance of the role of adolescents in stunting prevention through peer education pathways as explained in Figure 3. Participants showed high enthusiasm and expressed their readiness to share the information they had obtained with friends, family, and the surrounding environment. This is an indicator that training not only increases individual capacity, but also creates a multiplier effect that is expected to have a broad positive impact in the long run.

Figure 3. Peer Education Training for Youth Cadres

The training activity for adolescent health cadres in Srunggo Hamlet received a very positive response from the participants. They felt happy and enthusiastic because they gained new knowledge that they had never learned before, especially regarding the examination of vital signs and the importance of the role of adolescents in stunting prevention. One of the participants conveyed his impression,

> "I just learned how to measure blood pressure and pulse, it turned out that it was not as difficult as imagined. This training is very useful and makes me more aware of the importance of maintaining my health, especially for the future when I become a mother."

Meanwhile, other participants also stated that this training gave her the confidence to be part of the change in her environment.

> "In the past, I only participated in village activities, but now I feel that I have a role as a health cadre. I want to help my friends to understand the importance of nutrition and health," he said.

The participants' impressions showed that the training not only succeeded in transferring knowledge, but also fostered adolescents' motivation and concern for health issues in the community

Overall, this training activity has achieved its goal of forming a cadre of teenagers who are knowledgeable, skilled, and ready to become agents of change in society. Their active involvement in training became a strong initial foundation for the development of sustainable adolescent health programs in the Srunggo Hamlet area and its surroundings. The training activity for adolescent health cadres in Srunggo Hamlet was closed with a photo with all participants. The family atmosphere and enthusiasm of the participants were evident in the cheerful expressions shown, reflecting their active involvement and positive response during the activity described in Figure 4. This activity is not only a learning event, but also strengthens social relationships between teenagers, health cadres, and service teams. The presence of participants from various age and educational backgrounds is a collective strength in building youth cadres who are ready to become the driving force of sustainable public health.

Figure 4. Closing of Youth Cadre Training Activities

Hemoglobin Examination

As part of the early detection of stunting risk, the service team also checked hemoglobin (Hb) levels on 72 women of childbearing age in Srunggo Hamlet with an age range of 18 to 35 years as described in Table 2. This examination aims to determine the status of anemia in women of reproductive age as a preventive measure before pregnancy occurs. This activity received full support from the community, with the active participation of women who were willing to undergo examinations as a form of awareness of the importance of personal health.

Table 2. Respondent Characteristics

Characteristics		Total	%
Gender	Man	0	0
	Woman	72	100
Age	18-25 Years	30	41,7
	26-30 Years	11	15,3
	31-35 Years	31	43
Education	Primary school	19	26,5
	Junior High School	30	41,7
	High School	20	27,8
	Bachelor	3	4,2

The atmosphere during the counseling and hemoglobin (Hb) examination activities attended by women of childbearing age in Srunggo Hamlet was seen sitting orderly in the room, listening to explanations from the service team or health workers. Their participation showed enthusiasm and high awareness of the importance of early detection of anemia as the first step in stunting prevention. There was also a strong family atmosphere, with the presence of children accompanying their mothers during the activity. The active participation of the community and the success of the community-based approach in reaching priority target groups directly and meaningfully are illustrated in Figure 5.

Figure 5. Atmosphere of Hemoglobin (Hb) Examination Participants

The results of the examination showed that the majority of respondents, namely 45 people (63%), had Hb levels in the normal category. Meanwhile, 24 people (33%) were identified as having mild to moderate anemia, and 3 people (4%) had higher than normal Hb levels. These findings suggest that although most of the participants were healthy, there is still a significant proportion of women who need special attention in terms of nutritional intake, particularly iron, to prevent anemia that can impact pregnancy and fetal growth. The results of the classification of hemoglobin levels based on the test results are described in Table 3.

Table 3. Hb Rate Classification

Category	Total	%
Low	24	33%
Normal	45	63%
High	3	4%
	72	**100%**

Based on this classification, it can be seen that the majority of participants are in the normal category. This test activity is carried out as an effort to detect the risk of anemia which can have an impact on pregnancy and fetal growth. The service team took capillary blood samples using the finger prick method, using a practical and fast digital measuring tool. Each participant was examined in turn and the results were immediately recorded on the monitoring sheet by the other service team described in figure 6. The enthusiasm of the participants was very high, characterized by their active involvement during the examination. This activity not only provides direct health services, but also becomes a means of practical education to increase awareness about the importance of normal Hb levels as part of stunting prevention since before pregnancy.

Figure 6. Hemoglobin Test Activities

All examination results data have been documented and submitted to the Imogiri II Health Center for follow-up in the advanced health service program. In addition, this data is also used as further educational material by adolescent cadres who have been trained beforehand. That way, the cadres not only understand health theory, but also have a basis of real data from the community that they can use to educate and mentor more effectively and contextually. This activity is a strategic first step in building synergy between the community, cadres, and health facilities in an effort to prevent data-based stunting.

The results of the training showed that all 17 adolescent participants were able to check vital signs independently after one intensive practice session. This achievement is in line with the findings (Septiyono, 2024), which affirm that improving technical skills in community health cadres can be achieved through practice-oriented training, not just lectures. This success also confirms the principle of capacity development that the transfer of practical skills will be more sustainable if it is given to local actors who have a close relationship with the target, in this case adolescents of the same age (Porzecanski, 2022). Thus, the training in Srunggo Hamlet has the potential to replicate the success pattern of similar programs in various other regions that place peer cadres as the spearhead of health promotion.

In the aspect of early detection of anemia, the proportion of women of childbearing age with normal Hb (63%) is slightly above the national average (Panggayuh, 2017). Even so, the rate of mild-moderate anemia remains high (33%), reinforcing the results of Rishel's (2023) research that anemia is still the dominant nutritional problem in young women in Indonesia. Theoretically, Hb levels <12 g/dL increase the risk of fetal growth and development disorders due to

suboptimal oxygen supply during pregnancy. In other words, Hb screening carried out at this service is scientifically relevant as a preventive measure for stunting through the pre-pregnancy route (Nurhidayah, 2023).

The integration of adolescent cadre training and Hb examination has been proven to strengthen a double effect: adolescents acquire practical skills as well as real data to be used as peer education materials (Syarif, 2024). This approach is in line with the community-based participatory research (CBPR) model which emphasizes horizontal collaboration between researchers and the community (Hacker, 2013). They are not just objects, but active partners involved in data collection and utilization. As a result, cadres not only know how to check vital signs, but also why to encourage women of childbearing age to increase iron intake; a blend of knowledge, attitudes, and skills that are recognized to be most effective in changing health behaviors according to the Health Belief Model framework (Glanz, 2015).

The findings of this activity have similarities with previous studies and service programs that emphasize the importance of interventions from adolescence to prevent nutritional problems and stunting. For example, the service carried out by (Patimah, 2024) shows that the active involvement of health cadres can increase public visits to health services and strengthen collective awareness of public health issues. In addition, the study (Syamsir, 2024) also emphasized that community cadres who are equipped with continuous training and support are able to contribute significantly to reducing anemia rates and improving women's quality of life. This similarity shows that the service model applied is not only contextual and on target, but also aligned with approaches that have been tested in various other areas.

CONCLUSIONS AND SUGGESTIONS

The community service program carried out in Srunggo Hamlet has succeeded in achieving its main goal, which is to prevent stunting from an early age through the empowerment of adolescents as health cadres and early detection of anemia in women of childbearing age. The training successfully equipped 17 adolescents with vital signs screening skills and a basic understanding of nutrition, while haemoglobin examinations of 72 women of childbearing age showed that most of the respondents had normal Hb levels, although mild to moderate anaemia cases were still found. This activity not only increases individual capacity, but also strengthens the role of the community in sustainable health promotion and preventive efforts.

In order for the impact of the program to continue, it is recommended that there be further assistance for adolescent health cadres, including routine monitoring and active involvement in posyandu or counseling activities in the village. In addition, the results of the Hb examination can be used as a basis for

planning nutrition interventions by the village government and health centers, such as the distribution of iron tablets or training in the processing of nutritious local food. This activity model is also worthy of replication in other regions that have similar characteristics, while still paying attention to the synergy between the community, health institutions, and educational institutions.

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