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Nutrition education and anemia prevention in efforts to prevent stunting from upstream at SMP Taruna Mandiri

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ABSTRACT

Stunting and anemia are health problems that need to be considered during adolescence. Anemia is a condition of blood deficiency caused by a lack of iron nutrition which can cause various problems such as weakness, fatigue, and so on. This can certainly affect adolescents who are of productive age, such as school students. On the other hand, students do not understand the dangers of anemia and stunting themselves. This community service aims to provide understanding or education to students of SMP Taruna Mandiri regarding the dangers of stunting, prevention of anemia, and emphasis on the consumption of Iron Supplement Tablets (IST). Community service is carried out by designing a concept for socialization, observation, and surveys to 102 students. The survey showed that the majority of students of SMP Taruna Mandiri do not routinely consume Iron Supplement Tablets (IST) even though the school has routinely provided IST every month. So it is known that student awareness regarding the importance of consuming IST and maintaining health to avoid anemia is still lacking. Therefore, socialization of IST consumption and prevention of anemia is needed and carried out routinely.

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ABSTRAK

Stunting dan anemia menjadi masalah kesehatan yang perlu diperhatikan pada masa remaja. Anemia merupakan kondisi kekurangan darah yang diakibatkan kurangnya nutrisi zat besi yang dapat mengakibatkan berbagai masalah seperti lemah, cepat lelah, dan lain sebagainya. Hal ini tentunya dapat memengaruhi remaja yang ada pada umur produktif, seperti peserta didik sekolah. Di sisi lain, peserta didik kurang memahami bahaya dari anemia dan stunting itu sendiri. Pengabdian ini bertujuan untuk memberikan pemahaman atau edukasi kepada peserta didik SMP Taruna Mandiri terkait bahaya stunting, pencegahan anemia, dan penekanan konsumsi Tablet Tambah Darah (TTD). Pengabdian dilakukan dengan perancangan konsep sosialisasi, observasi, dan survei kepada 102 peserta didik. Survei menunjukkan bahwa mayoritas peserta didik SMP Taruna Mandiri tidak rutin mengonsumsi TTD meskipun sekolah telah secara rutin memberikan TTD setiap bulannya. Sehingga diketahui bahwa kesadaran peserta didik terkait pentingnya konsumsi TTD dan menjaga kesehatan agar terhindar dari anemia masih kurang. Maka dari itu, sosialisasi konsumsi TTD dan pencegahan anemia dibutuhkan dan dilaksanakan secara rutin.

Kata Kunci: anemia; sosialisasi; stunting

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INTRODUCTION

Nutrition is a fundamental need for every human being. Essentially, humans require adequate nutrition from the time they are in the womb through old age (Uce, 2018). Failure to meet nutritional needs can lead to stunting, a chronic malnutrition problem characterized by several signs, including being underweight, short stature, and other indicators (Laili & Andriani, 2019; Rahmadhita, 2020). Stunting remains an issue that still needs to be addressed in Cimahi City. In the Dissemination of Stunting Case Audit activity organized by the Cimahi City Office for the Empowerment of Women and Child Protection, Population Control and Family Planning (DP3AP2KB), the Acting Mayor of Cimahi, Dikdik S. Nugrahawan, stated that the prevalence of stunting in Cimahi City remains around 16.4%, which is still above the national stunting prevalence target set by the central government. According to the audit results, the high stunting rate in Cimahi City is primarily attributed to factors such as families with active smokers, inadequate water sanitation, houses with poor ventilation and lighting, and unbalanced nutritional intake. In response to these issues, the Mayor of Cimahi has implemented several priority programs based on the recommendations of the Cimahi City Stunting Case Audit Expert Team, including health check-ups, nutrition education, and support for pregnant women; fulfilling nutritional needs and monitoring growth and development in toddlers and infants under two years old; and providing support to families at risk of stunting. Additionally, the Cimahi City Government will ensure that families at risk of stunting are registered for the National Health Insurance (BPJS Kesehatan). (<https://cimahikota.go.id/index.php/artikel/detail/1339-diseminasi-audit-kasus-stunting-untuk-percepatan-penurunan-stunting-kota-cimahi>).

The issue of stunting in Cimahi City has also attracted the attention of the West Java Provincial Government and as part of efforts to address stunting in Cimahi City, the West Java Provincial Government, through the West Java BKKBN (*National Population and Family Planning Board*), organized a Reconciliation and Strengthening Program for Accelerating Stunting Reduction in Cimahi City. In this activity, the Head of the West Java BKKBN Representative Office, Drs. Wahidin encouraged all stakeholders to begin stunting prevention interventions upstream. He also stated that downstream stunting management has been carried out effectively through coordination in the health sector; therefore, greater focus is needed upstream as well (<https://jabar.bkkbn.go.id/?p=5063>) Efforts to prevent stunting upstream can begin with adolescents, who serve as the frontline in preventing the birth of babies affected by stunting (Zakiyah et al., 2024). Adolescents play a vital role in stunting prevention because adolescence is a unique period in the human life cycle (Dong et al., 2020; Volkow & Blanco, 2023). Biologically, adolescence is a period of rapid growth that requires adequate nutrition for optimal growth and development (Setyawati & Setyawati, 2015). Patimah, in “*Strategies for Preventing Stunted Children Starting from Adolescent Girls*,” explains that during adolescence, especially for girls, there is an increased need for energy, macronutrients, and micronutrients compared to childhood. Therefore, the role of adolescents is crucial in efforts to tackle stunting from an upstream perspective.

Adolescents are at high risk of developing anemia, particularly iron-deficiency anemia. Therefore, one upstream effort to prevent stunting is to raise awareness about the importance of preventing anemia (Meilani et al., 2024). Previous studies have emphasized that childhood stunting may be linked to maternal anemia, especially in developing countries (Ali, 2021). This implies that it is crucial to prevent anemia in adolescent girls and women before and during pregnancy as part of a comprehensive program to eliminate stunting in children. Other research indicates that pregnant women with a history of anemia are more likely to give birth to stunted babies, highlighting the importance of adopting a healthy lifestyle as early as possible to avoid anemia (Salma & Alifariki, 2021). Anemia is a condition characterized by a lower than usual number of red blood cells or a lower than usual concentration of hemoglobin in the blood, resulting

in symptoms commonly referred to as the 5Ls (weakness, fatigue, exhaustion, lassitude, and weariness) (Aulya et al., 2022; Roosley, 2016). In general, anemia is caused by deficiencies in iron, folate, vitamin B12, and/or vitamin A.

Anemia prevention among adolescents can be carried out by regularly consuming iron supplementation tablets (*Tablet Tambah Darah*, TTD) (Fathony et al., 2022). Research and community service activities related to anemia prevention through TTD consumption are conducted daily. One example is the community service project conducted by Carolin and Novelia (2023), which provided counseling on the importance of consuming TTD and vitamin C for pregnant women to maintain their health and that of their unborn babies. This counseling was conducted to ensure that pregnant women understand the importance of taking TTD during pregnancy to support the baby's health and as an effort to prevent stunting in children. On the other hand, adolescents also need adequate nutrition to avoid anemia. Regular consumption of TTD can prevent anemia in adolescents, especially girls who menstruate regularly. Therefore, counseling on the consumption of TTD is also necessary for adolescents so that they can better understand the importance of maintaining their health to avoid various diseases. Based on this background, this community service aims to provide education on the importance of consuming iron supplementation tablets (TTD) to students, while also assessing their level of routine TTD consumption.

Literature Review

Stunting

As previously explained, stunting is a condition of chronic malnutrition that can cause various physical changes, such as shorter stature, underweight, and other health issues due to inadequate nutritional intake. More specifically, the definition of stunting is stated in Presidential Regulation Number 72 of 2021 on the Acceleration of Stunting Reduction, which describes stunting as a growth and development disorder in children characterized by insufficient body length or height caused by a lack of nutrition and recurrent infections in the child. According to the World Health Organization (WHO), stunting is defined as a child's height being below the expected standard for their age, measured by the Z-score for height-for-age. If the value is below minus two standard deviations, it indicates that the child has experienced growth failure. This condition arises from chronic malnutrition during the first 1,000 days of life, spanning from conception in the womb to the child's second birthday (See: <https://www.who.int/news-room/fact-sheets/detail/malnutrition>).

The leading cause of stunting is the insufficient fulfillment of an individual's nutritional needs. Several risk factors contribute to stunting, including inadequate breastfeeding and the child's living environment (Nasution & Susilawati, 2022). In addition, other factors that can increase the risk of stunting include poor nutritional status of the child, maternal height (genetic factors), the mother's eating habits — especially when consuming foods shared with the child — parenting practices, economic conditions, and an unhealthy environment or poor sanitation (Agustin & Rahmawati, 2021; Yuwanti et al., 2021). Stunting can lead to various health issues and significantly affect a child's growth. It can impact a child's physical development, including height and overall body structure (Akbar et al., 2023; Putra & Sadiyyah, 2023). Beyond physical growth, stunting also affects a child's cognitive abilities. The impact of stunting includes a decrease in IQ or intelligence levels and a decline in cognitive function, as inadequate nutritional intake affects the nervous system, resulting in suboptimal brain cell production and, consequently, reduced thinking abilities (Ridwan et al., 2024; Ziharani & Agustin, 2024). Based on this explanation, it can be concluded that stunting can increase the susceptibility of children to illness, reduce cognitive abilities, increase the risk of diseases later in life related to poor dietary patterns, cause imbalances in bodily functions, lead to economic losses, and result in suboptimal physical stature when they reach adulthood.

METHODS

This activity is part of the 2023 Thematic Community Service Program (*Kuliah Kerja Nyata* or *KKN*) at Universitas Pendidikan Indonesia (UPI) under the *Si Penting* program, which stands for *Students Concerned About Stunting*. Before conducting the outreach, the community service team conducted a simple survey. Sugiyono, in his book “*Educational Research Methods (Quantitative, Qualitative, and R&D Approaches)*,” explains that a survey is conducted to collect sample data from a population using questionnaires distributed to large or small populations in order to obtain information on relative occurrences, distribution, and the relationships between variables, whether sociological or psychological. In this context, the survey was conducted to determine the students’ level of routine consumption of iron supplementation tablets (*Tablet Tambah Darah*, TTD). The outreach and assistance program on stunting and anemia prevention was implemented at SMP Taruna Mandiri, located in North Cimahi District, Cimahi City. The implementation method used was offline outreach, involving in-person meetings and distributing questionnaires to students at SMP Taruna Mandiri.

Program Preparation Stage

At the preparation stage, the team conducted a planning process in which members were assigned to various roles, including facilitators, a documentation team, and a team responsible for coordination with the puskesmas (community health centers), among others. The outreach activity at SMP Taruna Mandiri was a collaborative program with Puskesmas Cipageran, aimed at educating students about stunting. Meanwhile, the Puskesmas staff collected data on students who smoke and those identified as showing signs of anemia. To support this activity, several materials were prepared, such as presentation slides and questionnaires containing questions to assess students’ knowledge related to stunting.

Program Implementation

The outreach and assistance activities focused on delivering material on stunting, anemia, and the consumption of iron supplementation tablets (*Tablet Tambah Darah*, TTD), including information on how to prevent stunting by maintaining a healthy environment and adopting a healthy lifestyle from an early age. The outreach was designed as a form of stunting prevention, providing the community with basic knowledge and preventive measures to address the issue. After the material was delivered, the session concluded with the completion of a questionnaire by the participants. The overall stages of this activity are illustrated in the flowchart shown in **Figure 1**.

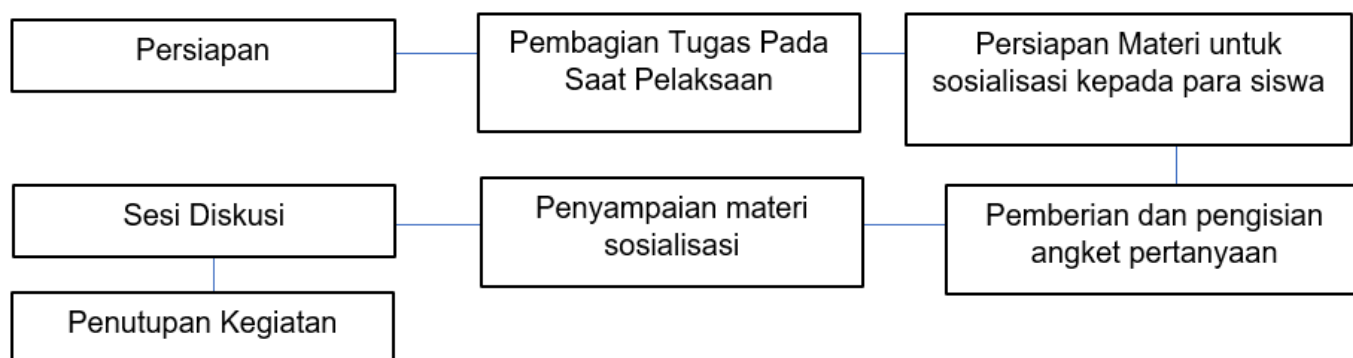


Figure 1. Flowchart of the Outreach Stages
Source: Author's Documentation, 2024

RESULTS AND DISCUSSION

Based on initial observations conducted through the 2023 Thematic Community Service Program (*Kuliah Kerja Nyata* or *KKN*) at Universitas Pendidikan Indonesia (UPI), it was found that many adolescents still have limited knowledge about stunting, including the urgency of eradicating stunting and efforts to prevent it. One of the factors contributing to stunting is the lack of knowledge among mothers, children, and the broader community regarding the dangers of stunting and the importance of proper nutrition. This highlights the need for early outreach to raise awareness about stunting as an essential step (Dewi et al., 2021). Consequently, stunting becomes a significant, long-term problem if education and outreach are not carried out continuously. Several factors can contribute to the occurrence of stunting, including anemia or iron deficiency. A preventive measure that can be taken to address anemia is to regularly consume iron supplementation tablets (*Tablet Tambah Darah*, TTD) and include vegetables rich in iron in your diet.

About anemia or iron deficiency, the 2023 UPI Thematic Community Service (*KKN Tematik*) Team in North Cimahi District, Cimahi City, surveyed students who participated in the outreach activity. The students were asked to complete a questionnaire to determine their level of regularity in consuming iron supplementation tablets (*Tablet Tambah Darah*, TTD). By assessing the students' level of regular TTD consumption, their awareness of anemia prevention could also be measured. The initial survey results showed that out of 102 students, only 19 reported consuming TTD regularly. The remaining 83 students did not take TTD for various reasons, including its unpleasant taste, side effects such as dizziness and nausea, and stomach discomfort. Because of these issues, students at SMP Taruna Mandiri often either store the tablets without consuming them or discard them immediately after receiving them. On the other hand, the school has consistently provided TTD once a week, hoping that students will consume it, thereby supporting the stunting prevention program. However, in reality, only a small number of students consume the tablets regularly. Additionally, blood pressure checks carried out by the Cipageran Health Center (*Puskesmas Cipageran*) revealed that many students suffer from anemia or iron deficiency. This indicates that these adolescents are still unable to manage proper eating, drinking, and rest habits, which leads to symptoms of anemia at an age when they are still in their teens. Moreover, the questionnaire also examined the students' living environment, showing that many of them tend to live near people who smoke or are passive smokers themselves. Continuous exposure to cigarette smoke can have adverse health effects.

The questionnaire results also showed that all 102 students who participated indicated that someone close to them is an active smoker, which means that these students are passive smokers. Passive smokers are at risk of experiencing the same health impacts as active smokers (Heriyansyah & Sariyanto, 2017; Mayaserli & Rahayu, 2018). The risks associated with exposure to cigarette smoke are particularly harmful to children's growth and development. Therefore, it is essential to build awareness among students about the importance of maintaining a healthy lifestyle and a healthy environment.

Based on the initial observations conducted through the questionnaire, it was found that students' level of awareness regarding anemia prevention tends to be low. Therefore, stunting and iron supplementation tablet (*Tablet Tambah Darah*, TTD) outreach activities are one way to provide students with a better understanding of the urgency of preventing stunting and anemia. In this outreach activity, the 2023 UPI Thematic Community Service (*KKN Tematik*) Team was accompanied by the Cipageran Health Center (*Puskesmas Cipageran*) to educate, hold discussions, and deliver awareness sessions to the students. The majority of the students who attended were unfamiliar with the concept of stunting. This suggests that many segments of society still lack adequate outreach or education regarding stunting, resulting in low awareness of its dangers. Moreover, the environment around SMP Taruna Mandiri tends to be less clean, with many street vendors selling food that is not very hygienic. On the other hand, one of the factors

contributing to stunting is poor sanitation and environmental cleanliness (Amalina et al., 2023; Maliga et al., 2022; Nisa, 2018). Given these hygiene factors, an environment and food that are consistently unhygienic can increase the risk of illness among the students.

After identifying the students' level of routine TTD consumption and their environmental conditions, an outreach session on iron supplementation (*Tablet Tambah Darah*, TTD) and stunting was conducted (**Figure 2**). Another finding revealed that most of the students did not yet know what stunting is, nor its definition. Therefore, it can be seen that several factors could potentially contribute to stunting in their future children due to the lack of a supportive environment and insufficient provision of education and outreach, resulting in low awareness of the dangers of stunting. The students' limited understanding of stunting is an issue that must be addressed, as many of them are unaware of the basic steps to maintain their health and prevent anemia and stunting, such as managing their diet, getting enough rest, consuming healthy drinks, and adopting other related habits. The students were given basic material about stunting and its prevention, including outreach on the importance of routinely consuming TTD.



Figure 2. Outreach Session at SMP Taruna Mandiri
Source: Author's Documentation, 2023

Junior high school students are adolescents aged between 13 and 15 years old, an age range in which productivity and activity levels tend to be high. Therefore, outreach sessions must be designed to be engaging and not boring. The outreach should focus on adolescent health, such as ways to prevent anemia, conducting health checks independently, and other relevant topics. The session began with an introduction to stunting, including its definition and associated risks. Stunting, as mentioned earlier, is a condition of undernutrition or malnutrition that often occurs in infants and young children (Scheffler et al., 2020; Shofifah et al., 2022; Sutarto et al., 2018). When the body does not receive sufficient nutrients, it becomes unhealthy and is at a greater risk of developing other conditions, such as anemia.

Insufficient intake of both macro and micronutrients can lead to anemia among adolescents, as inadequate nutritional intake, particularly iron, is a significant cause of anemia in this age group. One way to prevent this is by increasing iron (Fe) intake through the regular consumption of iron supplementation tablets (*Tablet Tambah Darah*, TTD) (Salam et al., 2024). Due to the lack of awareness among students about the importance of consuming TTD, outreach efforts are needed to emphasize its significance. A limited

understanding of anemia results in insufficient iron intake among students, which in turn increases their risk of developing anemia; this highlights the importance of outreach on TTD consumption, especially for adolescent girls (Julaecha, 2020). Following the outreach session on stunting, anemia, and TTD consumption, a quiz session was conducted with the students to assess their understanding of the topics discussed. Additionally, a discussion session was conducted by posing questions for the students to respond to and discuss together, allowing them to comprehend better and review the provided material. Based on the quiz and discussion sessions, the students at SMP Taruna Mandiri were able to answer correctly and in line with the information previously presented (**Figure 3**).



Figure 3. Outreach Session at SMP Taruna Mandiri
Source: Author's Documentation, 2023

Stunting remains one of the major nutritional problems faced by Indonesia, and it is even recognized as a global issue (Nirmalasari, 2020). Moreover, Indonesia is expected to experience a demographic bonus in 2045. Therefore, it is crucial to pay close attention to the health and nutritional adequacy of adolescents, who are the future generation that will lead the nation forward (Fatmawaty, 2017). The first step in preventing stunting and maintaining good health can be taken by instilling a basic understanding of nutrition and health, so that students can avoid the risk of stunting and other related health issues.

CONCLUSION

The conclusions drawn from this study suggest that many adolescents are still unaware of what stunting is. In addition, many adolescents often skip breakfast, which is one of the essential supports for their daily activities. Furthermore, we conclude that distributing iron supplementation tablets (*Tablet Tambah Darah*, TTD) at school for later use at home is less effective. It would be better if the method were changed to a weekly demonstration, where the tablets are consumed on-site. Another finding is that many adolescents are passive smokers, meaning they are frequently exposed to cigarette smoke, which can disrupt their respiratory system.

AUTHOR'S NOTE

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