



Education on Balanced Nutrition and Healthy Snacks in the School Environment to Prevent Nutritional Problems among Adolescents

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ABSTRACT

Around 12% of male and 23% of female adolescents experience anemia due to iron deficiency. Several habits cause nutritional problems in adolescents are not always having breakfast, most adolescents do not consume enough fibre, fruit vegetables, and consuming flavorful foods. In addition, adolescents also tend to adopt a sedentary lifestyle, resulting in less physical activity. This community service activity aimed to increase adolescents' knowledge about balanced nutrition and healthy snacks at school. The methods used in this activity were FGD, counseling, and simulation. The targets were students, teachers, and canteen managers, totaling 30 people. The training was carried out in April-May 2023 at SMAN 2 Mamuju. The evaluation was conducted through questions and answers and a simulation of reading nutritional information on food packaging. Results: Participants can determine healthy and safe foods to be consumed and read the nutritional information on food packaging. The canteen manager can sort out nutritious food for the school canteen. Counseling on balanced nutrition and healthy snacks can increase adolescents' knowledge about nutrition and healthy snacks in the school environment. The school and related stakeholders must provide balanced nutrition messages in the schools' teaching and learning process.



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INTRODUCTION

Adolescents are a vulnerable group experiencing increased nutritional problems during the Covid-19 pandemic. Food insecurity in adolescents that occurs due to the pandemic also impacts mental disorders and eating disorders (eating disorders) in adolescents (Paslakis, Dimitropoulos, & Katzman, 2021). Based on our research pre-survey in 2022 shows that adolescents experience food insecurity during the pandemic.

Before the pandemic, it was recorded that 14.5% of women of childbearing age (WUS), including adolescents, experienced chronic energy deficiency (KEK). The central obesity rate in 2018 reached 31% and continues to increase yearly (Kemenkes RI, 2019). This figure has the potential to increase during a pandemic due to economic changes and changes in shopping behavior and knowledge of food safety (Headey et al., 2020; Marques de Miranda, da Silva Athanasio, Sena Oliveira, & Simoes-e-Silva, 2020; Olaimat, Shahbaz, Fatima, Munir, & Holley, 2020). Another impact is decreased learning ability and low academic achievement (Olaimat et al., 2020). However, on the other hand, based on reports from the Central Statistics Agency, adolescents have a minor implementation of health protocols, such as rarely washing their hands, keeping their distance, and avoiding crowds (Badan Pusat Statistik, 2020).

Another impact of Covid-19 is the education, teaching, and learning process, most of which are carried out online in various regions. It causes most of his time spent at home (Nurbaya, Chandra, & Ansar, 2020). Research shows changes in the community's hygiene and sanitation behavior, eating patterns, and shopping behavior (Headey et al., 2020; Nurbaya & Najdah, 2023; Ruiz-Roso et al., 2020). Most adolescents experienced food insecurity during the Covid-19 pandemic, ranging from mild (30.6%), moderate (58.6%) to severe food insecurity (1.8%). Only 9% of youth experience good food security (Nurbaya & Najdah, 2023).

The pandemic also may change couples' sexual relationships: confinement, sexual activity difficulties, loss of work, economic problems, and future uncertainty can trigger the break of many couples (Sufyan, Syah, & Nurbaya, 2022). In addition, the necessity of staying at home causes many people to cook for themselves (Yilmaz, Aslan, & Unal, 2020). These are positive changes, but they do not necessarily improve the quality of individual and family diets. It is because even though people cook themselves, consuming sweet-packaged drinks also increases. This phenomenon is called the food syndemic, namely the nutritional impact caused by the pandemic, including food insecurity, malnutrition, and obesity (Huizar, Arena, & Laddu, 2021).

Given that adolescents are one of the vulnerable groups who experienced problems with good nutrition before the pandemic, especially during the increasing Covid-19 pandemic (Rachmi et al., 2019). Therefore, this community service activity is essential to increase the knowledge of teenagers, teachers, canteen managers, and food vendors about balanced nutrition and healthy snacks for teenagers in the school environment. It is crucial to do this as an effort to prevent nutritional problems in adolescents, such as anemia and obesity. The long-term impact of this community service activity is an effort to prevent stunting by creating healthy, nutritious youth.

METHODS

This community service activity was carried out in one of the high school schools in Mamuju Regency, which will be held from April to May 2023. The methods used in this activity were lectures, discussions, and demonstrations. The targets were students, teachers, and canteen managers, totaling 30 people. The flow of community service activities can be seen in Figure 1 below:

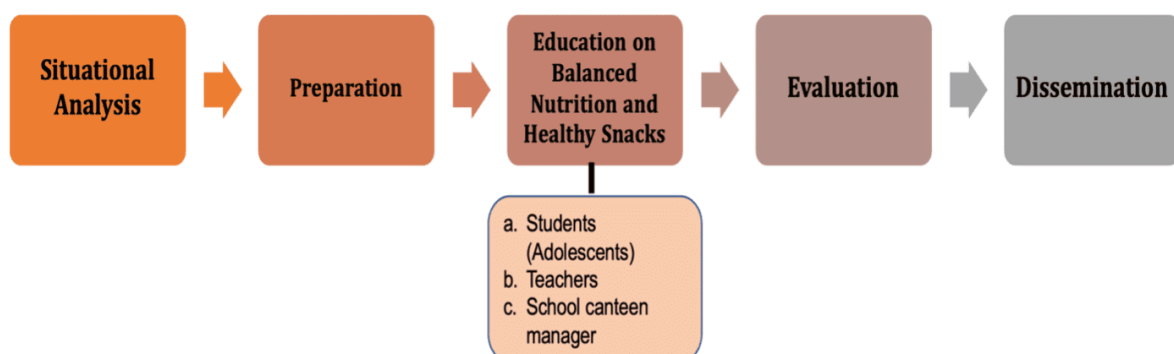


Figure 1. The chart flow of community service activity

The first stage is the situation analysis stage. The community service team determines the location of the community service. At this stage, the community service team conducts a situation analysis to assess which schools need to carry out

community service activities by considering the school's location, the availability of canteens and unhealthy snacks around the school, and the active participation of the school.

In the preparatory stage, the service team made preparations by coordinating with the school regarding permits and determining the day of community service activities. Furthermore, the counseling and educational stages of balanced nutrition and healthy snacks were the core of this community service activity. Counseling activities were carried out in 3 groups, namely 1) student groups (adolescents), teacher groups, and canteen/food vendor management groups.

Next was the evaluation stage to see the participants' active participation and changes in the level of target knowledge. Evaluation activities were conducted after providing counseling and educational materials, which were carried out as questions, answers, and demonstrations. Then the stage of dissemination of the results of community service is the stage of exposing the results of community service, which is carried out in the form of publication of the results of community service in national journals with the aim that these community activities can be practiced in other areas to increase public knowledge about balanced nutrition and healthy snacks.

RESULTS AND DISCUSSION

The situation analysis stage was the stage of determining the location of community service to assess which schools need to carry out community service activities by considering the school's location, the availability of canteens, and unhealthy snacks around the school. At this stage, the team decided to carry out activities at SMAN 2 Mamuju.

Participants were given material about the importance of nutrition for student achievement, healthy food, how to choose healthy snacks at school, and general guidelines for balanced nutrition for teenagers. Nurbaya, S.Gz, M.Gizi presented the first material about maintaining adolescent nutritional intake at school age. The next material was delivered by Sri Rahmawati, Apt. about how to choose healthy snacks at school. Next was the presentation of material on General Guidelines for Balanced Nutrition in Adolescents delivered by Zaki Irwan, SKM. M. Kes. This material emphasizes the application of balanced nutrition messages for adolescents in school and everyday life.



Figure 2. Food Safety Key Materials by BPOM Representative.

This knowledge on nutrition increases effort to enable participants to understand so that it can become behavior in everyday life. Behavior-based on knowledge will last longer, so adolescents need to continue to be provided with nutrition and health knowledge (Lestaluhu, Mahmud, Ruaida, & Rustam, 2020; Nurbaya, Najdah, Irwan, & Saleh, 2023). During school, nutrition education affects adolescents' understanding of nutrients such as protein, fat, carbohydrates, vitamins, and minerals and can improve balanced nutritional behavior into adulthood (Damayanti, Lutfiya, & Nilamsari, 2019).

The final stage was a qualitative evaluation through interviews and simulations of the implementation of this community service activity. Participants were asked about the material given, and a simulation was conducted to identify food safety in packaged food.



Figure 3. Evaluation activities through student simulations to identify packaged food's nutritional content and safety.

In addition, question and answer activities were also given to canteen managers. The canteen managers were very enthusiastic about this community service activity. One canteen manager said:

"We are very grateful to the community service team. We come to know about food or food that is dangerous for students. Foods that have the potential to cause poisoning."



Figure 4. The process of evaluating and answering questions to school canteen managers

Another benefit of increasing adolescent knowledge is that adolescents can become information disseminators at school (Nurbaya et al., 2023; Rasmaniar, Nurlaela, Ahmad, & Nurbaya, 2022). In addition, nutrition education through various media is considered quite effective in increasing knowledge and behavior of balanced nutrition in adolescents to prevent anemia problems (Triatmaja, 2019).

As an effort to maintain the continuity of nutrition education activities within SMAN 2 Mamuju, the community service team, and the head of SMAN 2 Mamuju signed a Memorandum of Understanding and Cooperation Agreement regarding efforts to educate on nutrition and health for adolescents, especially for students of SMAN 2 Mamuju. Schools are important environments for cultivating and promoting healthy food choices among children and young people, but large amounts of unhealthy food are sold in school canteens. Nutrition education among students, teachers, and school canteen managers can strengthen the promotion of healthy school nutrition (Foo & Tan, 2021; Mohammadi et al., 2020).



Figure5. The signing of a Memorandum of Understanding between the Mamuju of Health Polytechnic and SMAN 2 Mamuju.

This MOU contains the Cooperation of the Mamuju Ministry of Health Poltekkes in helping to increase the knowledge and skills of adolescents in practicing a balanced nutritional lifestyle in the school environment.

CONCLUSIONS AND SUGGESTIONS

Counselling on balanced nutrition and healthy snacks can increase adolescents, canteen manager, and teachers' knowledge about nutrition and healthy snacks in the school environment. The teachers and related stakeholders need to provide balanced nutrition messages in schools' teaching and learning process.

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