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Mentoring and Empowerment Diploma Three Student in Blood Bank Technology, Health Polytechnic, Ministry of Health, Semarang, Through Training in Making Soy Milk as an Effort to Prevent Anemia

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Abstract

Mentoring participants know about anemia and its symptoms. Participants know the equipment and materials needed to make soy milk and know the steps on how to make soy milk and participants are able to give a demonstration of making soy milk to the residents of the target village. Residents of the assisted villages know how to make soy milk. Community service activities with the Entrepreneurship Development Program (PPK) scheme with the theme "Assistance in the Empowerment of Diploma Three Technology Students at the PolkesMar Blood Bank through training in making soy milk (Soymilk) as an effort to prevent anemia" was carried out on Friday 28 July 2023 with a target of 10 people participating. consisting of 8 active students and 2 alumni. The output is in the form of videos and pamphlets on making soy milk that have received IPR certificates as well as the expertise of training participants resulting from a series of training activities on making soy milk (Soymilk) targeting students and alumni. This has also been implemented in community service activities for the target village residents in Pundan Hamlet, Subdistrict. Kebondowo Banyubiru, Semarang district, which will be held on Sunday 15 October 2023. The successful achievement of this activity was that all participants in the training on making soy milk were able to give demonstrations on making soy milk to the residents of the target villages. Residents of the assisted villages were given education about anemia and solutions to preventing anemia, the committee also showed videos of making soy milk, distributed pamphlets and gifts to residents of the assisted villages.

A. Introduction

Adolescents, who range in age from 10 to 19, are those who develop from the moment they exhibit secondary sexual symptoms until they attain sexual maturity (Rahman, 2022). Adolescents in Indonesia are those who fall between the age range of 10 to 18 years old, according to Republic of Indonesia Number 25 of 2014, a rule issued by the Minister of Health (Chynoweth et al., 2021), the National Population and Family Planning Agency (BKKBN) states that teenagers are single, between the ages of 10 and 24 (Hastuti et al., 2021). According to WHO, the world's adolescent population is estimated at 1.2 billion or 18% of the world's population, while in Indonesia, the number of people aged 10-19 years according to the 2010 population census is 43.5 million or about 18% of the total population of Indonesia (Basniati et al., 2023; Kumalasari & Nursanti, 2022).

Data from the Household Health Survey (SKRT) in Central Java stated that the prevalence of anemia in adolescent girls aged 10-18 years was 57.1% and in those aged 19-45 years was 39.5%. Iron deficiency nutritional anemia is the most common anemia in the world. Mangalik et al. (2023) found that 48.9% of

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adolescent girls experienced iron deficiency anemia. This is a nutritional problem in Indonesia because the percentage is >22%.

Adolescent girls have a ten times greater risk of suffering from anemia compared to young men. The first reason is because every month adolescent girls have their period (Herwandar & Soviyati, 2020). A woman who has heavy menstruation for more than five days is worried about losing iron, so she needs more replacement iron than a woman who has only three days and little menstruation (Ringoringo et al., 2022). The second reason is because adolescent girls often maintain their appearance, wanting to stay slim or thin so they diet and eat less. A diet that is not balanced with the body's nutritional needs will cause the body to lack important nutrients such as iron and magnesium (Ringoringo et al., 2022). The effects of anemia include decreased immunity, impaired concentration, decreased learning achievement, impaired fitness and productivity, increased risk of death during childbirth, being one of the causes of premature births, low baby weight (Deivita et al., 2021).

Students are still classified as an adolescent group at risk of anemia, including health students. Health students in terms of knowledge are certainly better than students in general (Sari & Anggraini, 2020). However, there are still many health students, especially students of the Health Analyst Department, who experience signs and symptoms of anemia. Prevention and treatment of anemia can be determined by paying attention to the factors that cause it, if the cause is a nutritional problem then an assessment of nutritional status is needed to identify nutrients that play a role in anemia cases (Tarini et al., 2020). Nutritional anemia can be caused by the lack of various nutrients essential for the formation of hemoglobin, iron deficiency, which is common in the world, is the main cause of nutritional anemia (Mangalik et al., 2023; Qin et al., 2022).

Lack of iron consumption can be prevented by eating foods such as nuts and seeds such as soybeans (Khoramipour et al., 2021). The preferred preparation of soybeans is usually in the form of soy milk. Where the protein content in soybeans is of higher quality than other beans (Haloho & Kartinaty, 2020). The preferred preparation of soybeans is usually in the form of soy milk. Where the protein content in soybeans is of higher quality than other beans (Kuncara et al., 2022).

Based on these conditions, it is necessary to hold training in making soy milk(soymilk) as an effort to increase hemoglobin levels in students and implemented to the community to make soy milk so that it is expected that the community is skilled in making and consuming soy milk so that it can be useful to increase the immunity of themselves (Soenarno et al., 2023).

B. Research Methods

This activity is a community service activity with the Entrepreneurship Development Program (PPK) scheme. The target in this community service activity is Diploma Three Blood Bank Technology students, Department of Health Analysts, Poltekkes Kemenkes Semarang. The implementation of this community service activity includes several stages so that it can run according to its goals and objectives. The stages of community service include:

1. **The Preparation Stage**, namely the planning of community service activities, is very basic to determine the direction or flow of the service in running according to the agenda. In this community service, the planning process includes planning the needs of tools and materials, taking care of licensing and coordinating with village officials to identify and find solutions related to obstacles that will be faced at the time of implementing community service.
2. **The implementation stage**, which starts from making a permit application letter to the Chairperson of the Health Analyst Department, collecting data on target trainees, socializing the activity plan, implementing training in making soy milk, discussing and evaluating the implementation of activities.

Time of implementation Community service activities were carried out on July 28, 2023, at Campus III of the Health Analyst Department of the Poltekkes Kemenkes Semarang. The target audience of community service is Diploma Three Blood Bank Technology students totaling 10 participants consisting of 7 active students and 2 alumni. This community service activity includes several stages, among others:

1. Licensing

   Permission to carry out this community service activity will be obtained from the Head of the Health Analyst Department of the Poltekkes marseli Semarang.

2. Student and alumni registration
   After obtaining permission, data collection will be carried out on the number of students and alumni of the Blood Bank Technology Diploma Three Study Program.
3. Socialization of activity plans
   Coordination meeting and socialization of community service activity plans with the service team.
4. Counselling
   Participants who receive invitations to participate in community service activities will first be given counseling about anemia and its management. Participants will also be given knowledge about making soy milk as an effort to increase hemoglobin levels.
5. Soy Milk Making Training
   Participants will get a briefing on how to make soy milk which includes the selection of tools and materials, manufacturing steps and storage procedures.
6. Discussion and evaluation
   At the end of the activity, a discussion session will be held as well as an evaluation of community service activities with the hope that participants will provide positive feedback related to this activity.
7. Data Analysis
   The activity data that has been collected will be processed and an activity report will be made. The data will also be used as a reference for making journals as a responsibility of community service fund recipients to participate in developing institutions in the field of research and community service.

Here are the steps to make soy milk that is suitable for consumption:

1. Sorted soybeans (separated from impurities and broken seeds) are soaked in a baking soda solution for 30 minutes.
2. The soybeans are drained, new water is added, and then boiled for 30 minutes.
3. The skin of the soybeans is then separated by kneading and washing with water several times (the skin will come off easily to avoid a bad taste).
4. The soybeans are ground with a metal grinder, or a stone grinder (commonly used in making tofu), or a blender.
5. The slurry obtained is added with boiling water until the total amount of water reaches 10 times the weight of dry soybeans.
6. The diluted slurry is filtered with gauze and the filtrate is raw soy milk.
7. To improve flavor and acceptability, 7 - 15 percent sugar and enough essence, such as chocolate, mocha, pandan or strawberry (can be purchased at cake shops, supermarkets or chemical stores), are added to the raw soy milk, then heated to boiling.
8. After boiling >71^{o}C, the heat is reduced and left on low heat for 15 minutes.
9. When bottled, 100 mg of CMC (Carboxymethyl cellulose) is added to 1 liter of soy milk, to maintain the stability of the beverage so that the solid particles remain evenly dispersed throughout so that they do not precipitate.
10. Soy milk should be in a cold temperature of about 50^{o}C (refrigerator temperature) (Mangaraj et al., 2022; Mayarni et al., 2020; Saini & Morya, 2021).

C. Result and Discussion

Community service activities with the Entrepreneurship Development Program (PPK) scheme with the theme "Empowerment Assistance for D-III PolkesMar Blood Bank Technology Students Through *Soymilk* Making Training as an Anemia Prevention Effort" were carried out on Friday 28 July 2023 with a target of 10 people consisting of 8 active students and 2 alumni.

Outputs in the form of videos and pamphlets on making soy milk that have obtained copyright certificates and the expertise of trainees resulting from a series of training activities on making soy milk *(Soymilk)* targeting students and alumni have also been implemented in community service activities for fostered villagers in Pundan Hamlet, Kebondowo Village, Banyubiru, Semarang Regency which was held on Sunday, October 15, 2023.

1. Soy Milk Making Training

The practice of making soy milk can provide an understanding and experience of how to make good and correct soy milk, starting from the selection of soybean products to finally become soy milk that is ready for consumption, and also given a pamphlet containing the tools and materials needed and the procedure for making soy milk so that after this training participants can apply it in their respective homes and can implement it to the wider community. In this training activity, participants are also required to make a video tutorial on making soy milk so that it can be disseminated to the community.


Figure 1. Training Activities at Campus III Health Analyst Departement

Soybeans contain about 40 percent protein (dry basis) which is the best and highest source of vegetable protein among all legumes or cereals, and are also rich in nutritious minerals and high in fiber. Soybeans can be processed into a variety of delicious and easily digestible foods and products. Soy milk is the most popular product as a healthy food drink (Han et al., 2021).

Soy milk is a product derived from soy bean seed extract. Vegetable soy milk has fiber content that is useful for digestion that cow's milk does not have and a fairly high protein content (Mayarni et al., 2020). Soy milk does not contain saturated fat where saturated fat can increase cholesterol in the body, soy milk only has unsaturated fatty acids and so it is good for health. Soy milk can also be an alternative to cow's milk for people who are allergic and dislike cow's milk or for those who cannot afford the expensive price of cow's milk because soy milk is cheaper when compared to animal milk, and soy milk has good nutritional value and is suitable for consumption for all age groups (Fathurohman et al., 2020).



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Figure 2. Video Making Documentation on Soy Milk Making Procedures who have obtained an IPR Certificate

Video Link https://drive.google.com/file/d/12npIO-uaJ_sXE6tpzY8bOgI55bfZWZZ/view?usp=sharing

Socialization of anemia prevention and demonstration of making soy milk to village communities assisted by the PolkesMar Blood Bank Diploma Three Technology Study Program.

Figure 3. Implementation of Soy Milk Making Skills by the Community Service Team in Pundan Hamlet

Health services need to socialize the benefits of soy milk against anemia in order to increase knowledge of the importance of soy milk for people who experience anemia. The benefits of soy milk are healthy for the body because it does not contain cholesterol but contains phytochemicals pertioleiclinoleic and linolenic and easily digested, In addition, soy milk also contains fat, carbohydrates, calcium, phosphorus, iron, provitamin A, vitamin B1, vitamin B2 and isoflavones (Hamid, 2022). Giving Fe tablets and soy milk can increase hemoglobin levels due to the iron content contained in it, from the benefits of soy milk that can be used to increase hemoglobin levels, it is hoped that the community can utilize soy milk as an alternative to increase hemoglobin (Valentina et al., 2020).

Figure 4. Soy Milk Making Pamphlet

D. Conclusion

The achievement of the success of this activity is that all participants of the soy milk making training are able to provide socialization of anemia prevention and demonstration of making soy milk to the fostered villagers. The fostered villagers were given counseling about anemia and anemia prevention solutions, the committee also showed a video of making soy milk, distributed pamphlets and gifts to the fostered villagers.

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