



INTERVENTION AND EDUCATION ON NABICHI CERIA (DRAGON FRUIT, BEETROOT, CHIA SEED JUICE) CONSUMPTION: A HEMOGLOBIN SOLUTION FOR ANEMIA-FREE, BEAUTIFUL ADOLESCENT GIRLS IN WEST BANDUNG REGENCY

Triana Indrayani^{1*}, Sri Kusri², Intan Nafisah³, Liana Fitriawati⁴, Nurhayati⁵, Witnowati⁶, Rohaeni⁷

^{1,2,3,4,5,6,7}Midwifery Study Program, Faculty of Health Sciences, Universitas Nasional
Corresponding Email: trianaindrayani@civitas.unas.ac.id¹

Abstract

Iron deficiency anemia remains a major public health problem among adolescent girls in Indonesia, which can negatively impact reproductive health, learning concentration, and productivity. Anemia prevention efforts need to be conducted through health education and the utilization of functional foods that adolescents easily accept. This community service activity aims to increase adolescent girls' knowledge of anemia and introduce NABICHI CERIA (red dragon fruit, beetroot, and chia seed juice) as a functional food that supports anemia prevention efforts. The activity was carried out at the Sabilulungan Art Dance Studio, West Bandung Regency, involving 36 adolescent girls aged 11–16 years. The methods used included a pretest, interactive counselling regarding anemia and reproductive health, a demonstration of making NABICHI CERIA, education on the recommended consumption of NABICHI CERIA, and a posttest to evaluate the participants' knowledge improvement. The pretest and posttest instruments consisted of five questions, with each question weighted at 20 points. The pretest results showed that 20 participants (55.6%) scored 100, six participants (16.7%) scored 80, and ten participants (27.8%) scored 60, with an average score of 85.6. Following the implementation of the educational activity, all participants (100%) scored 100 on the posttest. These results indicate a significant increase in the participants' knowledge regarding anemia, its prevention, and the utilization of NABICHI CERIA as a functional food. This activity is expected to serve as a promotive and preventive effort to support anemia prevention in adolescent girls by improving knowledge and encouraging the adoption of nutritious food consumption patterns.

Keywords: Anemia, Adolescent Girls, Anemia Prevention, Nabichi Ceria, Functional Food.

INTRODUCTION

Anemia is a public health problem that is still frequently found among adolescent girls in Indonesia. Anemia occurs when hemoglobin levels in the blood fall below normal limits, thereby reducing the blood's capacity to transport oxygen throughout the body. Adolescent girls are a particularly vulnerable group to anemia due to their rapid growth, increased iron requirements, and blood loss during menstruation. This condition can manifest in various symptoms such as fatigue, lethargy, sluggishness, weakness, and decreased learning concentration, which ultimately affect the productivity and quality of life of adolescent girls.

Based on the 2023 Indonesian Health Survey (SKI), the prevalence of anemia among adolescent girls in Indonesia reached 15.5%. Anemia in adolescent girls not only impacts their current health status but can also affect their future reproductive health. If not properly addressed, anemia can increase the risk of growth disorders, impaired immunity, reduced cognitive function, and potentially elevate the risk of complications during pregnancy when these adolescents enter their reproductive age.

Efforts to prevent anemia in adolescent girls can be achieved through various approaches, one of which is increasing knowledge about the importance of consuming nutritious foods containing iron

and other supporting nutrients. In addition to iron-folic acid supplementation, which has been established as a government program, the utilization of locally based functional foods can also serve as an easily applicable and more acceptable alternative for adolescent girls. Functional foods do not merely function as a source of nutrients but also provide additional benefits in supporting overall health when consumed properly and sustainably.

NABICHI CERIA is a functional food innovation developed from a combination of red dragon fruit (*Hylocereus polyrhizus*), beetroot (*Beta vulgaris*), and chia seeds (*Salvia hispanica*). These three ingredients are known to contain various beneficial nutrients, such as iron, vitamin C, protein, fibre, and antioxidants, which play a significant role in supporting the production of red blood cells and facilitating iron absorption in the body. Besides its high nutritional content, NABICHI CERIA also offers a refreshing taste, an appealing appearance, and is easy to prepare and consume by adolescent girls.

Based on the initial assessment conducted at the Sabilulungan Art Dance Studio, Kampung Babakan Jati RT 04/05, Cibodas Village, Lembang District, West Bandung Regency, it was found that there were still adolescent girls experiencing mild anemia and possessing sub-optimal knowledge regarding anemia prevention. This situation highlights the critical need for health education initiatives combined with the utilization of functional foods as a promotive and preventive strategy in anemia prevention.

Therefore, this community service activity was carried out to enhance the knowledge and skills of adolescent girls regarding anemia prevention through health education and a practical demonstration of making NABICHI CERIA as a functional food that supports anemia prevention efforts in adolescent girls.

METHODS AND PROCEDURES

The community service activity was conducted at the Sabilulungan Art Dance Studio, Kampung Babakan Jati RT 04/05, Cibodas Village, Lembang District, West Bandung Regency. The activity took place from 08.00 WIB until completion, targeting 36 adolescent girls aged 11–16 years who fully participated in the entire session.

The implementation of this community service activity consisted of three stages, namely the preparation stage, the implementation stage, and the evaluation stage.

1. Preparation Stage

The preparation stage began with obtaining formal permissions from relevant local authorities, including the Village Head, RW Head, and RT Head. Subsequently, an initial assessment was carried out to identify the issues faced by the partners, specifically the low knowledge concerning anemia and its prevention among adolescent girls. The implementing team then developed educational materials, prepared pretest and posttest instruments, and arranged the necessary ingredients and equipment to be used during the activity.

2. Implementation Stage

The implementation stage of the activity included:

- a. Registration of participants and filling out the attendance sheet.
- b. Administration of the pretest to measure the participants' baseline knowledge regarding anemia and its prevention. The pretest instrument comprised five questions covering the definition, causes, symptoms, and prevention of anemia, as well as the benefits of consuming NABICHI CERIA. Each question carried a weight of 20 points, allowing a maximum score of 100.
- c. An interactive lecture and discussion regarding anemia in adolescent girls, including its definition, causes, impacts, prevention, and the significance of meeting nutritional intake requirements during growth and menstruation phases.
- d. A demonstration of making NABICHI CERIA, which consists of a combination of red dragon fruit, beetroot, and chia seeds as a functional food supporting anemia prevention in adolescent girls.
- e. Education regarding the recommended consumption of 200 ml of NABICHI CERIA per day, particularly during menstruation and a few days thereafter, as part of adopting a nutritious dietary pattern.
- f. A discussion and question-and-answer session with the participants regarding anemia and the utilization of NABICHI CERIA.
- g. Administration of the posttest using the same instrument as the pretest to determine the increase in participants' knowledge after completing the series of activities.
- h. Documentation of the activity and closing.

3. Evaluation Stage

The evaluation stage was conducted through the analysis of pretest and posttest scores to evaluate the improvement in participants' knowledge concerning anemia and the utilization of NABICHI CERIA as a functional food. Furthermore, the implementing team planned a follow-up evaluation consisting of monitoring NABICHI CERIA consumption and checking haemoglobin levels after a minimum of seven days of consumption as a continuation of the program.

4. Ingredients and Equipment

The ingredients used to prepare two servings of NABICHI CERIA consisted of 250 grams of red dragon fruit, 40 grams of beetroot, 10 grams of chia seeds, 10 grams of granulated sugar, and 200 ml of water. The equipment used included a blender or juicer, digital scales, 200 ml beverage bottles, spoons, knives, and a cutting board.

The nutritional composition of NABICHI CERIA per two servings includes an energy content of 116.7–126.2 kcal, 2.6–3.25 grams of protein, 3.9–4.7 grams of fat, 18–18.4 grams of carbohydrates, 4.5–4.8 grams of fiber, 0.6–1.085 mg of iron (Fe), and 1.5–3.4 mg of vitamin C, based on the United States Department of Agriculture (USDA) data.

RESULTS AND DISCUSSION

The community service activity was successfully carried out at the Sabilulungan Art Dance Studio, Kampung Babakan Jati RT 04/05, Cibodas Village, Lembang District, West Bandung Regency, involving 36 adolescent girls aged 11–16 years. All participants completed the entire agenda designed by the implementing team, starting from registration, pretest, health education, demonstration, discussion, and Q&A, to the posttest.

The activity commenced with participant registration and attendance recording. Next, the participants took the pretest to determine their initial level of knowledge about anemia and its prevention. Following the pretest, an interactive health education session was delivered to the participants, covering the definition, causes, symptoms, and impacts of anemia on health and productivity, alongside the importance of iron intake during growth and menstruation.

In addition to the presentation on anemia, participants received education on NABICHI CERIA as a functional food composed of red dragon fruit, beetroot, and chia seeds. These three ingredients were selected due to their rich nutrient content that supports red blood cell formation and meets the nutritional needs of adolescent girls. The session proceeded with a demonstration of preparing NABICHI CERIA and guidance on its recommended consumption as a nutritious alternative for anemia prevention.

During the discussion and Q&A session, the participants exhibited high enthusiasm by asking various questions regarding anemia, recommended dietary habits during menstruation, and the specific health benefits of the ingredients used in NABICHI CERIA. This high level of enthusiasm demonstrated that the health education provided successfully stimulated the participants' interest and understanding of the importance of preventing anemia from an early age.

The evaluation of the activity was performed through pretest and posttest administration consisting of five questions, each weighted at 20 points, for a maximum total score of 100. The pretest results showed that 20 participants (55.6%) scored 100, six participants (16.7%) scored 80, and ten participants (27.8%) scored 60, resulting in an average score of 85.6. After the entire series of activities was completed, the posttest results showed that all participants (100%) achieved a perfect score of 100.

Tabel 1. Hasil *Pretest* dan *Posttest* Peserta

Score	Pretest n (%)	Posttest n (%)
100	20 (55,6%)	36 (100%)
80	6 (16,7%)	0 (0%)
60	10 (27,8%)	0 (0%)
Total Participants	36 (100%)	36 (100%)

The improvement in the posttest scores demonstrates that the educational method combined with the practical demonstration of preparing NABICHI CERIA was highly effective in increasing the participants' knowledge regarding anemia and its prevention. The percentage of participants achieving

a perfect score increased from 55.6% in the pretest to 100% in the posttest. These findings indicate that interactive material delivery coupled with direct practical demonstration helps participants comprehend the provided information more effectively.

This community service activity not only focused on expanding knowledge but also provided practical skills in utilising local functional foods that are easy to obtain and process independently. The combination of red dragon fruit, beetroot, and chia seeds in NABICHI CERIA is expected to become a viable nutritious food alternative supporting anemia prevention in adolescent girls when consumed as part of a balanced diet.

Although post-intervention hemoglobin level checks were not carried out during this specific activity, a follow-up evaluation has been planned after a minimum of seven days of NABICHI CERIA consumption. Therefore, the outcomes achieved in this activity are centered on improving participants' knowledge as an essential first step toward cultivating healthy living behaviors and raising awareness about the vital importance of anemia prevention among adolescent girls.

DOCUMENTATION OF ACTIVITIES

Documentation of the registration process and completion of the participant attendance sheet before starting the community service activities.



Figure 1. Participant Registration and Attendance Recording

Group photo documentation of all participants and the implementing team following the health education session on anemia prevention in adolescent girls.



Figure 2. Group Photo with Participants and Implementing Team

Documentation of presenting tokens of appreciation or rewards to active participants during the educational and discussion sessions as a form of motivation to increase participant engagement.



Figure 3. Presentation of Appreciation to Active Participants

Educational leaflet containing information on the nutritional content of NABICHI CERIA, recommended consumption guidelines, and its health benefits in supporting anemia prevention in adolescent girls.



Figure 4. NABICHI CERIA Educational Leaflet

Documentation showing the preparation stages of NABICHI CERIA, ranging from ingredient preparation, processing, to final beverage packaging, conducted as part of the education and practical demonstration of functional food preparation to support anemia prevention in adolescent girls.



Figure 5. Demonstration of Making NABICHI CERIA

Based on the documentation presented, the entire series of community service activities was successfully implemented and received high enthusiasm from the participants. The active engagement of the participants at each stage demonstrates that the educational method combined with the production demonstration and the use of visually engaging educational media successfully improved the adolescent girls' knowledge about anaemia and its prevention. This documentation also serves as evidence of the program's execution, supporting the reinforcement of healthy lifestyle behaviours through the utilisation of functional foods as a promotive and preventive effort in prevent anaemia among adolescent girls.

CONCLUSION

The community service activity through intervention and education on NABICHI CERIA (red dragon fruit, beetroot, and chia seed juice) consumption was successfully carried out at the Sabilulungan Art Dance Studio, West Bandung Regency, involving 36 adolescent girls aged 11–16 years. The series of activities—encompassing the pretest, health education on anemia, demonstration of preparing NABICHI CERIA, discussion and Q&A, and the posttest—demonstrated positive outcomes in improving participants' knowledge regarding anemia and its prevention techniques. The evaluation results indicated that all participants achieved a perfect score (100%) on the posttest, implying that the educational methodology employed was highly effective in enhancing the participants' comprehension of anemia and the importance of nutritious food intake.

In addition to improving knowledge, this activity provided participants with practical skills on how to use NABICHI CERIA as an easy-to-make and easy-to-consume functional food alternative for adolescent girls. Through this initiative, participants are expected to implement sustainable, nutritious food consumption patterns as part of their anemia prevention efforts. A follow-up evaluation in the

form of monitoring NABICHI CERIA consumption and examining hemoglobin levels after at least seven days of consumption is recommended to determine its potential benefits on the hemoglobin status of adolescent girls.

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