Nutrional Counseling and "Sukahitu "Cookies Making Demonstration: An Alternative to Promote Blood Hemoglobin Increase in Women of Reproductive Age and Pregnant Women in Belawan II Village, Medan Belawan District

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ARTICLE INFO	ABSTRACT
	Anemia poses a significant risk for women of reproductive age and pregnant women, impacting both their health and the quality of future generations. This condition can adversely affect the growth and development of the fetus, leading to potential complications during pregnancy and childbirth. In severe cases, it may even result in maternal and newborn mortality. The purpose of this community service activity was to enhance the knowledge of women of reproductive age and pregnant women through nutritional counseling and demonstrations on making "sukahitu" cookies, which serve as an alternative for increasing blood hemoglobin levels. "Sukahitu" cookies, made from katuk (Sauropus androgynus) leaf flour and mung bean flour, were provided daily for 30 days to 35 women of reproductive age and pregnant women in Belawan II Village, Medan Belawan District. Knowledge regarding intake, anemia, and hemoglobin was measured before (pretest) and after the intervention (posttest). The results of the activity indicate that the average pretest score is 77.1%, and the posttest score is 91.4%. There is an average increase of 14.28% in knowledge about anemia. It is recommended to regularly conduct nutrition and anemia counseling for women of reproductive age and pregnant women, along with providing hemoglobin-rich foods like "sukahitu" cookies to effectively prevent anemia. **Keyword:** Cookies Sukahitu, Haemoglobin, Pregnant Women

ABSTRAK

Wanita Usia Subur (WUS) dan ibu hamil merupakan kelompok berisiko tinggi terhadap anemia. Adanya gangguan kesehatan dan status gizi WUS dan ibu hamil akan berdampak pada kualitas sumber daya manusia generasi yang akan dilahirkannya. WUS berisiko mengalami anemia pada saat hamil. Kondisi ini dapat berdampak negatif terhadap pertumbuhan dan perkembangan janin, serta berpotensi menimbulkan komplikasi kehamilan dan persalinan, bahkan dapat menyebabkan kematian ibu dan bayi baru lahir. Tujuan kegiatan pengabdian pada masyarakat ini adalah untuk meningkatkan pengetahuan WUS dan ibu hamil melalui penyuluhan asupan gizi, anemia dan demonstrasi pembuatan cookies sukahitu sebagai alternatif pangan yang dapat meningkatkan kadar hemoglobin darah. Cookies sukahitu berbahan dasar tepung daun katuk dan tepung kacang hijau diberikan setiap hari selama 30 hari kepada 35 orang wanita usia subur dan ibu hamil yaitu di Kelurahan Belawan II Kecamatan Medan Belawan. Pengukuran pengetahuan tentang asupan, anemia dan hemoglobin dilakukan sebelum intervensi (pretest) dan sesudah intervensi (posttest). Hasil kegiatan menunjukkan rata-rata nilai pretest adalah 77,1%, dan posttest sebesar 91,4%. Peningkatan rata-rata pengetahuan tentang anemia sebesar 14,28%. Pemberian makanan yang dapat meningkatkan kadar hemoglobin darah seperti cookies sukahitu kepada wanita usia subur dapat dijadikan sebagai alternatif pencegahan anemia.
Keyword: Anemia, Cookies Sukahitu, Hemoglobin

1. Introduction

Anemia is a condition characterized by a decrease in the number of red blood cells (erythrocytes) or the amount of hemoglobin found within red blood cells, falling below normal levels. It is a widespread issue worldwide, particularly affecting women of reproductive age and pregnant mothers. Several factors make women of reproductive age and pregnant women more susceptible to anemia, such as blood loss during menstruation, pregnancy, insufficient iron intake in their diet, and difficulties in absorbing iron. Anemia can have negative consequences on cognitive and motor development as well as work capacity. In the case of pregnant women, iron-deficiency anemia is linked to poor pregnancy health, including premature deliveries, low birth weight babies, and reduced iron stores for infants, leading to developmental disturbances. It also affects the quality of life for pregnant women, including their fatigue levels and ability to cope with stress during pregnancy, as well as their work productivity [1].

According to the World Health Organization (WHO), anemia is believed to impact approximately 500 million women aged 15–49 and 269 million children aged 6–59 months globally. In 2019, about 30% (539 million) of non-pregnant women and 37% (32 million) of pregnant women aged 15–49 experienced anemia [1]. Meanwhile, the prevalence of anemia among women of reproductive age and pregnant women in Indonesia remains relatively high. According to the results of the National Basic Health Research survey (2018), the rate of anemia among pregnant women in Indonesia was 48.9%. Furthermore, within the group of pregnant women with anemia, a significant proportion, 84.6%, belonged to the age group of 15-24 years, which corresponds to women of reproductive age [2].

Based on the situational analysis conducted in Belawan II village, Medan Belawan subdistruct, it has been found that many women of reproductive age and pregnant women suffer from iron-deficiency anemia. Therefore, in this community engagement activity, supplementary food rich in iron, which was made using katuk leaves fortification, are provided to these women.

Cookies are processed products that are widely enjoyed by people of all ages. According to the Indonesian National Standard (SNI 01-2973-2011), cookies belong to the category of dry food items, and they are prepared by baking a dough mixture consisting of wheat flour or suitable substitutes, along with oil or fat, and may include other permissible food ingredients [3]. In this community engagement activity, cookies are made using katuk leaf flour and mung bean flour as binding agents. "Sukahitu" cookies, made from these ingredients, serve the purpose of increasing blood hemoglobin levels in women of reproductive age and pregnant women to reduce the risk of anemia.

The katuk (Sauropus androgynus (L) Merr.) leaf stands out as a nutrient-dense source, boasting higher levels of vitamin A and C, protein, calcium, and carbohydrates when compared to other leafy vegetables like amaranth and drumstick leaves. Fully matured katuk leaves are acknowledged for their richness in β-carotene, a precursor to vitamin A. Research indicates that these leaves also contain significant amounts of fat-soluble vitamin E, known for its antioxidant properties. Elemental composition studies highlight the substantial iron content in fully matured katuk leaves, surpassing 100 mg/kg [4].

The mung bean is a high-protein resource, containing between 14.6 to 33.0 g/100 g, and is also rich in iron, with a content ranging from 5.9 to 7.6 mg/100 g. The color of the grain is linked to compounds such as polyphenols and carotenoids, while the hardness of the grain is connected to its fiber content [5]. According to previous study, giving katuk leaf juice, sweet potato leaf juice, and kefir increased the hematological profile of anemic mice induced by aluminum sulfate [6], and giving green bean juice increased hemoglobin levels in pregnant women [7]. Therefore, mung bean starch can be combined with katuk leaves to be used as ingredients in making cookies.

The purpose of this community engagement activity is to enhance the knowledge of women of reproductive age and pregnant women in Belawan II village, Medan Belawan subdistrict, regarding nutrition counseling and the demonstration of making sukahitu cookies as an alternative to increasing blood hemoglobin levels.

2. Methods

The community engagement activity took place in Belawan II village, Medan Belawan subdistrict. The target participants for this activity were 35 of reproductive age and pregnant women. The selection of participants was carried out through purposive sampling. Before providing nutrition and anemia counseling, a pre-test was

conducted. The community engagement activity consists of six stages: (i) Pre-test; (ii) Hemoglobin blood level examination; (iii) Nutrition and anemia counseling (iv) Sukahitu cookies making demonstration; (v) Post-test; (vi) The activity evaluation.

2.1. Pre-test

In this activity, a pre-test was conducted to assess the level of knowledge of pregnant women in Belawan II village, Medan Belawan subdistrict about nutrition intake and anemia. Once all participants were registered and seated, they were provided with a questionnaire form. Due to the ongoing Covid-19 pandemic, all participants and research team members adhered to health protocols, including wearing masks, washing hands, and maintaining physical distance.

2.2. Hemoglobin blood level examination

The examination of hemoglobin blood level of reproductive age and pregnant women was performed in Medan Belawan subdistrict. The results of these examinations served as a reference point for providing nutrition and anemia counseling. Hemoglobin levels were obtained by taking blood samples from women of reproductive age and pregnant women using a digital Hb test device. The categorization of Hb levels was as follows:

- Non-Anemic: Hb $\geq$ 12 g/dl
- Anemic: Hb < 12 g/dl

2.3. Nutrition and anemia counseling for reproductive age and pregnant women

The nutrition and anemia counselling activities were conducted using a lecture method. The results from the hemoglobin level examinations in women of reproductive age and pregnant women were utilized as material for the counseling sessions. These sessions aimed to provide valuable information and education about nutrition intake and anemia, empowering the pregnant women to make informed and healthy choices during their pregnancy for the benefit of their own health and that of their unborn child.

2.4. Sukahitu cookies making demonstration

The participants consisting of 35 reproductive age and pregnant women in Medan Belawan subdistrict joined the demonstration on making Sukahitu cookies. The event was conducted at 8 AM, as scheduled, with 100% attendance. The process and ingredients used in making Sukahitu cookies were explained by the community activity team. After the demonstration, an improvement in their skills was evident. Participants were asked to practice making the cookies after the demonstration, and they successfully executed the process. Then, the Sukahitu cookies were tasted by the participants, and all of them expressed their delight, stating that the cookies were delicious, and they were willing to consume them.

2.5. Post-test

After completing the counseling session and conducting the Sukahitu cookies making demonstration, as well as introducing katuk leaves and their benefits, the team proceeded to carry out a post-test to assess the participants' understanding of the material that had been provided.

2.6. Evaluation

The evaluation was carried out to measure the ability of women of reproductive age and pregnant women in in Medan Belawan subdistrict to make Sukahitu cookies.

3. Results and Discussion

3.1 Characteristics of reproductive age and pregnant women

Table 1 showed the characteristics of reproductive age and pregnant women, including their age and maternal education. In terms of age distribution, most of respondents fell within the 20-35 years old category, constituting 82.8% of the total sample. Meanwhile, individuals aged less than 20 years old and those over 35 years old made up 5.7% and 11.5%, respectively. The Education Level variable illustrated the educational backgrounds of the respondents, with a substantial 77.2% having completed senior high school. Additionally, 11.5% had a junior high school education, while bachelor's degree holders comprised 8.5% of the respondents. This table serves as a valuable tool for understanding the demographic composition of the participants that may influence the outcomes of this study.

Table 1. Respondents' characteristic.

Variable	N	Percentage (%)
1. Age		
a. < 20 years old	2	5,7
b. 20-35 years old	29	82,8
c. > 35 years old	4	11,5
2. Education Level		
a. Elementary School (SD)	1	2,8
b. Junior High School (SMP)	4	11,5
c. Senior High School (SMA)	27	77,2
d. Bachelor's Degree (S1)	3	8,5

3.2 Sukahitu cookies

The Sukahiku cookies as shown in Figure 1 were made from katuk leaf flour, mung bean flour, and other additional ingredients. Table 2 demonstrated the nutritional content, composition of the cookies, and their compliance with Recommended Dietary Allowance (RDA). The 100 grams of Sukahitu cookies fulfilled 37.2% and 18.9% of the Recommended Dietary Allowance (RDA) for energy and iron (Fe), respectively [8].

Figure 1. Sukahitu cookies.

Table 2. The Nutritional composition of sukahity cookies per 100 g serving and recommended dietary allowance (RDA) for reproductive age and pregnant woman.

Nutritional Composition	Value	RDA*	%RDA
Energy (kcal)	818,0	2200	37,2%
Protein (g)	17,3	60	28,8%
Fat (g)	40,2	62,5	64,3%
Carbohydrate (g)	98,8	350	28,2%
Fiber (g)	4,4	31	14,2%
Vitamin C (mg)	2,7	75	3,6%
Fe (mg)	3,4	18	18,9%
Zinc (mg)	1,9	8	24%

*Source : Ministry of Health Republic of Indonesia [6]

3.3 Hemoglobin levels

Hemoglobin levels were measured before the intervention through the provision of Sukahitu cookies (shown in Table 3). The results revealed that the lowest hemoglobin level among participants was 10 g/dL, while the highest level was 12.3 g/dL, with an average of 11.6 g/dL. Normal hemoglobin levels typically fall within a range considered healthy for adults, which is often around 12 to 15.5 g/dL for adult females. Out of 35

individuals tested, 32 individuals (over 90%) had hemoglobin levels below 12 g/dL, indicating that they were suffering from anemia. According to the National Cancer Institute, anemia is divided into three grades, such as mild (hemoglobin level of 10.0 g/dL or lower limit of normal), moderate (hemoglobin level between 8.0 and 10.0 g/dL), severe (hemoglobin level of between 6.5 and 7.9 g/dL), and life-threatening (hemoglobin level less than 6.5 g/dL) [9]. Based on this study, among the 35 individuals with anemia, 3 individuals had moderate anemia.

Table 3. The Result of hemoglobin levels.

	n	Minimum	Maximum	Mean	Std. Deviation
Hemoglobin Levels	35	10,0	12,3	11,6	.9222

3.4 The Assessment of knowledge level about nutrition intake and anemia
The assessment of participants' knowledge regarding anemia and the importance of consuming iron-rich foods to prevent anemia is conducted by implementing pretests and post-tests. The post-test results are considered good if participants can answer correctly ≥ 60%.

Table 4. Pre-test results

		Pre-Test Value			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	27	77.1	77.1	77.1
	Bad	8	22.9	22.9	100.0
	Total	35	100.0	100.0	

Table 5. Post-Test Results

		Post-Test Value			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	32	91.4	91.4	91.4
	Bad	3	8.6	8.6	100.0
	Total	35	100.0	100.0	

Table 5 displayed the post-test results, showing an increase of knowledge about nutrition intake and anemia from 77.1% (Table 4) to 91.4%. This indicated that the participant's understanding significantly improved by 14.28% following the counseling and demonstration sessions.

4. Conclusions
The counseling and the demonstration of making Sukahitu cookies has successfully carried out in Kecamatan Medan Belawan. The participants, numbering 35 women of reproductive age and pregnant women, mostly aged 20-35 with a high school education, underwent hemoglobin tests, revealing a range from 10 g/dL to 12.3 g/dL, and an average level of 11.6 g/dL. Consequently, practicing the creation of Sukahitu cookies emerged as a viable alternative for preventing nutritional anemia. Notably, a 100-gram portion of Sukahitu cookies could satisfy 37.2% and 18.9% of the Recommended Dietary Allowance (RDA) for energy and iron (Fe), respectively. Additionally, participant comprehension saw a substantial improvement of 14.28% following the counseling and practical demonstration sessions. These outcomes underscore the potential of Sukahitu cookies as a valuable nutritional intervention and highlight the positive impact of educational efforts on participant understanding.

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