
Nutrition Education Video Can Improve Knowledge And Hemoglobin Levels In Students Of Sman 1 Singaraja Bali Province

Ida Ayu Eka Padmiari^{1b}, Desak Made Ardhya Pramesti Suci Sanjiwani², Desak Putu Sukraniti³

^{1,2,3}Health Polytechnic of the Ministry of Health, Denpasar, Nutrition Department, Nutrition and Dietetics Study Program

*Corresponding Author

Email : padmiarieka@gmail.com

Abstract

Based on the 2013 and 2018 Riskesdas, the prevalence of anemia in adolescents in Indonesia has increased from 18,4% to 32%. And there are 21,4% of young women forget to take iron tablets. The purpose of this study was to determine differences in knowledge and hemoglobin levels before and after giving nutrition education videos to female students of SMAN 1 Singaraja. The type of research used is quantitative research with a quasi-experimental design using the one-group pretest-posttest design method. The number of samples in this study were 61 female students. Using a nonparametric test, namely the Wilcoxon Test. The characteristics of the sample were 32 samples (51,6%) aged 16-20 years, while 30 samples (48,4%) aged 10-15 years. The results of data collection show that the average age of the sample is 16 years, where the average sample has a BMI of 20,18 kg/m² which is a normal nutritional status. There was an increase in the average value of the sample's Hb level of 0,3 from 14,2 to 14,5. The knowledge of the sample experienced an increase in the average value of 6,7 from 71,2 to 77,9. Wilcoxon Test Results On the Hb level variable, the sig. 0,159 (sig. >α ; α = 0,05) so that there is no significant difference in the results of Hb levels between before and after the nutrition education intervention is given. In the knowledge variable, the sig value is obtained. 0,000 (sig. <α ; α = 0,05), where there is a difference in the results of knowledge between before and after the nutrition education intervention is given. Therefore nutrition education is needed in any media to maintain health and prevent anemia in female students

Keywords: Hemoglobin Level; Knowledge; Nutrition Education Videos; Female Student

INTRODUCTION

Anemia is one of the nutritional problems in Indonesia today, where the number of red blood cells does not meet the physiological needs of the body which is indicated by low levels of Hemoglobin. One age group that is prone to anemia is adolescents. According to (WHO, 2015), the prevalence of anemia reaches 50-80% worldwide and cases of anemia in adolescents in developing countries range from 53.7% of all adolescents. Based on the results of the 2013 Basic Health Research (Riskesdas, 2013) and 2018, the proportion of anemia in adolescents in Indonesia increased from 18.4% to 32%. According to the results of the 2013 Riskesdas, 21.4% of adolescents forgot to take TTD, which means that three to four out of ten adolescents experience anemia and the prevalence of anemia in women (27.2%) is greater than in men (20.3%) (Riskesdas, 2018). Based on the 2018 National Riskesdas Report in Bali Province, the main reason for not taking or finishing Fe Tablets is forgetting to take the tablets with an age range of 16-18 years or high school/vocational high school education. Based on the 2016 Bali Province Sirkesnas Data, the proportion of anemia was 27.1%. This indicates that anemia, especially in women, is still quite high (Sirkesnas, 2016). Adolescent girls are included in the group prone to anemia. This is due to the increased need for nutrition to support peak growth. The need for iron during puberty is higher in girls than in boys because of the need to replace iron lost during the menstrual cycle which causes large amounts of blood loss and triggers a drastic decrease in hemoglobin levels (Zaddana, 2019). A 2018 study by Wahyuningsih in 2018 showed a relationship between knowledge of anemia in adolescents and the consumption of blood-boosting tablets. Adolescents with good knowledge tend to take blood-boosting pills (31.7%), while adolescents with sufficient knowledge tend to be non-compliant when taking blood-boosting pills (46.3%) (Wahyuningsih and Uswatun, 2019). A 2018 Shofiana study found that women with less knowledge were 2.7 times less likely to take blood supplements

regularly than women with advanced knowledge about anemia prevention (Shofiana et al., 2018).

Anemia in adolescents has a negative impact on weakening the immune system, concentration, learning and physical fitness. (Ministry of Health of the Republic of Indonesia, 2018). The health of the younger generation greatly determines the success of health development, especially in efforts to produce quality future offspring. Given that young women have the potential to become pregnant and give birth, they are at high risk of maternal death, premature birth, and low birth weight. (Dieny, 2014). Anemia can be overcome by consuming Iron Supplement Tablets. Through the Director General of Public Health of the Ministry of Health, the government has issued Circular Letter Number HK.03.03/V/0595/2016 concerning the Provision of Iron Supplement Tablets to Adolescent Girls and Women of Childbearing Age by holding an Anemia Prevention Program supporting the provision of iron supplements for adolescents aged 10-19 years, which is distributed through schools, namely 1 tablet/week (Ministry of Health of the Republic of Indonesia, 2018). Based on the results of the 2018 Riskesdas, 76.2% of adolescent girls received iron tablets, consisting of 80.9% who received them from school and 19.1% who said they did not receive them from school. At the same time, 23.8% of them did not take iron tablets at all. Consumption of iron tablets <52 tablets per year was 98.6% and ≥ 52 tablets was 1.4%. Eight out of ten adolescents have received iron tablets, and less than 2.0% of adolescents take iron tablets regularly every week (Ministry of Health of the Republic of Indonesia, 2018). Meanwhile, in 2020, the percentage of adolescents who received iron tablets in Bali Province was 51.5%, with Buleleng Regency being the regency in Bali with the smallest percentage. The percentage of adolescents aged 12-18 years who received TTD was 22.8% (Ministry of Health, 2020), According to data from the Buleleng 1 Health Center in 2020, 47.2% of adolescent girls consumed iron supplements. This figure shows that the target coverage of 50% has not been achieved compared to the achievement of the 2020 Renstra of the Ministry of Health of the Republic of Indonesia. During the Covid-19 pandemic, all schools carried out the learning process through an online system (online), so that TTD supplementation could not take place as usual, but TTD can be obtained through health centers or by buying it at nearby pharmacies, but compliance with TTD consumption cannot be monitored like in schools through assistance from teachers at school. Therefore, there needs to be awareness from adolescents themselves and the role of family members at home in helping to increase compliance with TTD consumption. According to the 2020 U-Report Survey, one in ten adolescents drank TTD throughout the Covid-19 Pandemic. Therefore, based on the explanation given, the researcher is interested in examining the differences in knowledge and hemoglobin levels before and after the provision of nutritional education videos to female students of SMAN 1 Singaraja. How is the difference in knowledge and hemoglobin levels before and after the provision of nutritional education videos to female students of SMAN 1 Singaraja?. Research Objectives are To find out the difference in knowledge and hemoglobin levels before and after the provision of nutritional education videos to female students of SMAN 1 Singaraja, to measure the hemoglobin levels of female students before and after receiving nutritional education, to analyze the difference in hemoglobin levels before and after the provision of nutritional education videos to female students of SMAN 1 Singaraja, to analyze the difference in knowledge before and after the provision of nutritional education videos to female students of SMAN 1 Singaraja.

RESEARCH METHODS

The type of research used is quantitative research with a quasi-experimental design. Using the one-group pretest-posttest design method (single group initial test-final test). The research was conducted in November 2023 at SMA Negeri 1 Singaraja, Buleleng District, Buleleng, Bali Province. The population was 417 people, with a research sample of 62 female students who met the inclusion criteria, namely: female students aged 14-17 years, grades X and XI at SMAN 1 Singaraja,

Buleleng, Bali, physically and mentally healthy, willing to be interviewed, and become research samples. The sampling technique used was proportional random sampling. Primary and secondary data include: personal data of samples using questionnaires by samples, Hb level data in samples before and after receiving nutrition education obtained using the Hb Meter method (EasyTouch GCHb), knowledge data by samples before and after receiving nutrition education obtained from questionnaires, additional data in the form of a history of bleeding, infectious diseases, and dietary restrictions in samples obtained through additional questionnaires, interventions in the form of providing nutritional education videos on "Anemia and the Importance of Blood Supplements for Adolescent Girls" were carried out after collecting pre or before data and secondary data includes information obtained from existing sources, especially school administration: results of measuring the weight and height of samples at the UKS, general description of the school, and data on the number of students. Using two types of analysis, namely univariate analysis, describing the general description of each variable in the study including knowledge and Hb levels which are processed into frequency distribution data and percentages, and displayed in table form. As well as bivariate analysis, Analysis for all variables to identify possible differences in knowledge and Hb levels before and after providing nutritional education videos. The nonparametric test used is the Wilcoxon Test.

RESULTS AND DISCUSSION

Sample characteristics based on age are categorized into two, namely 10–15 years old and 16–20 years old. The distribution of samples based on age shows the most, namely samples aged 16-20 years as many as 32 samples with a percentage of 51.6%, while samples aged 10-15 years as many as 30 samples with a percentage of 48.4%. Sample characteristics based on class are categorized into two, namely class X and XI. The distribution of samples based on class shows the most, namely samples with class XI as many as 33 samples with a percentage of 53.2%, while samples with class X as many as 29 samples with a percentage of 46.8%. Sample characteristics based on nutritional status are categorized into malnutrition, undernutrition, good nutrition, overnutrition, and obesity.

Table 1
 Sample Distribution According to Age, Class and Nutritional Status
 Supporting Data (History of Bleeding, Infectious Diseases and Taboos).

No.	Sample characteristics	n	%
1.	Age (Years)		
	10-15	30	48,4
	16-20	32	51,6
	Total	62	100,0
2.	Class		
	X	29	46,8
	XI	33	53,2
	Total	62	100,0
3.	Nutritional Status		
	Malnutrition	8	12,9
	Undernutrition	9	14,5
	Good Nutrition	41	66,2
	Overnutrition	2	3,2
	Obesity	2	3,2
Total	62	100,0	

Characteristics of the sample based on supporting data are history of bleeding, infectious diseases and taboos or food allergies. The distribution of samples based on menstrual history shows that 83.8% routinely and 16.2% do not routinely experience menstruation each month. Based on the menstrual period, 80.6% have a period of ≤ 7 days and >7 days as many as 19.4%. As many as 11.3% have and 88.7% have never experienced bleeding in the past month. There are 11.3% of samples who have food taboos or allergies and 88.7% do not.

Table 2

Distribution of Samples According to History of Bleeding, Infectious Diseases and Food Taboos Hemoglobin Levels Before and After Intervention

No.	Supporting Data	n	%
1.	History of bleeding		
	Routinely	52	83,8
	Not routinely	10	16,2
	Total	62	100,0
2.	The menstrual period		
	≤ 7 days	50	80,6
	>7 days	12	19,4
	Total	62	100,0
3.	Experienced bleeding		
	Yes	7	11,3
	Never	55	88,7
	Total	62	100,0
4.	Infectious diseases		
	Yes	1	1,6
	Never	61	98,4
	Total	62	100,0
5.	Taboos or food allergies		
	Yes	7	11,3
	Never	55	88,7
	Total	62	100,0

The results of the study explained that the Hb levels in the samples before the nutritional education intervention (Pretest) were 58 samples that had hemoglobin levels ≥ 12 g/dl with a percentage of 93.5%, the rest of which were four samples had hemoglobin levels < 12 g/dl with a percentage of 6.5%. Hemoglobin levels in the samples after the nutritional education intervention (Posttest) increased where 61 samples had hemoglobin levels ≥ 12 g/dl with a percentage of 98.4%, and the rest of which was one sample had hemoglobin levels < 12 g/dl with a percentage of 1.6%.

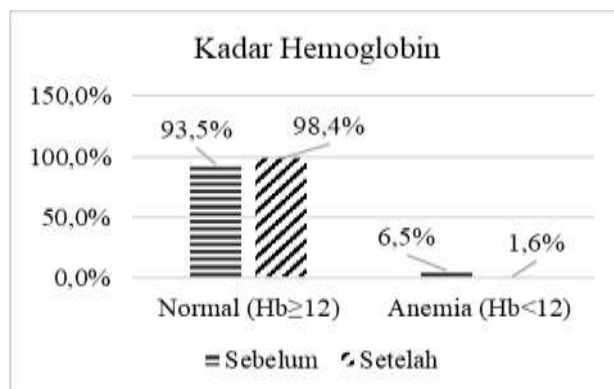


Figure 1.
 Hemoglobin Levels Before and After Intervention. Consumption of Iron Supplement Tablets Before and After Intervention

The results of the study showed that iron supplement consumption in samples before the nutritional education intervention (Pretest) showed 52 samples with good iron supplement consumption with a percentage of 83.9%, while the remaining ten samples had Less iron supplement consumption with a percentage of 16.1%. Iron supplement consumption in samples after the nutritional education intervention (Posttest) increased where there were 60 samples with good iron supplement consumption with a percentage of 96.8%, and the remaining two samples had Less iron supplement consumption with a percentage of 3.2%.

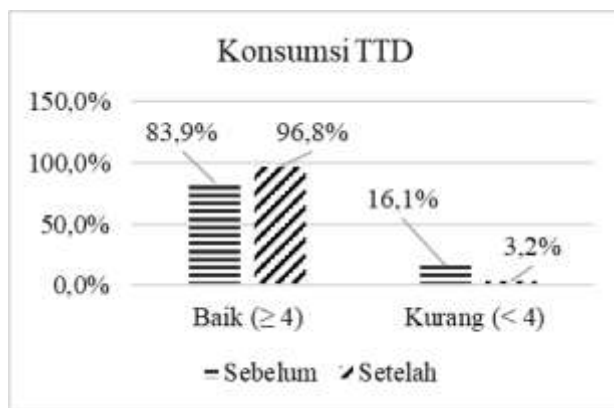


Figure 2. Consumption of Iron Tablets Before and After Intervention.

Knowledge Before and After Intervention

The results of the study showed that knowledge in the samples before the nutritional education intervention (Pretest) showed that the most were 41 samples who had sufficient knowledge with a percentage of 66.1%, while the least were two samples who had insufficient knowledge with a percentage of 3.2%. Knowledge in the samples after the nutritional education intervention (Posttest) increased where the most were 34 samples who had good knowledge with a percentage of 54.8%, and the rest, namely 28 samples, had sufficient knowledge with a percentage of 45.2%.



Figure 3. Knowledge Before and After Intervention

Data Analysis Results

Wilcoxon Test Results on the Hb level variable, a sig. value of 0.159 was obtained (sig. $> \alpha$; $\alpha=0.05$) which means that the Hypothesis is rejected, so there is no difference in Hb level results between before and after being given the nutrition education video. On the knowledge variable, a sig. value of 0.000 was obtained (sig. $< \alpha$; $\alpha=0.05$) which means that the Hypothesis is accepted, so there is a difference in knowledge results between before and after being given the nutrition education video.

Table 3
 Analysis Results of Hb Levels and Knowledge Before and After Intervention

Kategori	n	mean	p value
Hb Level			
Before	62	14,2	0,159
After		14,5	
Knowledge			
Before	62	71,2	0,000
After		77,9	

Discussion

Hemoglobin Levels

Based on the results of tests conducted on 62 samples before being given nutritional education intervention, it was found that four samples had anemia. There was an increase in the average Hb level of 0.3 from 14.2 to 14.5. However, after the Hb level data before and after the intervention was analyzed using the Wilcoxon statistical test, a sig. value of 0.159 (sig. > α ; α = 0.05) was obtained in this study indicating that there was no significant or meaningful difference in Hb levels between before and after being given the nutritional education video. This is likely because the Hb levels before and after the intervention decreased (Negative Ranks) by 26 samples, but the number of samples showing anemia decreased from before and after the intervention by three samples, so that there was still one sample that was anemic and the rest were still within normal limits, in addition to other factors such as a history of dietary restrictions, bleeding, and infectious diseases. This is similar to several studies, namely research conducted by (Sari et al., 2022) which stated that there was no statistical difference because a sig. value of 0.588 (sig.> 0.05) was obtained for changes in Hb levels after intervention, other previous studies showed that providing TTD and nutrition education reduced anemia rates in each intervention group, but did not differ significantly between treatment groups (Zaddana, 2019).

Knowledge

Based on the results of the questionnaire conducted on 62 samples before being given nutritional education intervention, it was found that two samples had insufficient knowledge. There was an increase in the average knowledge value of 6.7 from 71.2 to 77.9. After the knowledge score data before and after the intervention was analyzed using the Wilcoxon statistical test, a sig. value of 0.000 (sig. < α ; α = 0.05) was obtained in this study, indicating that there was a significant or meaningful difference in knowledge between before and after being given the nutritional education video. This is suspected to be the contribution of nutritional education intervention to differences in knowledge levels, the results of this study are also in line with research conducted by (Zulaekah et al., 2010) which showed a significant difference between initial and final nutritional knowledge with a sig. value of 0.000 (sig. <0.05). In the study (Zaddana, 2019) showed that respondents' knowledge increased after being given nutrition education, and in the study (Mayguspin et al., 2022) the results showed that there was an effect of nutrition education on knowledge and consumption of TTD as evidenced by a sig. value of 0.041 (sig. <0.05).

CONCLUSION

Based on the research results and discussions presented, it can be concluded that: before the provision of nutritional education videos, there were 6.5% of female students who were anemic and after the provision of nutritional education videos, 1.6% of female students were anemic with Hemoglobin levels <12g/dl. In terms of knowledge before the provision of nutritional education

videos, there were 30.6% of female students and after the provision of nutritional education videos, 54.8% of female students had good knowledge. And there was no difference in Hemoglobin levels before and after the provision of nutritional education videos to female students of SMAN 1 Singaraja. However, there was a difference in knowledge before and after the provision of nutritional education videos to female students of SMAN 1 Singaraja

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