



The Role of the Youth Counselors to Improve the Nutritional Status of Youth in Wet Areas (Experimental Study in Aluh-Aluh District, Banjar Regency)

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Abstract

AIM: Nutritional problems in adolescent girls are iron deficiency anemia, thin adolescents, and chronic lack of energy. Banjar district has a prevalence of anemia of 23.54%, the prevalence of thin and very thin adolescents is 9.78% and 2.90%, while the prevalence of chronic energy deficiency is 1.35%. One factor that influences health problems is knowledge. Increased knowledge can be provided through health education. One technique that can carry out health education in adolescents is to conduct counselor intervention.

OBJECTIVES: The aim of the study was to know the difference in knowledge, attitudes, hemoglobin (Hb) levels, upper arm circumference, and body mass index (BMI) between before education and after education.

METHODS: This study uses a quasi-experimental intervention as adolescent counselors who provide education about nutrition to young women at SMAN 1 Aluh-Aluh. The variables identified were Hb levels, upper arm circumference, and BMI before and after education by the counselor. Education was given in three meetings; each meeting identified the knowledge and attitudes of adolescents about nutrition. The number of samples is 53 people taken by incidental sampling.

RESULTS: Knowledge data showed a significant difference before education by the counselor and after the first education ($p = 0.000$), there was no significant difference after the first and second education ($p = 0.533$), there was a significant difference after the second and third education ($p = 0.000$). Attitude data showed that there was no significant difference between attitudes before education and after the first education ($p = 0.350$), there was no significant difference between the first and second education ($p = 0.991$), and there was a significant difference between the second and third education ($p = 0.000$). Hb level data showed that there was no significant difference before counselor education and after education ($p = 0.410$). Upper arm circumference data showed that there was a significant difference before and after counseling by the counselor ($p = 0.019$). BMI data showed that there was no significant difference before and after education by counselors ($p = 0.418$).

CONCLUSION: Adolescent counselors can improve knowledge and attitudes about nutrition and increase the size of the upper arm circumference of adolescents in wetland areas.

Edited by: Sasho Stoleski
Citation: Noor MS, Setiawan MI, Putri AO, Fakhriyah F, Lasari HHD. The Role of the Youth Counselors to Improve the Nutritional Status of Youth in Wet Areas (Experimental Study in Aluh-Aluh District, Banjar Regency). Open Access Maced J Med Sci. 2023 Jan 03; 11(E):132-135. https://doi.org/10.3889/oamjms.2023.8029
Keywords: Knowledge; Attitude; Hemoglobin level; Upper arm circumference; and IBM
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Received: 21-Nov-2021
Revised: 08-Dec-2021
Accepted: 19-Oct-2022
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Funding: This research did not receive any financial support
Competing Interests: The authors have declared that no competing interests exist
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Introduction

Adolescents are individuals with an age range of about 10–19 years who are part of the global population of 16%. Most adolescents live in low-middle-income countries. The development of adolescents into adults is largely determined by nutritional status. The most nutritional problems are in adolescent girls, one of which is iron deficiency anemia [1]. A young woman is said to be anemic if the hemoglobin (Hb) level is <12 g/dL [2]. Another nutritional problem that is often found in young women is thin adolescents. It is characterized by body mass index (BMI) [3]. According to Petrika *et al.* stated that chronic energy deficiency is also a nutritional problem in adolescent girls [4].

The data for underweight adolescents in Indonesia are 6.8%, while those who are very thin are 1.9%. The data on underweight and very thin adolescents in South Kalimantan are higher than the national data, namely, 8.4% and 2.4%, respectively. Banjar Regency is one of the districts where the number of underweight and very thin adolescents is higher than the provincial data, namely, 9.78% and 2.90% [5], [6].

The prevalence of anemia of all ages in Indonesia is 21.70% with a higher prevalence in women of 23.90%. The prevalence of anemia in rural areas is higher than in urban areas, which is 22.80% compared to 20.60%. The prevalence of iron deficiency anemia in adolescent girls in the first 1 year of menstruation is 27.50%. In addition to anemia, chronic energy

deficiency is also high in Indonesia. The prevalence rate of chronic energy deficiency in Indonesia is 20.8% in women of childbearing age [7]. The prevalence of anemia in adolescent girls in South Kalimantan is 21.69%, while Banjar Regency has a higher prevalence than the province, which is 23.54% [8].

One of the consequences of malnutrition is that it affects the immune system and makes it more susceptible to infectious diseases. In addition, productivity is also reduced due to frequent fatigue. Malnutrition also has an impact on cognitive performance so that it affects intellectual learning [9]. In addition, if young women are in a malnourished condition and continue to survive until their time of marriage, pregnancy, childbirth, and breastfeeding, it will have an impact on providing complications and risk for maternal morbidity and mortality.

One of the factors that influence health problems is knowledge. Lack of knowledge will lead to bad behavior. Increased knowledge can be provided through health education. Health education is provided by supporting health promotion media to improve adolescent understanding [10]. Health promotion is an intervention that is quite effective by providing changes in adolescent behavior [11].

One technique that can be used to conduct health education in adolescents is to conduct counselor intervention. Research Noor prove that counselors can improve the knowledge, attitudes, and environment of adolescents to make behavioral changes [12]. Research Noor *et al.* also stated that adolescent counselors can increase knowledge and attitudes toward chronic energy deficiency, although they have not been able to significantly increase the size of their upper arm circumference. Based on the previous research, this study creates the concept of adolescent counselors to provide education about nutrition and then monitors BMI, Hb levels, and upper arm circumference [13].

Banjar Regency became the research location because it is one of the districts with nutritional problems in adolescent girls. One of the sub-districts that have nutritional problems for adolescent girls in the district is Aluh-Aluh District which has characteristics of riverbanks and swamps. This demographic condition can affect the health behavior of the community. Until now, research on adolescent counselors for education and monitoring of the nutritional status of adolescent girls has not been widely carried out.

Methods

Research design

This research is a quasi-experimental study with the intervention given in the form of adolescent

counselors. Inclusion criteria were young women who had no chronic disease and bleeding history that was known from the anamnesis. The sampling technique used incidental sampling, obtained 53 young women as samples.

Adolescent counselors are six students of the Faculty of Medicine who have been trained to provide education and check the nutritional status of adolescent girls at SMAN 1 Aluh-Aluh 3 times. Adolescent counselors are trained on BMI, anemia, and chronic energy deficiency. Adolescent counselors were also trained on how to measure height, weight, upper arm circumference, and Hb levels. Counselors who have been trained will provide this information to young women as respondents using booklets and videos through Google Classroom, then assess the knowledge and attitudes in question at the end of each educational session. After all the education is given, the counselor will check the nutritional status.

Research procedure

Questionnaire filling

Young women will fill out knowledge and attitude questionnaires about nutrition before the counselor carries out their duties, then after intervention with the adolescent counselor after materials 1, 2, and 3.

BMI check

Adolescent girls were measured for their height with a microtome. Respondents stand barefoot and heels against the wall. The counselor reads the numbers on the microtome. Then, the teenager was weighed on a digital scale. Respondents stood up straight by removing heavy items in their pockets, the numbers listed were read by the counselor. BMI is calculated using the formula.

Hb level check

Blood is taken from the fingertips. The fingertips were treated with antiseptic and then pricked with a needle and placed on the hemoglobinometer stick. Make sure the hemoglobinometer is on and working properly. Hb levels will appear on the screen.

Data analysis

All data will be tabulated according to the variables studied, then homogeneity and normality tests are carried out. If the data are normally distributed and homogeneous, it will be tested with a paired t-test with a 95% confidence level to distinguish knowledge, attitudes, Hb levels, BMI, and upper arm circumference before and after education by adolescent counselors.

If it is not normally distributed, the Wilcoxon test will be carried out with a 95% confidence level.

Results and Discussion

This research was conducted on 53 young women at SMAN 1 Aluh-Aluh. The intervention carried out was a youth counselor who provided education about nutrition to young women using booklets and videos through Google Classroom and WhatsApp groups. The data identified are knowledge and attitudes before education by counselors and in time series after each education, up to 3 times the education is given. Descriptive data of knowledge and attitudes are as follows:

The data show that knowledge and attitudes tend to increase in value. The knowledge and attitude normality test showed that the data were not normally distributed, so the Wilcoxon difference test was carried out. The significance of the increase in knowledge and attitudes can be seen in the following different tests:

The data show that adolescents' knowledge of nutritional status increased significantly after the first education, then did not differ significantly in the second education, and was significantly different again at the end of the third session of education by adolescent counselors. This shows that the education provided by the counselor can increase the knowledge of young women about nutrition, but knowledge will increase shortly after giving education and after the repetition of education for a certain duration of time. Education repetitions that are too short do not significantly increase knowledge because it is assumed that teenagers are bored if the repetition of education is too close to previous education.

Attitude data showed a significant difference after 3 times of education. This shows that attitudes will increase if knowledge increases first. Knowledge is a basic component of the formation of behavior. Good knowledge will direct a person's attitude in a positive direction. This takes time so that the provision of indirect education can change attitudes. A positive attitude is a firm foundation for changing one's behavior. In this study, knowledge about good nutrition increases attitudes in a positive direction, so it is assumed that diet will also improve, and the hope is that health problems as nutritional status of adolescent girls will improve.

The next variables identified were Hb levels, upper arm circumference, and BMI. The data can be seen in the following table:

The Hb level in the table above increases descriptively, but when the different tests were carried out, it was still not significantly different before and after

education by adolescent counselors. This shows that the education provided has increased knowledge and attitudes, which affect good eating behavior so that Hb levels increase descriptively. Different test analyses did not show a significant increase.

Adolescence is a period of rapid growth marked by physical and mental transitions. An unhealthy diet and low socioeconomic background make them vulnerable to various nutritional morbidities. One of the nutritional problems in adolescents is anemia, where anemia is a priority nutritional problem in developing countries [14].

The main risk factors are a low iron diet, low iron absorption due to phytate and phenolic compounds in the diet, and a life span characterized by high nutrient requirements, such as pregnancy or growth spurt. Other risk factors, such as insufficient intake of folate or Vitamin A, inflammatory processes, and infections (especially malaria and parasitic infections from the Ancylostomidae family), can also cause anemia. Hereditary anemia, such as hemoglobinopathies and other genetic deficiencies related to enzyme production, and types of anemia resulting from inherited or gained immunologic disorders, also contribute to the prevalence of anemia in many populations.

Other factors that influence the occurrence of iron deficiency anemia include parasitic infection and another nutritional status that may have an effect. In addition, the risk of infection such as helminthiasis and absorption disorders is also possible but not identified in this study. Thus, this can be one of the reasons why Hb levels increased descriptively but did not differ significantly.

Another nutritional status identified was upper arm circumference. Upper arm circumference data in Table 3 show an increase in upper arm circumference before and after education. The descriptive data are also supported by a different test, namely, there is a significant difference in the upper arm circumference of female adolescents before and after education by adolescent counselors.

Table 1: Descriptive data of knowledge and attitude of young women

No.	Variable	Pre-test	Post-test 1	Post-test 2	Post-test 3
1.	Knowledge	6.90	10.50	10.60	8.82
2.	Attitude	50.60	52.02	52.05	53.82

Table 2: Test the difference in knowledge and attitudes in each educational session

No.	Variable	Groups conducted different tests	p-value
1.	Knowledge	Pre-test and post-test 1	0.000
		Post-test 1 and post-test 2	0.533
		Post-test 2 and post-test 3	0.000
2.	Attitude	Pre-test and post-test 1	0.350
		Post-test 1 and post-test 2	0.991
		Post-test 2 and post-test 3	0.000

Table 3: Data on Hb levels, upper arm circumference, and BMI of adolescent girls

No.	Variable	Before education	After education	Normality test	Wilcoxon test
1.	Hb level	13.43 ± 2.70	14.01 ± 2.78	<0.05	0.410
2.	Upper arm circumference	23.54 ± 2.52	23.64 ± 2.79	<0.05	0.019
3.	BMI	20.92 ± 3.87	20.36 ± 3.59	<0.05	0.418

Hb: Hemoglobin, BMI: Body mass index.

Increased knowledge and attitudes after education (Table 1) trigger good eating behavior so that calorie and protein needs are fulfilled. This is supported by the dietary data in the appendix. This upper arm circumference is an indicator of a nutritional disorder known as chronic energy deficiency.

Chronic energy deficiency is a state of malnutrition, where there is a lack of food intake for a long time, a matter of years which results in health problems. If the size of the upper arm circumference is <23.5 cm, it means that the woman is at risk of chronic energy deficiency, and is expected to give birth to a low birth weight baby.

The results of this study in Table 2 indicate that the average upper arm circumference is more than 23.5 cm, so it is assumed that the education provided can increase knowledge and attitudes about nutrition, then change diet to improve nutritional status. With good nutritional status, this will reduce the risk of complications when the young woman is pregnant and gives birth.

Another nutritional status identified was BMI. BMI difference test analysis showed no significant difference before and after education by counselors. This can be caused by the components of BMI are weight and height. Bodyweight is one of the nutritional indicators that describe short-term nutritional status because it is easy to change. The respondent's weight may easily change along with changes in the respondent's diet.

Conclusion

This study concludes that the role of adolescent counselors can increase knowledge, attitudes, and upper arm circumference in adolescents in wetland areas (Experimental Study in Aluh-Aluh District, Banjar Regency). Suggestions based on the results of this study can be given to schools and health centers. The school can form a youth counselor who is trained by the Puskesmas to provide education about nutrition. The counselor is tasked with providing education and assisting the Puskesmas program to screen the nutritional status of adolescents in their schools.

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