Nutrition Education Regarding Physical Activity to Prevent Obesity Among Adolescents at State Islamic Senior High School 4 Banjar

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ABSTRACT

Lack of physical activity is one of the behaviors associated with non-communicable diseases. Physical activity levels decreased among individuals aged ten and above in South Kalimantan. The proportion of this problem also increased sharply in Banjar Regency. Discussions with the school showed that students at the school lacked physical activity. Nutrition education regarding physical activity has never been conducted at this school. This activity aimed to increase adolescents' knowledge about the importance of physical activity in preventing obesity. It was conducted at Islamic Senior High School 4 Banjar, involving 67 members of the Youth Red Cross. Nutrition education was performed through lectures using PowerPoint slides. Participants' knowledge was assessed using pretest and posttest questionnaires. There was a significant knowledge difference ($p<0.05$) before and after the education. A total of 61 people had a higher score than before the education. A total of 52.2% of participants had poor knowledge, and 47.8% had moderate knowledge before education. After education, 58.2% had high knowledge, 38.8% had moderate knowledge, and 3% had low knowledge. It indicated that nutrition education is effective in increasing participants' knowledge.

Keywords: Vaginal discharge, knowledge, behavior, motivation, reproductive health

INTRODUCTION

Lack of physical activity is one of the behaviors associated with non-communicable diseases (NCDs). The percentage of individuals in South Kalimantan aged above ten who showed a decrease in physical activity levels has shown an upward trend, from 19.8% in 2013 to 33.67% in 2018. The proportion of this problem in Banjar Regency also increased sharply, from 14.4% in 2013 to 39.4% in 2018. The proportion of the population aged ≥10 years based on sedentary activities (≥6 hours/day) in Banjar Regency in 2013 was the second highest after Tanah Laut (1,2). Adolescents are advised to perform moderate to vigorous physical activity for 60 minutes (3), but 81% of adolescents worldwide do not do physical activity according to this recommendation (4). Adolescents spend an average of nine hours sitting. Approximately 75% of high school and junior high school students' study time in class is dominated by sedentary activities, especially sitting (5). Although there are sports lessons, only 36% of the activities are classified as moderate and heavy physical activity levels (6). Research on adolescents at a junior high school in Banjarbaru showed that only 12.6% of 119 people had heavy activity levels, while the rest were included in the moderate (65%) and light (39%) categories (7). Another study in Banjarbaru on pencak silat athletes, where the respondents were mostly teenagers, showed that 83.3% (25 people) of 30 people had light and very light activity levels (8). These results show that the adolescent group is vulnerable to nutritional problems, especially those related to sedentary activities.

One of the groups that is vulnerable to nutritional problems is adolescents because rapid growth and development occur during this period (9). Adolescents with light physical activity are almost five times more likely to be obese than adolescents with moderate physical activity (10). Physical activity is significantly related to the incidence of overweight in adolescents (11). Obese adolescents tend to remain obese as adults, which has an impact on their health. Therefore, education about physical activity for adolescents is important.

Nutrition education on physical activity using lecture and practice methods has been previously conducted in community service activities at SMAN 80 Jakarta. The material presented in the activity was the definition and benefits of physical activity and examples of simple movements that can be performed daily. Detailed explanations through lectures accompanied by demonstrations of movements are effective methods to increase understanding of physical activity because these methods increase students' enthusiasm and encourage students to be active (9). The combination of nutrition counseling and stretching exercise programs has been shown to be effective in improving nutritional status (12). Nutrition education with a similar method, namely lectures accompanied by providing examples of sports movements using the Zoom application for adolescents in Kampung Samakan, has improved participants' knowledge regarding the importance of physical activity for adolescents. The percentage of adolescents who understood the material provided increased, from 22% before counseling to 100% after counseling (13).

Adolescents were chosen as respondents in this community service activity because this age period is at high risk of obesity. Besides that, the incidence of obesity in adolescence is a good predictor of public health problems and an increased risk of non-communicable diseases and death in adulthood. State Islamic Senior High School 4 Banjar was chosen as the location for the community service because it is an A-accredited school; thereby, the success of counseling at the school can be an example for other educational institutions. This school also implements a full-day school system, which runs from morning to evening. This condition can be one of the causes of students having low levels of physical activity and physical fitness because most of the teaching and learning time is spent sitting (14). Students only do sports during sports lessons. Their activities at home are dominated by lying down, playing with cellphones, using computers, and other sedentary activities. Nutrition education regarding physical activity has also never been conducted at this school.

METHOD

This community service activity was carried out in the school hall of State Islamic Senior High School 4 Banjar on January 8, 2024, for one and a half hours. The participants were 67 Junior Red Cross (JRC) members in the 10^{th} and 11^{th} grades. They were selected by the school according to the advice of the officers of the school's health clinic. JRC members in the 12^{th} grade were not included in this activity so that they could focus on preparing for the final exam. After receiving counseling, JRC members were expected to disseminate the information they had obtained to their peers. The community service was conducted using the lecture method using PowerPoint slides accompanied by demonstrations/practices.

This activity was carried out through the following stages: 1) planning and preparation, 2) implementation, and 3) data processing and analysis, which are detailed as follows:

1. Planning and preparation
   a. Manage permits to hold community service activities
   b. Conduct location surveys and situation analysis at State Islamic Senior High School 4 Banjar
   c. Align perceptions between the community service team and the partner (the school)
   d. Coordinate with the vice principal for student affairs and officers of the school's health clinic regarding the schedule and location of activities
   e. The community service team prepared the media and instruments, i.e., PowerPoint slides and pretest and posttest questionnaires
2. Implementation

   This community service activity was carried out with the help of 4 students, with the following details:

   a. Participant registration

      Before the activity began, participants filled out the attendance list prepared in advance by the school.

   b. Greeting from the principal of State Islamic Senior High School 4 Banjar

This activity was attended by the principal, the head of the administration department, and two people in charge of the School Health Clinic. After the community service team introduced themselves, the school principal gave a greeting and opened the activity.

c. Prayer

One university student, a part of the community service team, led a prayer so the activity could run smoothly and the material would be useful for the participants.

d. Taking a group photo

Before the activity, the community service team took a group photo with the school principal and the participants.

Figure 1. Group photo of the community service team with the school principal and students of State Islamic Senior High School 4 Banjar

e. Pretest

The pretest assessed participants' knowledge of physical activity and obesity before the nutrition education. Three university students from the community service team distributed the pretest questionnaire, and participants were given five minutes to answer ten multiple-choice questions.

Figure 2. Participants completed the pretest questionnaire

f. Giving the materials

The materials provided consisted of lack of physical activity (prevalence, triggers, and ways to overcome the laziness to move), physical activity (definition and benefits of physical activity and sports, principles in sports, strategies for effective physical activity, preparation before sports, types of physical activity intensity, and myths or facts about physical activity), and obesity (triggers and the concept of energy balance).

Figure 3. Explanation of material about physical activity to prevent obesity in adolescents

The materials were explained not only by lecture method but also by demonstration. One participant was asked to demonstrate physical activity with light intensity (walking), while another participant was asked to perform physical activity with high intensity (squat jump). This demonstration was performed to show participants how to determine the intensity of physical activity.

Figure 4. Two students demonstrated physical activity with two different intensities

g. Discussion with participants

The participants were very active in the discussion. Many participants asked questions related to the material provided, including the relationship between obesity and genetics, the right time span to consume food before exercising, and other questions related to physical activity.

Figure 5. Discussion related to the educational material provided

h. Posttest

Three university students gave participants the posttest questionnaire, and participants were given ten minutes to answer the same questions as the pretest questionnaire. This activity aimed to assess the participants' knowledge after the nutrition education.

Figure 6. Participants answered the posttest questionnaire

3. Processing and analysis of pretest and posttest data

This stage was carried out after the activity was completed. All university students involved in this activity processed the results of the participants' questionnaire answers, and the lecturers analyzed the data. A score of 1 was given for a correct answer, while zero was given for an incorrect answer.

RESULT AND DISCUSSION

Table 1 shows the participants' characteristics in this community service activity. Most of the participants (50.7%) were 16 years old, while the rest were 15 years old (37.3%) and 17 years old (11.9%). Most students who participated in this activity were female (77.6%). The participants were mostly Banjarese (92.5%), while the rest were Javanese (4.5%) and mixed ethnicity (3%). Most students (59.7%) were in the 10^{th} grade, while the rest were 11^{th}-grade students

Table 1. Participants' characteristics

Participants' characteristics	n	%
Age		
15	25	37.3
16	34	50.7
17	8	11.9
Sex		
Boys	15	22.4
Girls	52	77.6
Ethnicity		
Banjarese	62	92.5
Dayak-Sundanese	1	1.5
Javanese	3	4.5
Sundanese-Banjarese	1	1.5
Grade		
10	40	59.7
11	27	40.3

The success of nutrition education was evaluated by comparing pretest and posttest scores. The normality test results showed that the pretest and posttest data were not normally

distributed; therefore, the Wilcoxon test was performed to analyze whether there was a difference in participants' knowledge scores before and after education.

Table 2. Differences in Knowledge Score Before and After the Nutrition Education

Ranks

		N	Mean Rank	Sum of Ranks
Posttest score – pretest score	Negative Ranks	3[a]	6.50	19.50
	Positive Ranks	61[b]	33.78	2060.50
	Ties	3[c]		
	Total	67		

a = Posttest score < pretest score, b = posttest score > pretest score, c = posttest score = pretest score

Table 2 shows a comparison of participants' knowledge before and after education. A total of 61 people had a better understanding than before the education, three people had lower knowledge after education than before education, and three people with the same knowledge between before and after education. The Wilcoxon test results showed significant knowledge differences before and after nutrition education (p=0.000). The knowledge of most participants improved because the PowerPoint slides were accompanied by interesting pictures, not just words. The material was explained using examples of physical activities commonly performed daily; thereby, participants could easily understand it. Using PowerPoint media in similar nutrition education regarding physical activity in Bandar Lampung also changed the students' understanding of the material given in a better direction (15).

The explanation of the material in this community service activity was also accompanied by a demonstration to show the differences in the types of physical activity intensity. Providing education accompanied by practice makes participants understand faster. This result was in line with the previous activity in North Jakarta, where low and medium-intensity movement practices made students more enthusiastic in responding to the information presented. Practices carried out together make students feel happy (9). The increase in understanding of participants after counseling in this activity was similar to the results of previous community service activities for adolescents in Sukun District, Malang, which also used the lecture method (16). Improvements in the level of knowledge were also found in nutrition education regarding healthy lifestyles accompanied by providing examples of physical exercises with the principle of good, correct, and measurable in Bojong Koneng Village. The percentage of people who understood the material given improved after counseling, from 45% before being given education to 100% after education (17).

The advantage of this community service activity lies in the method, which combines lectures with practice/demonstration. However, this activity only used supporting media in the form of PowerPoint slides; thereby, the participants needed to record the information given in the book themselves so that they would not forget it. Further community service can be equipped with other supporting media, such as leaflets or pocketbooks, which can be reread and lent to their peers to help disseminate information.

CONCLUSION

Nutrition education on physical activity to prevent obesity in adolescents can be well understood by the participants. This result can be seen from the knowledge scores, which were significantly different before and after the nutrition education. The knowledge of most participants (61 people) increased after being given the material. Further nutrition education can be given to teachers and staff at the school to increase their knowledge regarding physical activity; thereby, the school can motivate students to increase the physical activity they perform at school and at home.

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