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Nutritional Intake Education by Peers, Nutritionists, and Combinations to Changes in Nutritional Status in Adolescent Girl in School

Irine Christiany[1]*, Adin Mu'afiro[1], Kiaonarni Ongko Waluyo[1], Suparji Suparji[2]

[1]Department of Nursing, Politeknik Kesehatan Kementerian Kesehatan, Surabaya, Indonesia; [2]Department of Midwifery, Politeknik Kesehatan Kementerian Kesehatan, Surabaya, Indonesia

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***Correspondence:** Irine Christiany, Department of Nursing, Politeknik Kesehatan Kementerian Kesehatan Surabaya, Indonesia. E-mail: irinesby64@gmail.com
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Abstract

BACKGROUND: Adolescents are very concerned about their physical form and often form their own body image. Low nutritional knowledge will have an impact on attitudes and behaviors related to nutritional status in adolescents. Nutrition education can also help adolescents acquire adolescent knowledge. Peers are believed to be very influential as educators, so peer nutrition education in adolescents will be felt positively and have a very significant impact on nutritional status.

AIM: This study was to determine the effect of peer nutrition education, nutrition, and a combination on the nutritional status of adolescents.

METHODS AND MATERIALS: This study used a quasi-experimental design using a pretest-posttest control group design. The research location was at SMA 19 Surabaya City in March–October 2019. The sample consisted of 120 students with an age range of 15–18 years, selected by random sampling. Nutrition education is provided through lectures and discussions by peers, nutritionists, or a combination of both during 1 meeting a week. Statistical analysis used: Paired t-test.

RESULTS: The results showed that nutrition education delivered by peers had p = 0.033 and nutritional education delivered by nutritionists had a value of 0.003, but there was no significant effect on adolescent nutritional status when the nutritional education provided was combined with a value of 0.317. Nutrition education provided by peers is very useful for improving the nutritional status of adolescents.

CONCLUSION: Nutrition education provided by peers is proven to be able to have a positive impact on adolescents because peers are the axis of youth association so that what is shared and learned by peers will be more easily accepted.

Introduction

Adolescence is a period in the life of every individual, where they are very concerned about their physical appearance. The rapid physical growth and development, both in height and weight, that occurs during adolescence is accompanied by the development of reproductive potential. This is why teenagers pay so much attention to their physical shape and often build their own body image. When compared to young men, young women are more likely to suffer from this disease. According to Melo, because of psychological, physiological, and social changes, the adolescent phase is sensitive to dietary disorders. Peer pressure is another element that leads to a distorted perception of body form in adolescent, which has an impact on eating habit aberrations [1]. Nomate *et al.* research showed that 33.2% of respondents revealed that they often received criticism about their weight from their peers [2]. Weight loss was also mostly done by respondents who received influence from peers, which was 49.1% compared to respondents who did not get influence from peers. At this age, there is a double nutritional problem: Some of the teenagers are malnourished, but some of them are obese. Adolescents who experience a body mass index (BMI) < 18.5 in Indonesia are 8.7%, while those who are more than the normal limit are 16%. The tendency of this nutritional problem is different in each province. In East Java Province, adolescents who have a BMI greater than the normal limit are 19.3%. Almost one-fifth of adolescents in East Java Province have a BMI that is higher than normal or is overweight and obese [2]. Fulfillment of nutrition during adolescence is important because adolescents are the future of the nation in the creation of a better future generation [3].

In addition, the nutritional status of adolescents has a positive relationship with learning achievement [4]. Dietary behavior is an attempt by young women to reduce food intake to get a thin and slim body. Adolescence is a vulnerable condition in the process of development and growth so that it can cause several health problems [4]. Anemia is a health problem that is often experienced by young women. The incidence of

anemia in Indonesia is still quite high [3]. According to the WHO, if the prevalence of anemia is in the range of 20–39.9%, it can be said to be a public health problem in the moderate category [5].

Iron has a function in the formation of hemoglobin, minerals, and enzymes. Iron deficiency in adolescents can cause stunted physical growth, especially for adolescents who attend school. Anemia causes low concentration of thinking, learning disorders occur, and learning achievement decreases [6]. The results showed that the cause of anemia in adolescents was due to irregular eating patterns, not eating protein foods, not liking vegetables, and eating fast food and junk food [7]. In reality, teenagers tend to like junk food and fast food, consuming certain foods so that their bodies do not get a varied nutritional intake. This is what triggers a decrease in red blood cell production, making it easy for anemia to occur [8].

Lack of iron intake in adolescents can be caused by a lack of knowledge of adolescents about food sources of iron and the role of iron in adolescents. Low knowledge of nutrients will have an impact on attitudes and behavior related to iron nutrition in adolescents. Nutrition education can also help youth gain the knowledge and skills; they need to make healthy food choices and develop healthy eating patterns for life. Peers are believed to be very influential in the lives of adolescents because peer groups provide a source of independence, identity, recognition, and group membership [9] so that the peer educator approach is expected to convey iron nutrition information and change attitudes and behaviors of their peers to become healthier [10]. Schools are ideal places for nutrition education as they reach a large proportion of young people. In accordance with Beydoun and Wang's statement, nutrition education for adolescents will be felt positively and have a very significant impact on nutritional behavior so that nutrition education conducted by peers is important [11].

Methods

The type of research used is a quasi-experimental design using a pretest-posttest control group design. The population of this study were all students of the 19th senior high school in Surabaya with criteria of age 15–18 years and willing to be participants. Samples will be taken randomly and divided into three intervention groups (peer group, nutritionist group, and combination group) and one control group. Each group will consist of 30 participants, so the total number of participants in this study was 120.

The research instruments are: (1) Education is obtained using a test questionnaire to determine the level of knowledge of the participants, (2) guide book based on literature and FGD with experts, (3) food recall sheet and FFQ observation sheet 1×24 h, and (4) nutritional status assessment table based on BMI/U.

Initial data collection will begin by dividing the groups into four groups, namely, the peer group, nutritionist group, combination group, and control group, and each group has 30 participants. All groups will then perform a pretest, such as answering the questionnaire and measuring BMI. After all groups have taken the pretest, the peer group, nutritionist group, and combination group will receive treatment in the form of a lecture session followed by a discussion. In the peer group, a selected student will be the resource person. This selected student was previously provided with nutrition knowledge by nutritionists. In the nutritionist group, a nutritionist will be the resource person. In the combination group, the previously selected student and the nutritionist will alternately become resource people. Meanwhile, the control group did not receive any treatment. After all groups received treatment, it was time for all groups to do the posttest by answering the questionnaire. Statistical analysis used: This study will use the paired t-test

Results

The results of the study are presented as follows:

Based on Table 1, it can be seen that during the pre-test, as many as 79 students were in the normal category. Meanwhile, in the post-test, 69 students were in the normal category.

Table 1: Frequency distribution of nutritional status treatment groups' pre-test and post-test

Education	Before			After		
	Thin	Normal	Fat	Thin	Normal	Fat
Peer	7	19	4	14	13	3
Nutritionist	4	21	5	11	16	3
Control	4	23	3	5	21	4
Combination	12	16	2	9	19	2
Total	27	79	14	39	69	12
	120			120		

Based on Table 2, the calculation results show a value of 0.016 ($p < 0.05$) which means that there is a significant difference in adolescent nutritional status between before and after education. As for nutritional intake, it shows that there is no significant difference between before and after education.

Table 2: The Wilcoxon signed-rank test, which was used to examine differences in nutritional status and nutritional intake before and after education

Variable	p value
Nutritional status	0.016
Nutritional intake	0.088

Based on Table 3, the calculation results show a value of 0.033 ($p < 0.05$) in the peer group and a

Table 3: The Wilcoxon signed-rank test, which was used to examine the effect of nutritional status before and after education

Group	p value
Peers	0.033
Nutritionist	0.003
Control	100
Combination	0.317

value of 0.003 ($p < 0.05$) in the nutritionist group. This concludes that nutritional status experienced significant differences in the peer group and nutritionist before and after education. Furthermore, there was no significant effect in the control and combination groups.

In Table 4, it is known that the value is 0.039 ($p < 0.05$) which means that the treatment group is iron intake education. At the time of the posttest, the nutritional status values between groups had differences. The conclusion of these results, the combination education group has a different nutritional status between each group, which is then followed by a group of nutritionists and peer groups.

Table 4: Differences in nutritional status of each group after education

Group	N	Mean rank	p
Peers	30	50.53	0.039
Nutritionist	30	55.58	
Control	30	63.37	
Combination	30	72.52	

Discussion

Nutrition education can significantly improve nutritional status [12]. This begins with increasing nutritional knowledge so that adolescents can choose healthy foods that will improve their nutritional status. One way to increase adolescent knowledge is by providing education or counseling about balanced nutrition. Several studies have concluded that counseling is effective in increasing adolescent knowledge about balanced nutrition [13], [14], [15].

In the beginning, nutrition education was able to improve nutritional status. The speaker was also one of the factors that could affect the success of nutrition education, one of which was peers. Based on the results above, it can be explained that the education that has the most influence on changes in nutritional status is that conducted by peers and nutritionists. Comprehensive nutrition education also empowers youth's knowledge and skills in making healthy food and beverage choices.

Education conducted by peers is considered the most effective in changing nutritional status. Knowledge can form a supportive attitude and will affect the motivation of adolescents to behave in a healthy manner. Knowledge can be increased by a group learning process with a peer group [16]. This peer counselor has great potential because of the tendency for adolescents to choose their peers as a place for discussion and information reference. One of the efforts made through peer counselors is to share nutritional knowledge, which is an expression of a state of balance between consumption and absorption of nutrients and the use of these nutrients [17].

The peer education method is effective in promoting healthy behavior in groups because adolescents are more receptive to behavioral examples from their peers. This is in line with research conducted by Astika and Permatasari who showed that peer groups are effective in giving a large influence to the group in knowledge of balanced nutrition [18]. According to Story *et al.*, nutrition education through peers has a higher level of acceptance [9]. This is because peers become the main focus in adolescents, so peer education is like having "peer pressure" in a positive and constructive way. Research by Dargie *et al.* states that well-designed peer education can have an impact on increasing food intake for each individual [19].

In addition to peer education, nutritionist education also helps improve the nutritional status of adolescents. In the nutritionist education group, the students received knowledge about iron intake from experts. This is also in line with research conducted by Pakhri *et al.*, which shows that education carried out provides understanding for students so that they experience changes and increase knowledge in individuals as well as in groups [8]. Students understand the portion of food that teenagers need according to the RDA, as well as proper eating patterns that affect the growth of teenagers.

Research conducted by Raikar *et al.*, also revealed that nutrition education provided by experts using flipchart media can help increase nutritional knowledge. With nutrition education methods provided by experts, teenagers can understand and choose healthy foods for their health now and in the long term [20].

In this study, it was found that the combination method also contributed to the increase in nutritional status. The combination method has been used several times in nutrition education. The study by Rodríguez evaluated previous research that used a combination method with internet media. A method brings together peers and nutritionists to discuss nutrition. It was found that the research using the combination method did not have a significant effect on nutritional knowledge. However, this can still be used as a method of providing nutrition education while still considering the duration of a program and session [21].

The findings of this study confirm that small informal nutrition education sessions can play a role in increasing youth knowledge, which, in turn, will help the

health prevent malnutritional deficiencies and disorders. Nutritional education provided by peers is proven to be able to have a positive impact on adolescents because peers are the axis of youth association so that what is shared and learned by peers will be more easily accepted. This study also gives hope that such sessions on a larger scale involving several small groups can help increase basic knowledge related to nutrition in large groups of adolescents.

Conclusion

Nutritional education provided by peers is proven to be able to have a positive impact on adolescents because peers are the axis of youth association so that what is shared and learned by peers will be more easily accepted.

Ethical Considerations

Ethical issues (including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Data Availability

Data and any supplementary material related to this article can be obtained from the corresponding author on request.

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