Jurnal Action - Reri Noor Amelia

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The Effectiveness of E-Booklet and Lectures to Increase Overweight Adolescents' Nutritional Knowledge

Efektivitas E-Booklet dan Ceramah <mark>untuk M</mark>eningkatkan Pengetahuan Gizi Remaja Overweight

Abstract

Overweight adolescents' low knowledge of balanced nutrition is a problem that needs attention. If such a problem is left unchecked, overweight adolescents have a higher risk of suffering from various health problems. Efforts are needed to increase overweight adolescents' nutrition knowledge, including through the provision of nutrition education using educational media. The purpose of this study was to analyze differences in knowledge after being given nutrition education using e-booklets and lectures. This study was an experimental research with a quasi-experimental design with pre-test - post-test control group. The sample in this study was selected by purposive sampling technique, namely 64 overweight students divided into two groups, namely nutrition education with e-booklets accompanied by lectures and nutrition education with lectures only. The intervention was carried out 4 times in one month and each meeting took 55 minutes. Based on the result of paired t-test, there was a significant difference in nutrition knowledge (p=0.000) after being given nutrition education using e-booklets and lectures. It can be concluded that the provision of nutrition education using e-booklet media combined with lectures can increase overweight adolescents' knowledge of balanced nutrition.

Keywords: adolescent, e-booklet, lecture, nutritional knowledge

Abstrak

Pengetahuan terkait gizi seimbang yang masih rendah bagi remaja overweight merupakan resalah yang perlu mendapat perhatian. Iska dibiarkan remaja yang soverweight memiliki risiko lebih tinggi untuk menderita berbagai masalah kesehatan Perlu upaya untuk meningkatkan pengetahuan gizi remaja overweight, salah sacunya dengan memberikan edukasi gizi dengan bantuan media edukasi. Tujuan penelitian ini adalah mengaralisis perbedaan pengetahuan sesudah diberikan edukasi gizi dengan media e-booklet dan ceramah. Penelitian sini merupakan penelitian eksperimen dengan desain quasi experiment with pre test – post test control group. Sampel dalam penelitian ini dipilih dengan Teknik purposive sampling, yakni siswa overweight sebanyak 64 orang yang selanjutnya dibagi dalam dua kelompok, yaitu edukasi gizi dengan e-booklet disertai ceramah dan edukasi gizi dengan ceramah saja. Intervensi berupa edukasi gizi dilakukan sebanyak 4 kali pertemuan dalam waktu satu bulan dan setiap pertemuan menghabiskan waktu selama 55 menit. Berdasarkan hasil uji statistik sample paired T Test, terdapat perbedaan pengetahuan gizi yang signifikan (p=0.000) sesudah diberikan edukasi gizi dengan media e-booklet dan ceramah. Kesimpulan dari penelitian ini adalah pemberian edukasi gizi dengan media e-booklet dan ceramah. Kesimpulan dari penelitian ini adalah pemberian edukasi gizi dengan media e-booklet yang dikombinasikan dengan ceramah dapat meningkatkan pengetahuan tentang gizi seimbang remaja overweight.

Kata Kunci: ceramah, e-booklet, remaja, pengetahuan gizi

Introduction

Adolescence is defined as a transitional period from childhood to adulthood included in a vulnerable group. (Darmawati & Arumiyati, 2017). In fact, most people with nutritional problems consider themselves healthy(WHO, 2018). One of nutritional problems is being overweight. Overweight in adolescents under 18 years is indicated by a z-score (BMI for Age) > 1 SD - 2 SD, which is a condition of excessive accumulation of body fat. The global prevalence rate of overweight among adolescents has increased equally among boys and girls, namely in 2016, 19% of boys and 18% of girls were overweight (WHO, 2018). The prevalence of overweight adolescents in Indonesia in 2018 with an age range of 16-18 years was 9.5%, while the prevalence of overweight adoslescents in South Kalimantan was 8.9% (Kemenkes RI, 2018). Banjarmasin has a high overweight prevalence of 12.3% (LPB, 2019). Data from Dinas Kesehatan Kota Banjarmasin (2021) explains that of all sub-districts in Banjarmasin, West Banjarmasin is the sub-district with the highest percentage of overweight adolescents at 76%.

The cause of overweight adolescents is imbalanced nutrient intake. Nowadays, adolescents consume energy-dense foods, consisting mostly of carbohydrates and fats. High energy intake can cause overweight (Narciso et al., 2019). Most adolescents consume food based on excessive food preferences that can lead to unmet or excessive nutritional needs by the body (Moehji, 2017). Other factors causing unmet or excessive nutritional needs include lack of food availability, poverty, bad eating habits and low knowledge about the importance of nutrients for health causing adolescents to accept any available information without filter (Harjatmo et al., 2017). As a result, adolescents often receive a lot of inaccurate information. Therefore, it is necessary to provide nutrition education to increase adolescents' nutrition knowledge (Khomsan, 2022).

The provision of nutrition education can increase adolescents' nutrition knowledge (Hamulka et al., 2018). The provision of nutrition education to adolescents is expected to be one of the efforts to overcome the overweight problem because the better the nutrition knowledge of adolescents, the greater the accuracy in making decisions to choose foods containing nutritional

elements according to their needs and a balanced menu (Pratiwi & Puspitasari, 2017). The provision of nutrition education can be carried out by several methods and media. Nutrition education using media can facilitate educators to explain to the audiences in order to understand the material presented. A study revealed that the lecture method of nutrition education using booklet media was more effective in increasing adolescents' nutrition knowledge than the lecture method without the media. After receiving nutrition education using lectures and booklets, adolescent girls' knowledge increased from 73.96% to 78.89% (Safitri & Fitranti, 2016).

The provision of nutrition education using attractive media can facilitate adolescents to understand the materials and overcome boredom. In this study, nutrition education was provided using lectures and e-booklets. The method of oral presentation delivery with slides to present information is called a lecture. Lectures have the advantage of reaching a large number of subjects and presenting more detailed information (Bertalina, 2015).

Along with advances in technology, information and communication, the provision of nutrition education has also developed using a variety of modern media. The selection of media and the proper method of delivering education significantly affect knowledge and behavior (Saykili, 2018). Smartphone usage is common among adolescents (Af, 2016). Several developed media, including booklets, which were in printed form are available in a digital form called ebooklets and can be accessed via smartphones (Eka, 2021). E-booklet preparation was adapted to the needs and conditions of adolescents and was combined with images to attract the attention of adolescents and avoid the boredom of adolescents while reading the materials. This was the reason for choosing e-booklets as the educational medium. E-booklet entitled 'Balanced Nutrition for Adolescents" used as a medium for nutrition education is related to the 4 pillars of balanced nutrition, namely consuming a variety of foods, adopting a clean lifestyle, having physical activity and monitoring body weight.

Based on the background, the researcher was interested to find out the effect of nutrition education using lectures combined with ebooklets on the increase in overweight adolescents' nutrition knowledge. The study was conducted at SMA Negeri 4 and SMA Negeri 7

Banjarmasin because based on secondary data from Dinas Kesehatan Banjarmasin (2021), the two schools are located in sub-districts with the highest prevalence of overweight adolescents at 76%.

Methods

The design of this study was quasiexperimental research using a non-equivalent
control group design to analyze the effect of
nutrition education on the two groups, namely
the group given nutrition education using
lectures and the group given nutrition education
using e-booklets and lectures. The population in
this study were students aged 15-17 years in two
senior high schools (SMA Negeri 4 and SMA
Negeri 7) in West Banjarmasin District,
conducted in September of 2022. The number of
samples was determined by calculating using the
following formula (Murti, 2013):

following formula (Murti, 2013):
$$n = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 \cdot (S_1^2 + S_2^2)}{A^2}$$

n = Sample size of each group

 $Z1-\alpha/2 = Z$ statistic for type I error (α) ($Z1-\alpha/2 = 1.06$ if $\alpha = 5.04$)

1.96 if $\alpha = 5\%$ Z1- $\beta = Z$ statistic for type I error (α) (Z1- $\beta = 0.84$ if $\alpha = 20\%$)

S1 = Standard deviation of group 1 S2 = Standard deviation of group 2

d = Effect size, which is the minimum difference between the mean of the control group and the treatment group which is considered meaningful.

Based on research conducted by (Insani, 2019) on the effect of nutrition education interventions, on nutritional knowledge, eating habits and physical activity in adolescents, the following data were obtained:

- Mean ± SD knowledge of the treatment Agroup = 75.3 ± 13.1
- b) Mean ± SD knowledge of the control group = 61.3 ± 20.1

Calculation of Lost Follow Up is done by 40%, based on the opinion of Dettori (2011), to avoid excessive bias. So the calculation of Lost Follow Up 40% of 23 = 9.2 (9), 23 + 9 = 32 people for each treatment group and the total sample in the study consisted of 32 people x 2 (treatment) = 64 people.

The sampling technique in this study was the purposive sampling technique, which is a sampling technique that does not use random sampling. In this technique, the researcher determines the sampling by determining the specific characteristics that are in accordance with the research objectives. According to the formula, it was obtained 64 subjects as samples, divided into 2 groups consisting of 32 overweight students as the control group (SMAN 4 Banjarmasin) and 32 overweight students as the intervention group (SMAN 7 Banjarmasin).

Before providing nutrition education, students' weight and height were measured as a benchmark to determine the nutritional status of research subjects, then adolescents with overweight status, namely adolescents with the results of BMI-for-age (BMI/Age) ≥ 1 SD were used as samples in the study. Measurement of nutrition knowledge data was carried out by interview using the general nutrition knowledge question aire (GNKQ). The research subjects answered 30 questions in the form of multiple choice questions related to balanced nutrition knowledge. The score given is 0 if the answer is wrong and 1 if the answer is correct. The number of correct questions is divided by the number of questions and multiplied by 100%. Classification of knowledge of research subjects good > 80% correct answers, sufficient 60-80% correct answers and less < 60% correct answers (Khomsan, 2022). Measurements were taken in the first week before the intervention and after the intervention.

The intervention was carried out 4 times a month and each meeting took 55 minutes. The control group was given nutrition education with lectures is the delivery of nutrition education through conventional lectures, which are conducted directly which allows two-way communication. In this study, the delivery of nutrition education through lectures was carried out four times for four weeks and delivered by researchers with powerpoint tools containing balanced nutrition learning materials based on the Regulation of the Minister of Health of the Republic of Indonesia Number 41 of 2014. The duration of the delivery of material from the opening to the closing of the event is 55 minutes. During the nutrition education, the research subjects were allowed to consult.

The intervention group was given nutrition education using e-booklets and lectures, e-booklets and lectures materials were made by the researcher with reference to the Regulation of the Ministry of Health of the Republic of Indonesia Number 41 of 2014 on Guidelines for Balanced Nutrition in adolescents.

The delivery of balanced nutrition messages is presented in the form of an e-booklet that has been made by researchers which will then be sent to research subjects so that it can be accessed offline via a smartphone. The e-booklet contains images, graphics and multimedia that make reading a more enjoyable experience. This education was conducted four times for four weeks with a duration of approximately 55 minutes 15 minutes of lecture 30 minutes of ebooklet, 10 minutes to open and close the program at each face-to-face meeting and research subjects were allowed consultation during the intervention. Nutrition education has been carried out outside of class hours according to the schedule agreed upon with the homeroom teacher.

Data analysis includes univariate and bivariate analysis. Univariate analysis was used to describe each variable. Meanwhile, bivariate analysis includes paired t-test and Wilcoxon test to determine differences in nutrition knowledge before and after the provision of nutrition education in each group. Independent t-test and Mann-Whitney test were used to determine differences in nutrition knowledge between treatment groups. This study has been approved by the Research Ethics Committee of the Faculty of Medicine, Universitas Sebelas Maret Number 108/UN27.06.11/KEP/EC/2022

Result and Discussion

This study consisted of 2 groups, namely the control group consisting of 32 overweight students who were given nutrition education with lectures is the delivery of nutrition education through conventional lectures and the intervention group consisting of 32 overweight students who were given nutrition education using e-booklets and lectures.

Table 1. Respondents Characteristics

Variable	Control Group Mean±SD	Intervention Group Mean±SD
Age (years)	16.34±0.48	15.93±0.84
z-score (BMI for Age)	1.58±0.26	1.57±0.30
Nutrition Knowledg (pre-test)	ge 51.5±11.53	56.43±13.57

On average, the subjects had a z-score (BMI for Age) of 1.58 for the control group and

1.57 for the intervention group. Prior to the provision of nutrition education, a nutrition knowledge pretest was conducted. The result of the pre-test on nutrition knowledge was 51.5 for the control group and 56.4 for the intervention group. The results of the bivariate analysis revealed that there was no difference between the pre-test on nutrition knowledge of the control group and the intervention group with p=0.633, meaning that each group had the same level of nutrition knowledge.

Table 2. Nutrition Knowledge Score

	Mean (SD)		
Nutrition Knowledge	Before	After	p-value*
Control group	51.5	59.5	0.001
Intervention group	56.4 Arti	cle 79.5 or	€0.000

*Paired t-test

Based on table 2, the average nutrition knowledge in the control group given nutrition education using only lectures increased from 51.5 to 59.5. The intervention group given nutrition education using lectures and e-booklets also increased from 56.4 to 70.5. The increase in the intervention group was higher than that in the control group given nutrition education using lectures. The results of the paired t-test of both groups obtained p-value <0.05, meaning that there was a difference before and after nutrition education was given. Furthermore, independent t-test was conducted to analyze the differences between the control group and the intervention group. Based on the test result, it was obtained pvalue of 0.002, meaning that there was a significant difference in nutrition knowledge ticle Error (between the group given nutrition education using only lectures and the group given nutrition education using lectures and e-booklet.

The results of this study are in accordance with research by Azinar & Fibriana (2019) stating that statistically, the use of e-booklet media is effective in increasing students' knowledge of reproductive health materials. Before the intervention, the students' knowledge is 62.12 and after the intervention, students' knowledge increass to 71.76. The use of e-booklets during the learning process increases the students' interest and facilitates the students to understand the materials. According to research by (Nikmah, Supadi, Setiadi, et al 2022), nutrition education using e-booklet media can increase knowledge on anemia in adolescent girls with a

p-value of 0.004 (p<0.05). Research by (Kurniasari & Mintarsih, 2021) revealed that nutrition education using lectures and e-booklets is more effective in increasing the respondents' knowledge of obesity. In addition, the effectiveness of the provision of nutrition education using lectures and e-booklet media can be seen from the statistical results indicating that e-booklets can increase nutrition knowledge by 2.21 times compared to nutrition education using only lectures.

Student learning outcomes with the use of e-booklets have better results than those without e-booklets. The use of e-booklet is effective because it can be accessed via smartphones. Students can study independently, anywhere, and anytime by downloading the e-booklet files (Azinar & Fibriana, 2019).



Figure 1. E-booklet Media

Nutrition education is needed in an effort to increase the nutrition knowledge of school-age children and is expected to increase nutrition knowledge. In addition, it also forms a positive attitude toward nutritious food which leads to the formation of better eating habits (Nurmasyita et al., 2016). The better a person's nutrition knowledge, the more careful consideration and decision-making to consume food in terms of quantity, type and quality in accordance with the body's needs, so that nutritional problems can be prevented (Maharani, 2018).

E-booklet is easy to use and has an attractive design, in terms of writing, images, and colors. The students will not get bored using the e-booklet because it contains images to help the students understand the nutrition education materials presented (Azinar, 2019).

Conclusion

Educational media in the form of ebooklets and lectures had an effect on nutrition knowledge. There was a difference in the average knowledge before and after the provision of nutrition education in the education group using lectures and booklet (p<0,05). It is necessary to control confounding variables that can affect healthy food choices in overweight adolescents, In addition, further research is needed in using other media as a means of nutrition education in adolescents such as whatsapp, telegram, instagram, tiktok and others.

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PAGE 4

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