Effects of Balanced Nutrition Education on Knowledge About Overweight Among Adolescents

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ABSTRACT

Adolescence is a transition period from childhood to adulthood, characterized by rapid physical, psychological, and cognitive changes. During this period, adolescents often face various health problems commonly related to nutritional status, especially being overweight. This study aimed to evaluate the efficacy of balanced nutritional intake education intervention on knowledge about overweight in adolescents. This is an experimental study with quasi quasi-experimental approach involving 30 respondents from a study group in the Islamic Center Association, Lhokseumawe District, Aceh, Indonesia. Results showed that there is a shift in knowledge on post-test assessment after intervention, in which the majority of participants had moderate (33,3%) to high (66,7%) knowledge. T-test results showed that there is a significant difference between pre-test and post-test results. The results of the t-test conclude that balanced nutritional intake education is effective in improving knowledge about overweight.

Keywords: Balanced nutrition, adolescent.

INTRODUCTION

Adolescence is a transition period from childhood to adulthood, characterized by rapid physical, psychological and cognitive changes (Sawyer et al., 2018). During this period, adolescents often face various health problems that can hinder their growth and development. One of the most common health problems is related to nutritional status, especially being overweight. Overweight is a condition where the body experiences excessive fat accumulation, defined by measurement and plotting using standarized z-score (cut off points of >2.0) or percentiles (>85th to <95th percentile) (Kansra et al., 2021). This condition can have a negative impact on the physical and cognitive development of adolescents. Further, previous studies had reported that obesity, the next step after overweight could potentially lead to immune and hormonal dysregulation that incites inflammatory reaction that lead to numerous disease (Shaikh et al., 2024; Vrieling & Stienstra, 2023).

Balanced nutrition is a daily diet that contains nutrients in the types and amounts that are appropriate for the body's needs, taking into account the principles of food diversity, physical activity, clean living behavior, and maintaining normal body weight regularly. Balanced nutrition ensures that food intake is sufficient in both quantity and quality, and contains various nutrients that the body needs. The goal is to maintain a healthy body, support optimal growth (in children), store nutrients, and ensure proper daily activities and functions (Masrikhiyah, 2020).

According to world health organization (WHI), more than 1.9 billion adolescents worldwide were overweight, with more than 650 million of them being overweight. Of these, 39% of males and 40% of females were overweight (Vardell, 2020). The prevalence of overweight in the world has almost tripled from 1975 to 2018. In Indonesia, data from the 2018 Basic Health Research (Riskesdas) showed that 38.3

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million people were overweight, with 9.5% of adolescents aged 16-18 years being overweight. The highest prevalence of overweight among adolescents aged 16-18 years was recorded in Papua province (13.5%), followed by East Kalimantan (12.9%), Jakarta (12.8%), Bali (11.9%), and Aceh and North Sulawesi (11.4%). Overweight in adolescents can increase the risk of degenerative diseases such as heart disease and diabetes mellitus, as well as various other comorbidities (Laporan Nasional RISKESDAS 2018, 2018).

Previous study reported that education through audiovisual media can improve the knowledge and attitudes of overweight adolescents, it reports that there was an increase in the average value of knowledge and attitudes after being given education through both leaflets and videos (Meidiana et al., 2018). Another study also showed that education about healthy snacks through group discussions was effective in increasing the knowledge and attitudes of overweight students (Usi Lanita, 2024). On the other hand, another study concluded that the use of educational disk media had no significant effect on knowledge and attitudes (Nurazis et al., 2021).

The differences in results between previous studies and the limited data on the effect of post-education knowledge retention after a certain period of time indicate the need for further research on this topic. Therefore, this study aimed to evaluate the efficacy of balanced nutritional intake education intervention on knowledge about overweight in adolescents on Lhokseumawe District, Aceh, Indonesia.

METHOD

This is an experimental study with quasi experimental approach that aimed to evaluate the effectiveness of balanced nutrition education intervention on improving the level of knowledge about overweight among adolescent. The population of this study are all students from study group in Islamic Center Association, Lhokseumawe District, Aceh, Indonesia. Eligible respondents are recruited using a total sampling method, who agreed to the terms and conditions of this study by signing the informed consent form, with total sample of 30 students.

Baseline data were collected through questionnaire distributed to randomly selected respondents. age, and gender were collected as demographic characteristics. The level of knowledge about overweight was determined based on the questionnaire constructed by the author and the results were divided into three main categories, namely high, moderate, and low. The level of knowledge was collected before and after intervention.

After baseline data and pre-test knowledge were collected, all respondents undergo balanced nutritional intake education in three separate sessions which includes introduction to balanced nutrition, personal measurement of body mass index for participants, and open discussion session. A visual aid by leaflet were used as complementary materials and respondents are allowed to take it home. Two weeks after intervention were done, post-test was done to assess the knowledge of respondents.

Tabulation of the data was carried out on SPSS software, while analysis was performed descriptively to obtain the frequency (n) of the variables. Paired t-test was used to assess whether there is a significant difference before and after the intervention, a p-value of <0.05 was considered statistically significant.

RESULT AND DISCUSSION

Demographic Characteristics of Respondents

Table 1. Demographic Characteristics of Study Participants (n=30)

No	Demographic Variable	Frequency (f)	Percentage (%)
1	**Age Group**		
	12 years old	17	56.7
	13 years old	13	43.3

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2	**Gender**		
	Male	13	43.3
	Female	17	56.7
	Total	**30**	**100**

As shown in table 1, the majority of participants were female (56,7%). The most common age group was 12 years old.

Table 2. Pre-test and post-test results (n=30)

No	Overweight Knowledge	Pre-test		Post-test	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	High	2	6,7	20	66,7
2	Moderate	17	56,7	10	33,3
3	Low	11	36,7	0	0,0
	Total	**30**	**100,0**	**30**	**100,0**

As shown in table 2, on baseline, the majority of participants had moderate (56,7%) and low (36,7%) knowledge. In post-test assessment after intervention, a shift in knowledge was observed, in which majority of participants had moderate (33,3%) to high (66,7%) knowledge.

Bivariate Analysis

No	Overweight Knowledge	Mean	Mean Difference	Standard Deviation	*ρ Value Sig. (2-tailed)* *α = 0,05*	Df
1	Pre-Test	2,30	0,967	0,596	0,000	29
2	Post-Test	1,33		0.479		

Based on table 3, it is shown that the average knowledge about overweight before and after intervention increased from 2.30 to 1.33 with a mean difference of 0.967, with a probability value or sig. (2-tailed) of 0.00 (<0.05) indicating that there is a significant difference between pre-test and post-test results. Based on the results of t-test, it can be concluded that balanced nutritional intake education is effective on improving knowledge about overweight.

DISCUSSION

Knowledge is a very important domain for the formation of one's behavior. Most of the problems of malnutrition including overweight and obesity can be prevented by numerous modalities, and one of them is behavioural modification, particularly achieved if individuals have sufficient knowledge about nutritional maintenance and dietary regulation (Johnson et al., 2020; Ma et al., 2023) (Notoatmodjo, 2010). Providing information, both formally and informally, can increase knowledge. Prior to education intervention, the majority of participants had moderate (56,7%) and low (36,7%) knowledge. In post-test assessment after intervention, a shift in knowledge was observed, in which majority of participants had moderate (33,3%) to high (66,7%) knowledge. T-test results showed that there is a significant difference between pre-test and post-test results. The results of t-test concludes that balanced nutrition intake education is effective on improving knowledge about overweight.

This study is in line with previous research which reports an increase in the average knowledge of respondents after being given nutritional education (Ramadhani & Khofifah, 2021). Another research also reported similar results, where there was an effect of nutrition education on nutritional knowledge as well as

energy, protein, and iron intake in adolescents (Pakhri et al., 2018). Research by Meidiana et al. (2018) also showed that education through audio-visual media had a positive effect on the knowledge and attitudes of overweight adolescents, with a significant increase in knowledge and attitude scores after being given education (Meidiana et al., 2018). Previous research and this study indicate that education, especially with visual media modalities, can help improve understanding related to nutrition, especially in younger respondent groups. Some of the reasons for this may include: first, visual media can capture the attention of adolescents more effectively than conventional education methods. Visual media that are well-designed, colorful, and contain attractive images or illustrations make information easier to remember and understand. Second, Visual media present information in a concise and to the point form, in accordance with the characteristics of adolescents who tend to have a shorter attention span. Information presented in the form of bullet points or diagrams makes it easier for adolescents to understand and remember important points related to balanced nutrition. Third, visual media in the form of leaflets are easy to distribute and can be taken home by adolescents to re-read at leisure, allowing them to access information at any time, repeat learning, and strengthen memory retention related to the knowledge gained (Djannah et al., 2020; Fadyllah & Prasetyo, 2021).

This study has several limitations. First, the lack of a control group and small sample size limits the strength of the analysis. A proper design with control group and large sample size may be appropriate in future studies. Second, although the follow-up test on knowledge was done after a month to confirm the retainability of education, the long-term effects of education to respondent knowledge remains unknown. Nevertheless, this study provides an overview of retainability after an educational intervention on balanced diet and guide future studies.

CONCLUSION

In conclusion, this study showed a significant difference in knowledge about overweight after intervention, from predominantly moderate (56,7%) and low (36,7%) knowledge into predominantly moderate (33,3%) to high (66,7%) knowledge. This result implied the effectiveness of balanced nutrition intake education on knowledge about overweight among adolescents.

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