J-Kesmas: Jurnal Fakultas Kesehatan Masyarakat
(The Indonesian Journal of Public Health)
Available at http://jurnal.utu.ac.id/jkesmas
p-ISSN: 2355-0643, e-ISSN: 2355-0988
Vol. 11, No. 01, April 2024
Open Access
RESEARCH ARTICLE

Association Consume Sweet Food with Overweight Adolescents

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Submitted: 21/11/2023 **Revised:** 14/01/2024 **Accepted:** 06/03/2024 **Published online**: 30/04/2024

doi: https://doi.org/10.35308/j-kesmas.v7i2.9566. **How to cite this article**: Siregar, S.M.F., Lubis, A.I, Husna, A., Fera, D., Rinawati., Muhsin, S.W., Harahap, L.A & Nursia (2024). Association Consume Sweet Food with Overweight Adolescents. *J-Kesmas: Jurnal Fakultas Kesehatan Masyarakat (The Indonesian Journal of Public Health)*. 11 (1): 43-46

Abstract

The prevalence of overweight in adolescents is increasing rapidly due to the high production and consumption of sweet foods favored by adolescents. Being overweight during adolescence is correlated with the risk of obesity in adulthood if there is no further prevention. More than one-third of adults and 17% of adolescents are obese, and the prevalence remains stable in America. In Indonesia, the prevalence of excessive nutrition has also reached 16%. This study to determine which types of food consumption are at risk of overweight in adolescents. This research used a cross-sectional design. The study sample consisted of high school students and was selected using random sampling methods. The dependent variable was overweight, and the independent variables included consumption aims of fatty foods, sweet foods, sweet pastries, junk food, and sweet beverages. The gathered data were analyzed using univariate analysis and bivariate analysis with a chi-square test at $\alpha = 0.05$. This research found that 28% of adolescents are overweight. The results of the bivariate analysis showed that the variables significantly influencing overweight we the consumption of sweet foods ($p = 0.02$; OR = 2.965, 95% CI = 0.978-8.988) and sweet pastries ($p = 0.01$; OR = 6.829, 95% CI = 0.987-47.231). In conclusion, the consumption of sweet foods, which implies high sugar intake, is correlated with overweight in adolescents. It is recommended that adolescents limit their consumption of sweet foods containing high sugar levels and increase their nutritional literacy because there is no recommended dietary allowance for sugar.

Keywords: Overweight; Obesity; Sweet; Food; Intake

Introduction

Obesity contributes to the global disease burden and serves as a risk factor for non-communicable diseases, reducing the overall quality of life (GBD, 2019; Bluher, 2019). Diseases related to diet and non-communicable diseases (NCDs) are leading causes of death, accounting for 38 million (68%) of 56 million premature deaths worldwide in 2012. Low- and middle-income countries contributed to nearly three-quarters of all NCD-related deaths (28 million), as well as the highest incidence of diseases and premature deaths (82%). Excessive consumption of added sugars is a cause for concern as it is associated with poor nutrition quality, overweight issues, and NCD risks among adolescents (Shetty).

The incidence of obesity is increasing across various demographic and age groups. Obesity occurs because there is a positive imbalance between the amount of energy entered and released from the body. In Western societies, the environment encourages obesity; people tend to be less active, while food portions have become very large and highly processed fast food and soft drinks provide many calories throughout the day (Isganaitis & Lustig, 2005).

Eating habits are influenced by various factors, including social environment, family, and individual preferences, as well as food availability and cost. The preference for sweet taste begins to develop in early childhood and persists throughout childhood, only starting to decline towards adulthood in the mid-teenage years. This phenomenon explains why children are at a higher risk of excessive sugar consumption. Empty calories from added sugars hinder healthy growth and development due to the lack of nutrients. There is still controversy surrounding the relationship between added sugar consumption and potential adverse health effects. Added sugars refer to all types of sugars added to food or drinks, or those naturally present in fruit juices without added sweeteners, honey, or syrup. However, this does not include natural sugars found in vegetables, fruits, and dairy products (Paglia, 2019).

Currently, the WHO recommends that adults and children limit their intake of free sugars (including

monosaccharides and disaccharides) to less than 10% of their total daily energy intake. On the other hand, the Institute of Medicine recommends that added sugars should not exceed 25% of total calories consumed. According to the WHO report in 2016, more than 1.9 billion adults (aged 18 and above) were overweight, and over 650 million of them, especially women, were obese (Haththotuwa, et.al., 2013). Glucose metabolism disorders can occur in neurological diseases and have been reported in clinical and pre-clinical studies in both humans and experimental animals. Obesity is a major risk factor for the development of sleep-disordered breathing (SDB). Inadequate sleep duration and quality in children and adolescents are associated with weight gain, insulin insensitivity, hyperglycemia, and common cardiometabolic risk factors (Paglia, 2019).

Previous research has found empirical evidence that among the following factors, namely excessive sugar consumption, fats, and junk food, influence overweight and non-communicable diseases such as cardiovascular diseases, to mental disorders and depression.

This study aims to examine the relationship between food consumption factors suspected to be at risk of overweight, namely low fiber intake, consumption of junk food, and sweet food consumption.

Methods

This study utilized pre-existing information provided to the respondents before data collection. The research employed a cross-sectional design with a sample size of 102 high school adolescents from a specific high school. Data collection was carried out through an accidental random sampling technique and involved the use of a food frequency measurement instrument. The data were analyzed through univariate and bivariate analyses, with the independent variables being fiber consumption, junk food consumption, and sweet food consumption. Data analysis included the use of the chi-square test for bivariate analysis.

Results

The table below shows the distribution of the number of respondents who are at risk and not at risk of being overweight.

Table 1. Univariate table of risk factors for overweight

Variable	Not at risk		At risk	
	Frequency	%	Frequency	%
Fiber consumption	34	33	68	68
Consumption of junk food	51	50	51	50
Consumption of sweet food	66	66	36	36
Total	102	100	102	100

Primer data, 2022

From Table 1, it can be seen that the respondents predominantly have a low risk of low fiber consumption at 68%, respondents have a high frequency of junk food consumption at 50%, and high consumption of sweet foods at 36%.

The cross-tabulation results of risk factors for overweight

The cross-tabulation results indicate the relationship between the dependent variable and the independent variable. Among the three variables studied, the consumption of sweet foods is related to the risk of overweight.

Table 2. Bivariate table of risk factors for overweight

Variable		IMT			
		Normal	Over weight	Total	P value
Fiber consumption	No	26	8	34	
		76,5%	23,5%	100	
	Risk	47	21	68	0,438
		69,1%	30,9%	100	
Consumption of junk food	No	36	15	51	
		70,6%	29,4%	100	0,826
	Risk	37	14	51	
		72,5%	27,5%	100	
Consumption of sweet food	No	41	25	66	
		62,1%	37,9%	100	0,003
	Risk	32	4	36	
		88,9%	11,1%	100	

Primer data, 2022

Discussion

Fiber consumption

The 2020 Dietary Guidelines Advisory Committee conducted a systematic evidence review and confirmed that the conclusions drawn by the 2015 Dietary Guidelines Advisory Committee generally reflect current scientific knowledge: Strong and consistent evidence indicates that a diet associated with reduced risk of cardiovascular diseases is characterized by high consumption of vegetables, fruits, whole grains, low-fat dairy products, and seafood, as well as low consumption of red and processed meats, and limited intake of refined grains, foods and beverages with added sugars,

compared to less healthy diets. Regular consumption of nuts, legumes, and moderate alcohol intake have also been proven to be beneficial in most studies. Randomized dietary intervention studies have shown that healthy eating patterns have significant clinical impacts on cardiovascular risk factors, including blood lipids and blood pressure. Additionally, research that includes specific nutrients in their dietary descriptions indicates that diets low in saturated fat, cholesterol, and sodium, and rich in fiber, potassium, and unsaturated fats are beneficial in reducing the risk of cardiovascular diseases (Alexandria, 2020).

Consumption of junk food

Limited evidence suggests that calorie-unrestricted diets based solely on macronutrient distribution, including proportions of carbohydrates, fats, and/or proteins outside the Acceptable Macronutrient Distribution Ranges, do not have a significant impact on cardiovascular disease risk in adults, especially in individuals at high risk, such as those who are overweight, obese, or exhibit symptoms of metabolic syndrome (Alexandria, 2020).

Fast food tends to be high in fat in the diet. Although fat in the diet is a strong predictor of weight gain, the relationship between fat and carbohydrates appears to be more relevant than fat consumption alone. Although diets that are high in fat and low in carbohydrates (e.g., the Atkins diet) may reduce the postprandial insulin response, the combination of fat load and glycemic load appears to amplify the insulin response and promote further weight gain. As obesity increases, the insulin response eventually weakens, possibly contributing to glucose intolerance. The close relationship between fast food consumption and obesity has been carefully examined. A study focused on specific mechanisms through which fast food affects the development of obesity. Fast food has a negative impact on insulin balance in the body, disrupting neuroendocrine energy regulation, and plays a crucial role as a primary trigger in the process of obesity occurrence (Isganaitis & Lustig, 2005).

Consumption of sweet food

Furthermore, a large prospective study involving 353,751 adults in the United States reported that overall fructose consumption had a weak positive association with all-cause mortality in both men and women. Conversely, added sugars exhibited differences depending on their food sources, where added sugars from solid foods were inversely related to all-cause mortality in both men and women, but added sugars from beverages were positively associated with all-cause mortality in women. (Tasevska, et.al., 2014).

In Song, et.al, 202 study, it was found from the reviewed studies that the level of added sugar consumption is related to mortality, analyzing the relationship between the contribution of energy from added sugar consumption and deaths from various causes. All three studies indicated different risk patterns based on consumption levels because increased mortality was observed even at consumption levels of less than 5% of total energy, even within the low target group for added sugar consumption. Similar patterns were also observed in studies regarding deaths due to cardiovascular diseases (CVD). The risk of CVD decreases with an increase in consumption levels in studies where the reference consumption interval is less than 5% of total energy.

Conclusion

In conclusion, we have found a positive correlation between sweet food consumption and the risk of overweight among adolescents. It is advisable for teenagers to educate themselves about their calorie intake, especially regarding sugar, and to regularly monitor their weight to prevent overweight during adolescence. This proactive approach is crucial in preventing potential risks of cardiovascular diseases in adulthood, underscoring the importance of early prevention efforts.

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