The Risk of Overweight based on Frequency, Type, and Level of Knowledge about Fast Food among Students at Dwijendra Junior High School Denpasar

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ABSCTRACT
Overweight is a gateway to non-communicable diseases. The aims of this study are to determine the risk of overweight based on the frequency of junk food consumption among students at Dwijendra Junior High School Denpasar. This study is observational with cross-sectional design and was conducted at Dwijendra Junior High School Denpasar with sample 70 students. Data collected included knowledge, types and frequency of fast food consumption, as well as measurements of weight and height. The results indicate that the frequency of fast food consumption is one of the factors contributing to overweight, showing a significant risk only in the sample where the selection of fast food types was not diverse (95% CI : 1,03 – 17,76). This selection of fast food types is related to students' knowledge about fast food. It was found that the risk of fast food frequency was also not significant in the sample with high knowledge (95% CI : 0,25 – 24,46) and only showed a significant risk in the sample with low knowledge (95% CI : 1,00 – 19,86). It was concluded that the frequency of fast food consumption has the potential to increase the risk of overweight, especially if the types of fast food consumption are not various. Therefore, education about the health effects of fast food consumption among students needs to be promoted more, and if necessary, this subject matter should be presented as one of the teaching materials in schools.

Keywords: Overweight, fast food frequency consumption, types of fast food, knowledge about fast food

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INTRODUCTION

Overweight is a condition of excess fat accumulation in the body. Furthermore, overweight can develops into obesity which is a chronic disease that triggers various health problems[1]. Overweight is a condition that is affected by lifestyle, including a person's consumption habits[2]. Currently, the issue of overweight and obesity is a concern for various countries around the world, including Indonesia[3]. Statistics in some developed countries report that deaths due to overweight are more common than those with malnutrition[4].

Obesity is one aspect of the double burden of malnutrition. The prevalence of overweight and obesity continues to rise among adults and children. From 1990 to 2022, globally, the percentage of children and adolescents aged 5-19 years who are obese has increased quadrupled, while the percentage of adults aged 18 years and older has increased more than doubled. In 2019, estimated that 5 milion deaths from non-communicable diseases (NCDs) were caused by a higher than normal BMI [5].

Based on National Health Survey (Riskesdas) in 2013 and 2018, there was an increase in the prevalence of overweight among adolescents aged 13-15 years from 8.3% to 11.2%[6]. Bali is one of the regions with a relatively high prevalence of overweight among adolescents, which is 15.9%, more than the national prevalence of 12.1% in the 13-15 age group[7].

Obesity in adolescents is a major cause of non-communicable diseases in adulthood[8]. Aside from the risk of serious diseases such as hypertension, diabetes, stroke, cancer, and heart disease, being overweight also has a negative impact on adolescents psychological well-being such as self perception disorders, including negative emotions toward oneself, feelings of worthlessness, low self-confidence, and hopelessness[9]. Overweight and obesity among adolescents are also at risk of developing health issues that affect their quality of life, such as sleep disorders and sleep apnea (brief pauses in breathing while sleeping)[10].

According to the 2018 National Health Survey (Riskesdas), overweight is caused by various factors, including high intake of junk food[11], low intake of fruits and vegetables[12], and lack of physical activity[13]. Junk food refers to "junk food" or non-nutritious food[14]. Junk food is high in

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calories, fat, salt, sugar, and low in fiber vitamins, and minerals[15]. Lack of nutritional knoledge results in limited information about balanced diets. According to Anggraeni's study of 88 respondents at SMA Harapan 1 Medan, there is a correlation between nutritional knowledge and the nutritional status of students at SMA Harapan 1 Medan[16]. Based on Wangi's 2023 study of 91 respondents at SMK Ketintang Surabaya, there is a significant relationship between junk food consumption habuts and nutritional status[17].

Based on this background, the researcher is interested in analyzing the risk of overweight based in consumption frequency, type, and knowledge about fast food among students at Dwijendra Junior High School Denpasar.

METHOD

This study is an observational study with a cross-sectional design. The study was conducted at Dwijendra Junior High School Denpasar, with the target population students in grade VIII in the 2024/2025 academic year. The sample in this study was selected purposively based in inclusion criteria, with total 70 participants. Data collection was conducted in May 2025 with the assistance of three enumerators who had been trained beforehand. The inclusion criteria includes eight-grade students at Dwijendra Junior High School for the 2024/2025 academic year; aged 13-15 years; not currently under regular treatment that affects their weight development; and experiencing overweight not due to genetic factors from their parents (hereditary).

The determination of students' overweight status was conducted using anthropometric measurements. Anthropometric data were collected by measuring body weight using a digital scale and height using a microtoise. From these measurements, the Body Mass Index (BMI) was calculated and then referenced based on anthropometric standards according to Indonesian Ministry of Health Regulation Number 2 of 2020 (Permenkes No. 2 Tahun 2020). Data on the frequency and types of fast food consumption were collected using a Food Frequency Questionnaire (FFQ) and analyzed using statistical categories. Knowledge about fast food was

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collected using a questionnaire designed by the researcher, consisting of 16 questions. The level of students' knowledge was determined based on the percentage of correct answers to the 16 questions. All items in the questionnaire have been tested for validity and reability.

All data were then processed into binomial data (consisting of only two observation categories) and tested for significance using the Mantel-Haenszel chi-square statistical method.

RESULTS

From the observation of 70 samples, it was found that most of the samples (84.28%) were 14 years old, with more females (54.29%) than males (45.71%). There were 19 samples (27.14%) who were overweight. Forty-three samples (61.4%) frequently consumed fast food, and most of them (75.7%) consumed a limited variety of fast food. It was also found that more than half of the samples (55.7%) had insufficient knowledge about fast food. The relationship between overweight status, frequency of fast food consumption, and variety of fast food consumed is presented in Table 1.

Table 1

Risk of Overweight Based on Frequency of Fast Food Consumption

According to Types of Fast Food Consumed by the Sample

Frequency of Fast Food Consumption	Various Types of Fast Food				Non Various Types of Fast Food			
	Overweight Status							
	Normal		Overweight		Normal		Overweight	
	f	%	f	%	f	%	f	%
Rarely	2	16.7	1	20.0	21	53.8	3	21.4
Often	10	83.3	4	80.0	18	46.2	13	78.6
Total	12	100.0	5	100.0	39	100.0	14	100.0
P value based on Fisher Exact Test	0.68				0.04			

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95% Confident Interval OR	0.06 – 11.50	1.03 – 17.76

Table 1 indicates, in a group of samples with various types of fast food consumption, in the overweight group, were found 4 samples (80%) who often consumed fast food. Meanwhile, in the non-overweight group, there were 10 samples (83.3%) who frequently consumed fast food. This means that the risk of being overweight based on fast food consumption frequency is not significant (95% CI OR = 0.06–11.50; p value = 0.68) in the sample group with diverse fast food consumption patterns. Meanwhile, in the sample group with a diverse fast food consumption pattern, there were 13 samples (78.6%) in the overweight group, while in the non Overweight group, there were 18 samples (46.2%) who frequently consumed fast food. This means that the risk of being overweight based on the frequency of fast food consumption is significant (95% CI OR = 1.03–17.76; p value = 0.04) in the sample group with a diverse range of fast food consumption. As a result, the frequency of fast food consumption contributes significantly to an increased risk of being overweight, especially if the types of fast food consumed are not diverse.

Table 2

Risk of Overweight Based on Frequency of Fast Food Consumption

According to Level of Knowledge about Fast Food among the Sample

Frequency of Fast Food Consumption	Sufficient Level of Knowledge about Fast Food				Insufficient Level of Knowledge about Fast Food			
	Overweight Status							
	Normal		Overweight		Normal		Overweight	
	f	%	f	%	f	%	f	%
Rarely	7	29.2	1	14.3	16	59.3	3	25.0
Often	17	70.8	6	85.7	11	40.7	9	75.0
Total	12	100.0	5	100.0	39	100.0	14	100.0

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P value based on Fisher Exact Test	0.40	0.05
95% Confident Interval OR	0.25 – 24.46	0.96 – 19.86

Based on the sample's level of knowledge about fast food, as shown in Table 2, in the sample group with a sufficient level of knowledge, there were 6 samples (85.7%) in the overweight group that often consumed fast food. Meanwhile, in the group that was not overweight, there were 17 samples (70.8%) who often consumed fast food. The risks of being overweight based on the frequency of fast food consumption were not significant (95% CI OR = 0.25–24.46; p value = 0.40) in the sample group with sufficient knowledge about fast food. On the other hand, the sample group with low knowledge levels, there were 9 samples (75.0%) with overweight who frequently consumed fast food. Meanwhile, in the non-overweight group, there were 11 samples (40.7%) who frequently consumed fast food. Therefore, the risk of overweight based on the frequency of fast food consumption was also insignificant (95% CI OR = 0.96 – 19.86; p value = 0.05) in the sample group with low knowledge levels. However, upon closer observation, although both were insignificant, the risk of overweight based on the frequency of fast food consumption was proven to be higher in the group with low knowledge levels about fast food.

DISCUSSION

Previous study on 65 students conducted at SMK Muhammadiyah 3 Pekanbaru concluded that there was no relationship between fast food consumption and obesity in adolescents[18]. Another study that took samples from students at the Jakarta "Veteran" National Development University from the 2019, 2020, and 2021 year of study, with stratified random sampling of 149 subjects, also concluded that the frequency of fast food consumption was not related to nutritional status[19]. Meanwhile, observations of 70 students at SMK Yappika Legok Tangerang concluded that there is a relationship between fast food consumption and obesity[20]. Research with 204

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samples in Surakarta City also concluded that there is a relationship between fast food consumption and nutritional status in adolescent girls in Surakarta City[21].

An article on a website explains that fast food is mostly low in nutrients and high in energy. Evidence shows that excessive consumption of fast food can have a negative impact on health, both in the short and long term. In the short term, the high carbohydrate content in fast food will trigger insulin resistance, the salt may increase blood pressure, and the saturated fat may trigger inflammation. In the long term, this can increase the risk of obesity, insulin resistance, type 2 diabetes, and various cardiovascular disorders[22]. However, it should be emphasized here that not all fast food has a negative impact, as there are several "healthy" fast food options such as salads, chicken wraps, and vegetarian burgers. Japanese foods such as sushi and donburi are also considered healthy fast food[23]. Even when referring to the definition of fast food, traditional Indonesian foods such as *nasi padang*, chicken porridge, chicken noodles, and *nasi campur* are also considered good fast food. Based on the results of this study, it was found that an overweight risk increase based on fast food consumption frequency only occurred in groups whose fast food consumption was not varied. This means that as long as one is able to sort and choose the types of fast food to consume, one can reduce the risk of overweight without having to stop the habit of consuming fast food. In order not to make the wrong choice, consumers only need to remember the statement that all types of junk food can indeed be categorized as fast food, but not all fast food can be called junk food[24].

The ability to choose the type of food to consume is actually influenced by many factors. There are at least four important determinants that most influence food consumption choices, including: (a) social factors such as parental influence and household eating habits; (b) product-related factors including product attributes, packaging, and labeling; (c) individual factors, such as food knowledge and cooking skills; and (d) situational factors such as food availability, time limitations, and the appearance of food stalls.[25]. This study also found that the risk of being overweight based on the frequency of fast food consumption was more evident in the low-knowledge group of

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student. This means that a person can continue their fast food consumption habits as long as they understand the characteristics of the type of fast food they are eating.

CONCLUSIONS

From this research, it can be concluded :

1. Fast food is indeed considered unhealthy food. However, not all types of fast food have these characteristics. There are several types of fast food that are categorized as healthy food.

2. The habit of consuming fast food can still be continued, as long as people have enough knowledge to sort and choose the types of fast food they consume.

Since the most vulnerable groups affected by the negative impacts of fast food consumption are school-aged children and adolescents, it is necessary to educate them about the effects of fast food consumption in schools and youth health centers. If necessary, this subject matter can also be included as part of the teaching material for a school subject related to health.

CONFLICT OF INTEREST

This research has received approval from the Denpasar Polytechnic of Health Ethics Committee and a recommendation for implementation from the Denpasar City Government. The research team has no conflicts of interest related to the research objectives.

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