



The Effect of Fast Food Consumption on Obesity in Teenagers : A Literature Review and Secondary Data Analysis

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Abstract

Obesity among teenagers is a growing public health concern and is often linked to the frequent consumption of fast food, which is typically high in calories, fat, and sodium, but low in dietary fiber. This study aims to explore the impact of fast-food consumption on the prevalence of obesity in teenagers through a literature review and analysis of secondary data from two prior studies. A Chi-Square test was conducted to examine the relationship between the frequency of fast-food intake and obesity status. The combined analysis indicates that teenagers who consume fast food more than three times per week tend to have a higher prevalence of obesity. However, statistical testing revealed that this association is not significant (Chi-Square value = 0.0145; p-value = 0.9042). These results suggest that teenage obesity is not solely influenced by fast food intake but is also affected by other factors such as physical activity, overall dietary habits, and genetic predisposition.

Keywords: Fast-food, obesity, teenagers

1. Introduction

Obesity is a condition where the fat tissue in the body exceeds the normal limits when compared to total body weight. In 2022, it was recorded that 2.5 billion adults aged 18 and over were overweight, including more than 890 million adults living with obesity. These figures indicate that approximately 43% of the adult population worldwide is overweight, with a proportion of 43% among men and 44% among women. This prevalence has significantly increased compared to 1990, when only 25% of adults were recorded as being overweight. According to World Health Organization (2025), the distribution of overweight cases also varies by region, with the lowest prevalence of 31% in Southeast Asia and Africa, and the highest prevalence of 67% in the Americas.

In Indonesia, the prevalence of overweight among teenager in 16–18 years reaches 7.3%, consisting of 5.7% of teenagers with overweight status and 1.6% experiencing obesity. Meanwhile, in the age group of 13–15 years, the prevalence is higher, at 10.8%, with details of 8.3% overweight and 2.5% obesity. There are 13 provinces with high levels of teenagers overweight nationally, including DKI Jakarta, East Java, Riau, South Sumatra, West Kalimantan, Bangka Belitung, Bali, East Kalimantan, Lampung, North Sulawesi, and Papua. DKI Jakarta is recorded as the province with the highest prevalence of overweight, at 4.2%, as reported by the Health Research and Development Agency of the Ministry of Health of the Republic of Indonesia (2013). Furthermore, based on the 2023 Indonesian Health Survey, the prevalence of obesity among adults (aged >18 years) in Indonesia reached 23.4%. This figure represents an increase compared to the 2018 Riskesdas data, which recorded a prevalence of 21.8% in the same age group. The province with the highest obesity rate in 2023 is DKI Jakarta, with a prevalence of 31.8%, indicating a concerning level of obesity in urban areas.

The eating patterns of teenagers are greatly influenced by the type and amount of food consumed. Teenagers tend to prefer fast food in excessive amounts, exceeding their daily body needs (Atmaja et al., 2025). This habit can trigger the accumulation of fat in the body, which ultimately increases the risk of obesity. Survey data according to WHO shows that the intensity of fast-food consumption has several categories, namely 1 (0 days/week), 2 (1-3 days/week), and 3 (4-7 days/week) (Li et al., 2020).

Obesity in teenagers is one of the nutritional problems whose prevalence continues to increase and can have long-term health impacts. One of the factors contributing to obesity is the consumption of fast food, which is generally high in calories, fat, and sodium, but low in fiber and micronutrients. Research by Nugraeni et al. (2023) on high school students in Yogyakarta found no significant relationship between the frequency of fast-food consumption and central obesity. Research by Fitriyanti et al. (2024) on nutrition students at MH. Thamrin University also showed no significant relationship between the frequency of fast-food consumption and the occurrence of general obesity. Differences in variables, respondent characteristics, and methods of measuring nutritional status are suspected to also influence the obtained results. Therefore, this study aims to further examine the impact of fast-food consumption on the incidence of obesity in teenagers through a literature review and secondary data analysis.

Based on the background presented, the research questions in this study are:

- a. Does fast food consumption affect the incidence of obesity in teenagers?
- b. How is the frequency of fast-food consumption associated with teenage obesity based on secondary data and literature?

This study aims to:

- a. Examine the relationship between the frequency of fast-food consumption and the incidence of obesity in teenagers.
- b. Evaluate the patterns of fast-food consumption among teenagers using literature review and secondary data analysis.

The expected benefits of this study are:

- a. To provide additional academic insight into the relationship between fast food consumption and obesity in teenagers.
- b. To support public health efforts by highlighting the impact of dietary patterns, particularly fast-food consumption, on the nutritional status of teenagers.

This study is limited to the analysis of secondary data and literature related to fast food consumption and obesity in teenagers. It does not include primary data collection or analysis of other contributing factors such as physical activity, genetic predisposition, or socio-economic status. Therefore, the findings may not fully capture the complexity of obesity risk and may not be generalizable to all populations.

2. Literature Review

2.1. Definition of Fast Food

Fast food is a type of food that is prepared and served quickly, often within minutes. Among teenagers, fast food is highly popular due to its convenience and taste. However, it typically contains low amounts of dietary fiber and is high in sodium. When consumed in excess, it can significantly increase one's intake of calories, fat, and sugar—surpassing the body's daily nutritional needs. This condition may lead to a higher risk of obesity, particularly among teenagers (Garbella et al., 2025).

Fast food is characterized by high calorie, sugar, and salt content, but low fiber, vitamins, and minerals. Types of fast food can be divided into two categories, namely modern fast-food originating from abroad such as fried chicken, burgers, nuggets, pizza, and the like. As well as traditional fast food found in several local places such as Padang restaurants, Sundanese specialty stalls with menus such as catfish, grilled chicken and others.

The risk of obesity can also be assessed through the intensity of fast-food consumption, which is categorized based on weekly frequency: category 1 (0 days/week), category 2 (1–3 days/week), and category 3 (4–7 days/week), according to WHO survey data (Li et al., 2020).

2.2. Definition and Classification of Obesity

Obesity is a condition in which the fat tissue in the body exceeds normal limits when compared to the total body weight. This condition is characterized by excessive fat accumulation and is measured through an increase in Body Mass Index (BMI) that exceeds the normal threshold value. Obesity is a body condition that occurs due to an imbalance between energy intake from food consumed and the energy needed by the body, so that energy intake will be much greater than expenditure.

Obesity can be classified into two forms, namely central obesity and morbid obesity. Central obesity is characterized by fat accumulation in the abdominal area and is associated with metabolic disorders and diseases with high morbidity and mortality rates. Morbid obesity, particularly in its severe stages, is associated with impaired gas exchange, disrupted breathing patterns, and dysfunction of the respiratory regulation centers. Furthermore, based on the method of calculation, obesity is also divided into general obesity and abdominal obesity. General obesity can be assessed using waist circumference (WC) as an indicator of fat accumulation in the abdominal region, while abdominal obesity is identified through the measurement of Body Mass Index (BMI) (Tandean et al., 2015).

Body Mass Index (BMI) is the most commonly used and accessible measurement tool for assessing overweight and obesity levels. It is often applied as an initial step in determining the extent of excess body fat in relation to total body fat mass. The BMI value is obtained by dividing body weight in kilograms (kg) by the square of height in meters (m²), using the formula BW/H^2 . In contrast, abdominal circumference can be measured directly in centimeters (cm) (Tandean et al., 2015).

According to the WHO Asia Pacific classification, nutritional status based on Body Mass Index (BMI) is divided into several categories, namely underweight if BMI < 18.5 kg/m², normal range if BMI is between 18.5-22.9 kg/m², overweight if BMI is between 23-24.9 kg/m², obese I if BMI is between 25-29.9 kg/m², and obese II if BMI ≥ 30 kg/m² (Bolang et al., 2020).

2.3. Teenagers as a Vulnerable Group

Teenage years represent a crucial transitional phase in the human life cycle, characterized by rapid changes in physical, psychological, and social aspects. This stage is considered the second most important growth period after toddlerhood, which makes teenagers' energy and nutrient needs particularly high (Nasution et al., 2023). Adequate nutrition is essential to support bone growth, tissue development, and increased muscle mass (Indrasari & Sutikno, 2020). However, many teenagers pay little attention to their nutritional intake. Their diets are often influenced by environmental factors such as social media and peer groups, and they frequently overlook the nutritional content of the food they consume (Nasution et al., 2023). The tendency to choose fast food and calorie-dense snacks that are low in fiber and nutrients is also a common pattern among teenagers today (Nasution et al., 2023). These conditions indicate that teenagers are a group vulnerable to nutritional status disorders, both in the form of deficiencies and excesses. An imbalance between energy intake and energy requirements can negatively affect health, one of the most common outcomes being obesity. A study by Nasution et al. (2023) confirmed the association between poor dietary habits, low levels of physical activity, and limited nutritional knowledge with non-ideal nutritional status in teenagers.

Furthermore, an increase in sedentary behavior combined with high consumption of fatty and sugary foods contributes to the rising risk of obesity. Obesity among teenagers affects not only physical health but also psychological well-being, including decreased self-confidence and a higher risk of mental health disorders (Nasution et al., 2023). Indrasari & Sutikno (2020) also reported that energy intake and physical activity levels are closely associated with the nutritional status of teenagers aged 16–18 years. Overall, teenagers represent a population that is highly vulnerable to nutritional problems, which are influenced by increased nutritional demands, unhealthy dietary patterns, and limited nutrition literacy. Therefore, interventions through nutrition education and the promotion of healthy eating habits are essential to prevent nutritional issues that may have long-term consequences into adulthood.

2.4. The Relationship Between Fast Food Consumption and Obesity

Obesity among teenagers is a health problem influenced by various factors, not just a single cause. Several factors play a role, including the habit of consuming fast food, low levels of physical activity, genetics, and the social environment. Fast food generally contains high amounts of calories, saturated fats, and sodium, but is low in fiber and other essential nutrients. This can lead to fat accumulation in the body and increase the risk of obesity (Sawitri, 2019).

However, research results on the link between fast food consumption and obesity remain inconsistent. Some studies have shown a significant relationship, while others have not found any meaningful connection. Research by Purhadi (2022) found a significant relationship between teenagers' knowledge about fast food and obesity rates at SMK Gajah Mada Purwodadi. This was shown by a p-value of 0.034, which is smaller than the significance level ($\alpha = 0.05$), indicating that students' knowledge levels can influence their fast-food consumption patterns. A study by Husnah & Sakdiah (2023) also supported the significant link between fast food consumption and obesity among teenagers in Gorontalo Regency in 2019, with statistical tests showing a p-value of 0.002 ($p < 0.05$). Similarly, research by Fajrini & Ilmi (2022) showed a significant relationship between fast food eating habits and obesity in children aged 9–11. Bivariate analysis of 182 students revealed that most students who were obese were those who frequently ate fast food—19 students (32.8%). A Chi-square test produced a p-value of 0.028 ($p < 0.05$), indicating a statistically significant relationship.

On the other hand, this contrasts with the findings of Zurrahmi et al. (2024), which revealed that teenage obesity is influenced by several major factors, such as fast-food consumption habits, physical activity levels, and family history. Among the 100 teenagers studied, 69% had high fast-food consumption, but the statistical test result was $p = 0.07$, which is not significant. Research by Ramadani et al. (2023) also showed no significant relationship between fast food consumption and obesity, with a p-value of 0.138 ($p > 0.05$). This is supported by Fitriyanti et al. (2024), whose bivariate analysis using a Chi-Square test produced a p-value of 0.895, indicating no significant effect of fast-food consumption frequency on obesity levels. According to Zurrahmi et al. (2024), there are several factors that affect the relationship between fast food consumption and obesity among teenagers. Even though most respondents had a high fast food consumption habit, obesity was more commonly found among teenagers with low levels of physical activity,

with a statistical test showing a significant link ($p = 0.00$). This shows that fast food is not the sole cause of obesity—without enough physical activity, the energy from food is not burned efficiently and tends to be stored as fat.

In addition, social and family environments also play a role, both in terms of family eating habits and genetic factors. Teenagers with obese parents have a much higher risk of becoming obese themselves, even up to 80% if both parents are obese. Lack of nutritional knowledge and an unbalanced diet further increase this risk, as teenagers tend to choose fast food without understanding its calorie content—high in fat and low in fiber—which contributes to weight gain if not balanced with a healthy lifestyle.

2.5. Previous Studies

In recent years, various studies have emphasized a significant relationship between fast food consumption habits and the incidence of obesity among teenagers, both in Indonesia and in other countries. Research by Nurfaidah et al. (2023) in Makassar showed that out of a total of 87 students studied, 13.8% were obese and the majority (65.5%) had a high fast food consumption pattern. The analysis results indicated that fast food consumption has a statistically significant relationship with obesity ($p < 0.05$). Meanwhile, Simpati & Sugesti (2021) through a study in Bekasi found that fast food consumption contributed 9.45% to the incidence of obesity among girls. Additionally, the variables of breakfast and physical activity also influenced the outcomes, and all three were statistically significant.

Similar research was conducted by Marwadita & Rahayu (2021) in the South Jakarta area, stating that the frequency and energy content of fast food has a significant correlation with the nutritional status of students, particularly those who are overweight. Similar results were found by Zurrahmi et al. (2023) in their study in Bangkinang, which mentioned a significant relationship between fast food consumption and obesity cases in teenagers ($p < 0.001$). In Gorontalo, Wahyuni & Hanafi (2020) discovered that low physical activity and high consumption of fast food significantly influence the increase in obesity. Meanwhile, according to Barokah et al. (2020), fast food and sweetened beverage (soft drink) consumption significantly contributes to obesity with p -values of < 0.001 and 0.018 respectively. Other findings came from Lestari & Sarbini (2023) who studied the relationship between fast food consumption and screen time duration with the occurrence of metabolic syndrome in teenage girls in Surakarta. The results showed that both variables played a significant role in the risk of central obesity. Additionally, a literature review compiled by Permatasari (2024) of 10 scientific articles published between 2019 and 2024 revealed that nine of them concluded fast food as an important risk factor for teenage obesity.

Globally, the increasing consumption of fast food is also a concern. A study by Muzakir & Sulaiman (2022) focusing on urban teenagers in Aceh revealed that increased fast food consumption, low physical activity, and social environmental influences increase the risk of overweight and other health problems. These results are in line with a report from the Child Cohort Study in Canada (2025) which found that consumption of Ultra-Processed Food (UPF), including fast food, is strongly associated with increased body fat and obesity incidence in children and teenagers. In the United States, the CDC report in 2025 noted a decline in the trend of fast-food consumption since 2021, but the percentage of teenagers who still consume these foods regularly is still quite high. Meanwhile, the results of a survey in the UK reported by The Guardian (2024) showed that about two-thirds of teenagers' total calories come from ultra-processed foods, which can increase the risk of metabolic disorders and obesity.

Overall, previous studies have shown fairly consistent results. The majority concluded that fast food consumption has a significant impact on increasing obesity among teenagers. The majority of studies used a cross-sectional approach with measurement tools such as food frequency questionnaire (FFQ) and anthropometric measurements. The consistency of findings across different regions and populations strengthens the argument that obesity due to fast food consumption is a global public health issue. Therefore, the literature review and secondary data analysis in this study are important to understand the extent to which fast food consumption impacts teenagers' obesity and provide a scientific basis for future nutrition intervention efforts and health policies.

3. Materials and Methods

3.1. Materials

This research is a descriptive quantitative study using a literature review approach and secondary data analysis. The aim of the study is to examine the influence of fast-food consumption on the incidence of obesity among teenagers, based on previous research findings. Data were collected from two nationally published scientific journal articles: Nugraeni et al. (2023) and Fitriyanti et al. (2024). Both studies discuss the relationship between fast food consumption frequency and obesity status in teenagers, although they differ in subject characteristics and findings. These articles were selected due to their shared research variables: frequency of fast-food consumption and obesity incidence.

The research object is teenagers, represented by the subjects from both journal sources, high school students and first-year university students aged 15–21 years, which falls within the teenage to early adulthood transition period. The study focuses on the impact of fast-food consumption habits on nutritional status, particularly obesity.

The population and sample used in this study were derived from the two journal articles. Nugraeni et al. (2023) conducted research on 219 students from eight high schools in Yogyakarta, selected using a multistage sampling technique that combined cluster random sampling, stratified random sampling, and simple random sampling. Meanwhile, Fitriyanti et al. (2024) studied 58 undergraduate students from the Nutrition Study Program at Universitas MH. Thamrin, selected through purposive sampling.

Data in both original studies were collected through validated and widely used instruments. The frequency of fast-food consumption was measured using a Semi Quantitative Food Frequency Questionnaire (SQ-FFQ), while anthropometric data were collected through measurements of body weight (using a digital scale) and height (using a microtoise). These data were used to calculate Body Mass Index (BMI), which served as the indicator of nutritional status.

The independent variable in this study is the frequency of fast-food consumption, categorized into two groups: less than three times per week and more than three times per week. The dependent variable is the nutritional status of the participants, with a focus on whether or not they were categorized as obese. BMI classification was based on the WHO Asia-Pacific standards, which classify individuals into underweight ($\text{BMI} < 18.5 \text{ kg/m}^2$), normal ($18.5\text{--}22.9 \text{ kg/m}^2$), overweight ($23.0\text{--}24.9 \text{ kg/m}^2$), obesity grade I ($25.0\text{--}29.9 \text{ kg/m}^2$), and obesity grade II ($\geq 30.0 \text{ kg/m}^2$). For the purposes of this study, participants were grouped into obese and non-obese categories. The assessment of obesity risk was also supported by data on fast food consumption intensity, classified according to WHO criteria as follows: non-consumer (0 days per week), light consumption (1–3 days per week), and frequent consumption (4–7 days per week).

The data analysis was conducted using Microsoft Excel, which provided tools for tabulation and statistical testing, and ensured accuracy and transparency throughout the analytical process. The reliability of the data used in this study is supported by the fact that both journal articles were published in nationally accredited journals and used valid, standardized instruments. Additionally, both studies applied the Chi-Square test, which is appropriate for analyzing the relationship between categorical variables.

3.2. Methods

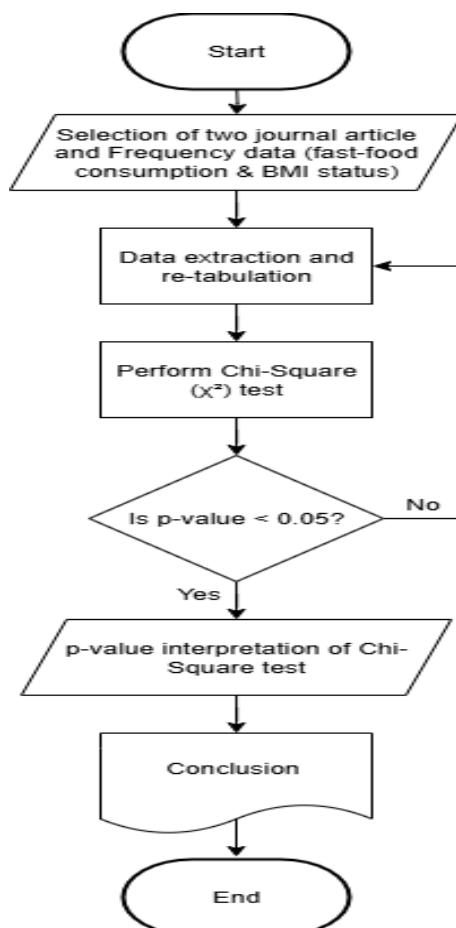


Figure 1: Research Flowchart

The analysis began with the selection of two journal articles based on their relevance to the research topic, credibility of publication, and the use of comparable research variables, specifically, the frequency of fast-food consumption and the incidence of obesity in teenagers. After identifying the two studies, relevant data were extracted and re-tabulated according to the frequency distribution presented in each study.

The extracted data were then organized into 2×2 contingency tables to facilitate comparative analysis between the frequency of fast-food consumption and nutritional status. Fast food consumption was categorized into two groups: less than three times per week and more than three times per week. Meanwhile, nutritional status was determined using Body Mass Index (BMI) values and classified according to the WHO Asia-Pacific standard. For the purpose of this study, BMI values were further grouped into two categories: obese and non-obese.

To identify the association between fast food consumption frequency and obesity incidence, a Chi-Square (χ^2) statistical test was employed. The analysis was conducted using Microsoft Excel to ensure accuracy, replicability, and transparency in the calculation process.

Hypothesis testing was also conducted to determine the significance of the observed relationship. The null hypothesis (H_0) stated that there is no significant association between the frequency of fast-food consumption and the incidence of obesity among teenagers, and it would be accepted if the p-value was greater than or equal to 0.05 ($p \geq 0.05$). Conversely, the alternative hypothesis (H_1) proposed that a significant association does exist, and it would be accepted if the p-value was less than 0.05 ($p < 0.05$).

Testing was conducted using the Chi-Square (χ^2) test to determine the relationship between two categorical variables, namely frequency of fast-food consumption and obesity status.

Chi-Square test formula:

$$\chi^2 = \sum \frac{(O - E)^2}{E}, \quad (1)$$

where,

O : observed (actual value),

E : expected (expected value).

4. Results and Discussion

4.1. Secondary Data Analysis

Two groups of teenagers, high school students and nutrition students, were analyzed based on their frequency of fast-food consumption and obesity status. The data in each journal was reconstructed and re-analyzed using the Chi-Square statistical test to determine whether there was a significant relationship between the two variables. The following presents the results of cross-tabulation and interpretation of primary data from each previous study.

Table 1: Primary Data Nugraeni et al. (2023)

Frequency of Fast-Food Consumption	Obesity	Not Obese	Total
Frequently ($> 3\times/\text{week}$)	34	144	178
Infrequent ($< 3\times/\text{week}$)	12	29	41
Total	46	173	219

Based on calculations from the primary data of Nugraeni et al. (2023), 19.1% of students who frequently consume fast food (more than 3 times per week) are obese. Meanwhile, in the group of students who infrequently consumed fast food (less than 3 times per week), the percentage of obesity was even higher, at 29.3%. This finding suggests that high frequency of fast-food consumption does not necessarily correlate directly with high obesity rates among teenagers in this study ($p > 0.05$). There may be other factors that influence nutritional status.

Table 2: Primary Data Fitriyanti et al. (2024)

Frequency of Fast-Food Consumption	Obesity	Not Obese	Total
Frequently ($> 3\times/\text{week}$)	36	18	54
Infrequent ($< 3\times/\text{week}$)	2	2	4
Total	38	20	58

According to the primary data from Fitriyanti et al. (2024), 93.1% of nutrition students fell into the category of frequently consuming fast food (more than three times per week). Among this group, the prevalence of obesity was recorded at 66.7%, indicating that the majority of students with high fast food consumption habits were overweight.

However, statistical analysis using the Chi-Square test showed no significant association between fast food consumption frequency and obesity incidence ($p - value = 0.895$). Nonetheless, the distribution pattern revealed a trend in which students who frequently consumed fast food had a higher rate of obesity compared to those who consumed it less often.

4.2. Combined Data Cross-Tabulation

Based on secondary data obtained from both sources, a cross-tabulation was created between fast food consumption frequency and obesity status. This table was constructed to illustrate the distribution of the relationship between the two variables as a basis for further statistical analysis.

Table 3: Combined Data Cross-Tabulation

Frequency of Fast-Food Consumption	Obese	Not Obese	Total
Frequent ($> 3 \times / \text{week}$)	70	162	232
Infrequent ($< 3 \times / \text{week}$)	14	31	45
Total	84	193	277

4.3. Chi Square Test Calculation

The expected value is first calculated based on the distribution of row and column totals, as follows:

- $E \text{ Frequent - Obesity} = \frac{(232 \times 84)}{277} = 70.35$,
- $E \text{ Frequent - Not Obese} = \frac{(232 \times 193)}{277} = 161.65$,
- $E \text{ Infrequent - Obesity} = \frac{(45 \times 84)}{277} = 13.65$,
- $E \text{ Infrequent - Not Obese} = \frac{(45 \times 193)}{277} = 31.35$.

Table 4: Chi-Square Value Calculation

Category	Observed (O)	Expected (E)	Chi-Square Value
Frequent – Obese	70	70.35	0.0017
Frequent – Not Obese	162	161.65	0.0008
Infrequent – Obese	14	13.65	0.0090
Infrequent – Not Obese	31	31.35	0.0030
Total χ^2 Value			0.0145

The test is conducted with a significance level of $\alpha = 0.05$, which is the limit for rejecting or accepting the null hypothesis (H_0). The degree of freedom used in this analysis is 1 ($df = 1$). The p-value is obtained from the Chi-Square calculation, which indicates the probability that the difference between the observed value and the expected value occurs by chance. In this study, the resulting Chi-Square (χ^2) value is 0.0145 with degrees of freedom ($df = 1$), so the $p - value$ obtained is 0.9042. Since the p-value is greater than the significance level of 0.05, it can be concluded that there is no statistically significant difference between the frequency of fast-food consumption and obesity status.

4.4. Result

The results of the analysis using the Chi-Square test show that the χ^2 value is 0.0145 with degrees of freedom ($df = 1$) and a p-value of 0.9042. Since the p-value is greater than the set significance level ($\alpha = 0.05$), the null hypothesis (H_0) is accepted. This means that there is no statistically significant relationship between the frequency of fast-food consumption and the incidence of obesity among teenagers in this study.

This finding indicates that fast food consumption has no significant effect on obesity status in the group of respondents studied. These results are in line with the research of Nugraeni et al. (2023) and Fitriani et al. (2024) which also showed that although there was an increasing trend in fast food consumption among teenagers, the relationship was not statistically significant to the incidence of obesity.

Although the data recorded that some respondents who infrequently consume fast food are also obese, this is most likely due to other factors, such as lack of activity, imbalance of nutritional intake such as carbohydrates, protein, energy, fiber, and consumption of snacks outside fast food. Therefore, to understand the causes of obesity more thoroughly, research is needed that considers various interacting variables.

5. Conclusion and Recommendation

Teenage obesity is an increasingly prevalent health issue, especially amid the widespread consumption of fast food, which is typically high in calories, fat, and salt, but low in fiber. Based on the analysis of secondary data, it can be concluded that there is no statistically significant relationship between the frequency of fast-food consumption and the incidence of obesity among teenagers (Chi-Square value = 0.0145; $p = 0.9042$; $p > 0.05$). Even though fast food is often regarded as a major contributor to obesity, these findings suggest that teenage obesity is a multifactorial condition, also influenced by other factors such as physical activity, overall dietary patterns, social environment, and genetics. Therefore, preventing obesity requires more than just limiting fast food intake; it should also involve continuous nutrition education, increased physical activity, and a comprehensive healthy lifestyle approach. It is important to note the limitations of using secondary data, as not all relevant variables could be directly analyzed.

Based on the analysis and discussion, it is recommended that nutrition education be strengthened through schools and relevant media to help teenagers better understand healthy eating habits. In addition, promotive interventions should be improved, such as encouraging physical activity both at school and at home, and ensuring access to balanced, nutritious food. Local governments are also encouraged to set regulations that limit the distribution of fast food around educational institutions and require nutritional information to be clearly labeled on food packaging. For future research, it is recommended to include additional variables such as physical activity, sleep duration, psychological status, and genetic history to gain a more complete understanding of the factors contributing to teenage obesity.

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