



## The Role of Fast-Food Consumption Patterns in The Incidence of Obesity in Adolescents

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### Abstrak

Obesitas remaja mengalami peningkatan signifikan secara global, termasuk di Indonesia. Salah satu faktor risiko yang menonjol adalah konsumsi makanan cepat saji yang tinggi kalori namun rendah nutrisi. Penelitian ini bertujuan menganalisis hubungan antara pola konsumsi makanan cepat saji dan kejadian obesitas pada remaja. Desain penelitian menggunakan case-control analitik observasional dengan 80 remaja berusia 12–18 tahun di Arga Makmur (40 obesitas dan 40 kontrol). Data dikumpulkan melalui kuesioner frekuensi konsumsi, kebiasaan up-sizing porsi, dan kebiasaan jajan di luar, serta pengukuran antropometri. Hasil analisis menunjukkan hubungan signifikan antara frekuensi konsumsi makanan cepat saji ( $p = 0,001$ ; OR = 5,10), kebiasaan up-sizing porsi ( $p = 0,001$ ; OR = 22,73), dan kebiasaan jajan di luar ( $p = 0,001$ ; OR = 9,80) dengan kejadian obesitas. Disimpulkan bahwa pola konsumsi makanan cepat saji berperan penting dalam meningkatkan risiko obesitas pada remaja. Diperlukan edukasi gizi dan intervensi kebijakan di tingkat sekolah dan keluarga untuk menekan prevalensi obesitas remaja. Kata kunci: obesitas remaja, Makanan yang cepat saji, up-sizing porsi, kebiasaan jajan

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### Abstract

Adolescent obesity has increased significantly globally, including in Indonesia. One prominent risk factor is the consumption of fast food that is high in calories but low in nutrients. This study aimed to analyse the relationship between fast food consumption patterns and the incidence of obesity in adolescents. The study design was an observational analytic case-control with 80 adolescents aged 12-18 years in Arga Makmur (40 obese and 40 controls). Data were collected through questionnaires on the frequency of consumption, portion up-sizing, and snacking habits, as well as anthropometric measurements. The analysis revealed a significant association between the frequency of fast-food consumption ( $p = 0.001$ ; OR = 5.10), portion-up-sizing habit ( $p = 0.001$ ; OR = 22.73), and outside snacking habit ( $p = 0.001$ ; OR = 9.80) and the incidence of obesity. It was concluded that fast food consumption patterns play an important role in increasing the risk of obesity in adolescents. Nutrition education and policy interventions at the school and family levels are needed to reduce the prevalence of adolescent obesity.

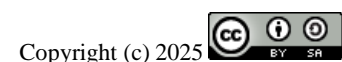
**Keywords:** Adolescent obesity, fast food, portion up-sizing, eating out habits.

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## INTRODUCTION

Obesity among adolescents has become an increasingly alarming global health issue WHO data shows a 10% increase in the prevalence of obesity among adolescents in the last decade, with fast food consumption being one of the main risk factors. In Indonesia, according to Riskesdas (2018), approximately 15% of urban adolescents are overweight, with a habit of consuming fast food two to three times a week. This trend is expected to continue increasing post-pandemic, along with

changes in lifestyle and increased accessibility to fast food. The prevalence of obesity among adolescents continues to rise, raising concerns about long-term health among the younger generation (Saputri Anam et al., 2022)

Changes in modern lifestyles and increased accessibility to fast food restaurants have significantly altered the consumption patterns of adolescents. Fast food, which is high in calories, saturated fat, and sugar but low in fibre and essential nutrients, has become a practical choice for adolescents who are busy with academic and social activities. This phenomenon requires in-depth research to understand its impact on adolescent health, particularly in the context of Indonesia, where aspects of behaviour such as portion size and frequency of eating out have been little studied.

Obesity among adolescents has become one of the significant public health issues that has increasingly come to the fore in the last decade. The development of fast-food consumption patterns, which has increased in line with globalisation and a fast-paced consumer culture, has contributed significantly to the prevalence of overweight among adolescents (Ferdianti, 2021; Permana Putri & Setyowati, 2022; Sopiah et al., 2021). Fast food tends to be high in calories, saturated fat, and salt, which increases the risk of obesity. (Heidy & Darvan, 2018; Sriwahyuni et al., 2021). Research shows that teenagers who consume excessive amounts of fast food are at a higher risk of obesity than those who choose a balanced diet (Sitoayu et al., 2021) . The sedentary lifestyle common among teenagers also contributes to worsening this condition (Al Rahmad, 2019; Normate et al., 2017)

This study provides significant updates by delving deeper into the patterns of fast-food consumption, specifically among adolescents in Indonesia, examining not only frequency but also portion sizes and the types of food that are most dominant. This approach enables the identification of more granular consumption habits, which may vary across regions or socioeconomic groups in Indonesia, providing a richer understanding than previous studies that tended to focus on general relationships.

Although many studies have highlighted the impact of fast food on obesity, a significant gap remains in the literature regarding fast food consumption patterns among adolescents in Indonesia, including preferences for food types and portion sizes commonly consumed. Existing studies are often general in nature and do not provide sufficient detail to inform the formulation of targeted interventions. There have been few studies that comprehensively link specific fast food consumption behaviors (e.g., types of sweet drinks often ordered with fast food or the habit of "up-sizing" portions) with obesity profiles in Indonesian adolescents.

The purpose of this study was to analyse the relationship between fast food consumption patterns (including frequency, up-sizing habits, and snacking habits) and the incidence of obesity among adolescents in Arga Makmur. The results of this study are expected to form the basis for the development of more targeted nutritional interventions and health policies at the school and family levels.

This research is important because obesity in adolescents not only affects their physical health but also has the potential to affect their mental health, self-confidence, and productivity in the future. In the long term, the country's economic burden will also increase due to the cost of treating chronic diseases resulting from obesity. In practical terms, the results of this study can serve as a basis for designing more effective nutrition education programmes and health promotion policies, particularly in school and family settings. With valid, evidence-based information, interventions can be more targeted and sustainable.

## **METHODOLOGIES**

### **Types of Research**

This study utilised an analytical observational case-control research design ([Sugiyono, 2019](#)) This design was chosen because it is efficient for investigating the relationship between exposure (fast food consumption patterns) and outcome (obesity) in populations with a relatively low prevalence of the outcome. Case and control groups were selected based on obesity status, and then their exposure histories were compared.

### **Time and Place of Research**

The study was conducted from June to August 2025 in the Arga Makmur area, North Bengkulu Regency, Bengkulu Province. The location was chosen based on the high prevalence of adolescent obesity.

### **Research Objectives**

The study population consisted of adolescents aged 12–18 years attending junior high and senior high schools in Arga Makmur. The sample comprised 80 adolescents divided into two groups:

1. Forty adolescents with obesity (BMI/U > 95th percentile according to WHO standards) as the case group.

2. Forty adolescents with normal nutritional status (BMI/U between the 5th and 85th percentiles) served as the control group.

Controls were selected using purposive sampling and matched with cases based on age ( $\pm 1$  year) and gender.

**Inclusion criteria:**

1. Willing to be a respondent by signing an informed consent form.
2. No medical conditions affecting body weight (e.g., hypothyroidism, Cushing's syndrome).

**Exclusion Criteria:**

1. Currently taking medication that affects appetite or metabolism

**Data Collection Techniques and Instruments**

Data will be collected through:

1. Structured questionnaire: For fast food consumption patterns (frequency, portion size), physical activity, and breakfast intake.
2. Anthropometric measurements: Weight and height will be measured directly to calculate BMI.

**Data Analysis Techniques**

Data analysis was performed using statistical software

1. Univariate analysis: Displays the frequency distribution and percentage of respondent characteristics.
2. Bivariate analysis: Using the Chi-Square test to examine the relationship between fast food consumption patterns and the incidence of obesity. Odds Ratio (OR) with a 95% confidence interval is reported to measure the strength of the association.

**RESULTS AND DISCUSSION**

**RESULTS**

This section of the research methodology explains the use of an observational analytical case-control design to investigate the relationship between fast food consumption patterns and obesity in adolescents. This study will be conducted in Arga Makmur from June to August 2025, involving several junior high schools and senior high schools. A total of 80 respondents will participate, consisting of 40 obese adolescents (cases) and 40 adolescents with normal weight (controls). Sampling for cases will use purposive sampling, while the control group will be matched based on age and gender. Data will be collected through structured questionnaires on fast food consumption patterns, physical activity, and breakfast intake, as well as anthropometric measurements such as weight and height to calculate Body Mass Index (BMI).

Table 1. Frequency Distribution and Percentage of Respondent Characteristics (n = 80)

Variabel	Category	Frequency (f)	Percentage (%)
	Woman	42	52.50%
	Man	38	47.50%
Age	13 years	16	20.00%
	14 years	13	16.20%
	15 years	12	15.00%
	16 years old	14	17.50%
	17 years	12	15.00%
	18 years old	13	16.20%
Nutritional Status	Case	40	50.00%
	Control	40	50.00%
	Noon	29	36.20%

Table 1 shows the basic characteristics of the 80 respondents who participated in this study. It can be seen that the distribution of respondents based on gender is relatively balanced, with 52.50% female and 47.50% male. The age group of respondents ranges from 13 to 18 years, with a reasonably even distribution across each age group. Furthermore, the nutritional status of the respondents was evenly divided between the case group (obese adolescents) and the control group (non-obese adolescents), with each group comprising 50% of the total. These data provide an overview of the demographics of respondents before analyzing the relationship between fast food consumption patterns and obesity.

The main objective of this study is to provide a clear picture of the relationship between fast food consumption patterns and obesity in adolescents. To that end, bivariate analysis will be used to test the relationship between the frequency of fast-food consumption and obesity status in the case and control groups. Fast food consumption frequency data will be grouped into "infrequent" and "frequent" to facilitate statistical analysis. Data analysis will be performed using statistical software with univariate analysis for frequency distribution and percentages, as well as bivariate analysis using the Chi-Square test to determine the relationship between fast food consumption patterns and obesity.

Table 2. Relationship between Fast Food Frequency and Obesity

Fast Food Frequency	Obesity				$\chi^2$	OR (95% CI)
	Case		Control			
	n	%	n	%		
Infrequently	7	17,5	23	57,5	0.001	5,10(1,89 –13,79)
Often	33	82,5	17	42,5		
Total	40	100	40			

Based on Table 2, there is a significant relationship between the frequency of fast-food consumption and obesity ( $\chi^2=0.001$ ). Adolescents who rarely consumed fast food were more commonly found in the control group (non-obese), with 23 respondents (57.5%), while in the case group (obese), there were only seven respondents (17.5%). Conversely, adolescents who frequently consumed fast food were more commonly found in the case group (obese), specifically 33 respondents (82.5%), compared to the control group, which had only 17 respondents (42.5%). The OR of 5.10; 95% CI: 1.89–13.79) indicates that adolescents who frequently consume fast food have a higher risk of obesity compared to those who rarely consume it.

This study also explores another aspect of fast-food consumption patterns, namely the habit of up-sizing portions. This habit is thought to contribute to excess calorie intake, which can increase the risk of obesity. This analysis will compare the proportion of adolescents who engage in portion up-sizing in the case group (those who are obese) and the control group (those who are non-obese).

Table 3. Relationship between portion up-sizing and obesity

Up-sizing Porsi	Obesity				$\chi^2$	OR (95% CI)
	Case		Control			
	n	%	n	%		
No	8	20	34	85	0.001	22,7(7,09 –72,88)
Ya	32	80	6	15		
Total	40	100	40	100		

Table 3 presents the relationship between the habit of *ordering fast-food portions in excess* and the incidence of obesity. The results of the analysis indicate a significant relationship ( $\chi^2 = 0.001$ ). The majority of respondents in the case group (obese) had the habit of *upsizing* portions (32 respondents or 80%), while in the control group (non-obese), only six respondents (15%) had this habit. An OR of 22.7 (95% CI: 7.09–72.88) indicates that adolescents who frequently *upsized* fast food portions have a much higher risk of obesity than those who do not.

Consumption of fast food and the habit of eating out in general are also important factors to consider in adolescent diets. This study aims to determine whether the habit of eating out contributes to obesity in adolescents. The analysis will compare the frequency of eating out in the case group and the control group.

Table 4. Relationship between outside snacking habits and obesity

Outdoor Dining	Obesity				$\chi^2$	OR (95% CI)
	Case		Control			
	n	%	n	%		
Infrequently	13	67,5	33	82,5	0.001	9,8(3,42– 28,07)
Often	27	32,5	7	17,5		
Total	40	100	40	100		

Based on Table 3 (which is equivalent to Table 52), a significant relationship was found between the habit of eating out and the incidence of obesity ( $\chi^2 = 0.001$ ). In the control group (non-obese), 33 respondents (82.5%) rarely ate out, while in the case group (obese), only 13 respondents (67.5%) rarely ate out. Conversely, adolescents who frequently ate out were more common in the case group (27 respondents or 32.5%) than in the control group (7 respondents or 17.5%). An OR of 9.8 (95% CI: 3.42–28.07) indicates that the habit of frequently eating out increases the risk of obesity in adolescents.

## DISCUSSION

This study aims to analyse the role of fast-food consumption patterns on obesity among adolescents, as well as to identify the social factors that influence these consumption patterns. The results show a significant relationship between fast food consumption patterns, particularly the frequency and habit of up-sizing portions, and obesity among adolescents in Arga Makmur.

Table 1 presents the frequency distribution and percentage of respondent characteristics. Of the total 80 respondents, the gender proportion was relatively balanced, with 52.50% female and 47.50% male. The age range of respondents (13-18 years) also showed an even distribution across each age group, ensuring the representation of adolescents at various stages of development. The division of respondents into 40 cases (obesity) and 40 controls (normal weight) met the criteria for a case-control study design, allowing for a comparison of exposure history between the two groups.

### **The Relationship Between Fast Food Consumption Frequency and Obesity**

The results of the analysis show that adolescents who frequently consume fast food have a 5.1 times higher risk of obesity than those who rarely consume it (OR = 5.10; 95% CI: 1.89–13.79), reflecting a trend consistently demonstrated by numerous previous studies. A study by Pamela (2018) explains that 90% of adolescents who frequently consume fast food experience weight problems, with 22.45% of them in the pre-obesity category and 9.52% obese. This study is in line with research stating that fast food, which is high in calories, saturated fat, and sugar, and low in fibre, contributes to an increased risk of obesity among adolescents. It also supports the WHO report, which notes an increase in the prevalence of obesity among adolescents, where fast food consumption is identified as one of the main risk factors (Mardiana et al., 2022; Saraswati et al., 2021).

Risk modelling, as shown in this study (5.10), indicates that adolescents who frequently consume fast food have a five times higher risk of obesity compared to those who rarely consume it Rifa'i and Nuryani (2018) also found a link between fast food consumption and increased obesity prevalence. In their study, consumption of foods high in energy and low in fibre was found to correlate with poorer eating habits among adolescents, leading to an increased risk of obesity. This suggests that effective interventions promoting healthy eating are urgently needed to address this issue at the population level (Rafiony et al., 2015).

### **The Relationship Between the Habit of Oversizing Portions and Obesity**

Demonstrating a significant association between the habit of portion up-sizing and an increased risk of obesity by up to 22.7 times (OR=22.73; 95% CI: 7.09–72.88). Adolescents in the case group (obesity) were significantly more likely to engage in portion up-sizing (80%) than those in the control group (15%). This study offers significant updates by examining the specific consumption patterns of fast food among adolescents in Indonesia, not only in terms of frequency, but also in terms of portion size and dominant food types.

This research is in line with previous studies by Nisa et al (2021) which found that fast food consumption contributes to an increased risk of obesity among adolescents. In their study, an increase in calorie intake from large portions was shown to have a significant impact on weight problems among adolescents in South Tangerang. This shows that it is not only the frequency of fast-food consumption that has an effect, but also the quantity of food consumed. Furthermore, the OR of 22 in this study shows that adolescents who have a habit of *upsizing* their portions have an obesity risk approximately 22 times higher than those who do not have this habit.

This study is in line with [Widyastuti et al \(2016\)](#) states that high consumption of saturated fat from larger portions contributes to unhealthy nutritional status among adolescents. In addition, research by [Qoirinasari et al \(2018\)](#) also emphasises that the imbalance between energy consumed and energy expended plays a role in the increase in obesity prevalence due to uncontrolled eating habits and excessive portions. Addressing this issue requires targeted interventions to help adolescents understand the importance of portion control and education about healthier food choices.

The results of this study explain that eating behaviour and portion sizes in fast food consumption have a significant impact on increasing the risk of obesity among adolescents. Future recommendations include the importance of providing better nutrition education to adolescents and implementing restrictions on advertising and access to high-calorie foods among the young population. Given that food portion size and habits that increase calorie intake are modifiable factors, there is hope that appropriate interventions can significantly reduce the prevalence of obesity in the community.

#### **The Relationship Between Eating Out Habits and Obesity**

There is a significant association between frequent eating out and a 9.8-fold increase in the risk of obesity (OR = 9.80; 95% CI: 3.42–28.07). Adolescents who frequently eat out were more commonly found in the case group (32.5%) than in the control group (17.5%). An OR of 0.102 (95% CI: 0.036–0.292) indicates that adolescents with frequent eating out habits have a higher risk of obesity, approximately 9.8 times higher (calculated from  $1/0.102$ ).

This study emphasises the importance of controlling eating habits among adolescents who frequently consume high-calorie foods, and aims to reduce the risk of being overweight ([Hanafi & Hafid, 2019](#)). High-calorie and high-fat food consumption patterns, often associated with eating out, are consistent with the study by [Nugroho dan Riatul Hikmah \(2020\)](#), which indicates that junk food consumption directly contributes to the risk of obesity. Their research notes that teenagers who frequently consume junk food have a higher tendency to become obese due to the high-calorie content and low nutritional value of such foods. Additionally, it argues that low levels of physical activity can exacerbate the effects of eating out, making it important to encourage more frequent physical activity among adolescents. This suggests that unhealthy eating patterns and lack of physical activity can interact to increase the risk of obesity in adolescents ([Hanafi & Hafid., 2019](#)).

The habit of eating out, which often involves foods high in calories, fat, and sugar, contributes to an overall increase in energy intake and the risk of being overweight, in line with modern lifestyles and increased accessibility to food outside the home.

### **Implications and Research Gaps**

The results of this study strongly support the hypothesis that fast food consumption patterns are a significant risk factor for obesity among adolescents in Indonesia. Despite numerous health campaigns promoting balanced diets, fast food consumption among adolescents remains very high. This study provides a clearer picture of this relationship and identifies specific factors, such as portion up-sizing, which have not been widely discussed in previous studies in Indonesia.

Obesity in adolescents has long-term effects not only on physical health, but also on mental health, self-confidence, and productivity. The increase in the economic burden on the country due to the cost of treating chronic diseases resulting from obesity is also a serious concern. Therefore, the results of this study can serve as a basis for policymakers to formulate more effective nutrition education strategies and programs, as well as health promotion policies, particularly in schools and families. Targeted and sustained interventions, based on this valid evidence, are urgently needed to address the increasingly alarming problem of obesity among Indonesia's younger generation.

### **CONCLUSION**

Obesity in teenagers has long-term consequences for not only physical health, but also mental health, self-confidence, and productivity. The increase in the country's economic burden due to the cost of treating chronic diseases caused by obesity is also a significant worry. Consequently, the findings of this study can inform policymakers in developing more effective nutrition education strategies and programs, as well as health promotion policies, particularly within schools and families. Targeted and sustained treatments based on this valid data are urgently required to address the growing problem of obesity among Indonesia's younger population.

### **REFERENCES**

- Al Rahmad, A. H. (2019). Sedentari Sebagai Faktor Kelebihan Berat Badan Remaja. *Jurnal Vokasi Kesehatan*. <https://doi.org/10.30602/jvk.v5i1.163>
- Ferdianti, L. (2021). Literature Review: Hubungan Aktivitas Fisik Dan Kebiasaan Konsumsi Fast Food Dengan Kejadian Obesitas Pada Anak Sekolah Dasar. *Media Kesehatan Masyarakat Indonesia*. <https://doi.org/10.14710/mkmi.20.2.139-143>

- Hanafi, S., & Hafid, W. (2019). Hubungan Aktivitas Fisik Dan Konsumsi Fast Food Dengan Kejadian Obesitas Pada Remaja. *Kampurui Jurnal Kesehatan Masyarakat (The Journal of Public Health)*. <https://doi.org/10.55340/kjkm.v1i1.49>
- Heidy, H., & Darvan, S. (2018). Hubungan Frekuensi Konsumsi Makanan Cepat Saji Dengan Tekanan Darah Pada Remaja SMP Permai. *Mandala of Health*. <https://doi.org/10.20884/1.mandala.2018.11.2.947>
- Mardiana, M., Yusuf, M., & Sriwiyanti, S. (2022). Hubungan Beberapa Faktor Dengan Kejadian Obesitas Remaja Di Palembang. *JPP (Jurnal Kesehatan Poltekkes Palembang)*. <https://doi.org/10.36086/jpp.v17i1.1169>
- Nisa, H., Fatimah, I. Z., Oktovianty, F., Rachmawati, T., & Azhari, R. M. (2021). Konsumsi Makanan Cepat Saji, Aktivitas Fisik, Dan Status Gizi Remaja Di Kota Tangerang Selatan. *Media Penelitian Dan Pengembangan Kesehatan*. <https://doi.org/10.22435/mpk.v3i1i1.3628>
- Normate, E. S., Nur, M. L., & Toy, S. M. (2017). Hubungan Teman Sebaya, Citra Tubuh Dan Pola Konsumsi Dengan Status Gizi Remaja Putri. *Unnes Journal of Public Health*. <https://doi.org/10.15294/ujph.v6i3.17016>
- Nugroho, P. S., & Riatul Hikmah, A. U. (2020). Kebiasaan Konsumsi Junk Food Dan Frekuensi Makan Terhadap Obesitas. *Jurnal Dunia Kesmas*. <https://doi.org/10.33024/jdk.v9i2.3004>
- Pamelia, I. (2018). Perilaku Konsumsi Makanan Cepat Saji Pada Remaja Dan Dampaknya Bagi Kesehatan. *Ikesma*. <https://doi.org/10.19184/ikesma.v14i2.10459>
- Permana Putri, E. B., & Setyowati, A. (2022). Pengetahuan Gizi Dan Sikap Remaja Dengan Pola Konsumsi Makanan Cepat Saji Selama Masa Study From Home (SFH). *Sport and Nutrition Journal*. <https://doi.org/10.15294/spnj.v3i2.49557>
- Qoirinasari, Q., Simanjuntak, B. Y., & Kusdalinah, K. (2018). Berkontribusikah Konsumsi Minuman Manis Terhadap Berat Badan Berlebih Pada Remaja? *Action Aceh Nutrition Journal*. <https://doi.org/10.30867/action.v3i2.86>
- Rafiony, A., Purba, M. B., & Putu Pramantara, I. D. (2015). Konsumsi Fast Food Dan Soft Drink Sebagai Faktor Risiko Obesitas Pada Remaja. *Jurnal Gizi Klinik Indonesia*. <https://doi.org/10.22146/ijcn.23311>
- Rifa'i, A., & Nuryani, N. (2018). Sosial Ekonomi, Konsumsi Fast Food Dan Riwayat Obesitas Sebagai Faktor Risiko Obesitas Remaja. *Media Gizi Indonesia*. <https://doi.org/10.20473/mgi.v13i2.123-132>
- (Riskesdas), R. K. D. (2018). Laporan Riskesdas 2018 Nasional.pdf. In *Lembaga Penerbit Balitbangkes* (p. hal 156). <https://repository.badankebijakan.kemkes.go.id/id/eprint/3514/1/Laporan>
- Saputri Anam, N. A., Suci Ayu, R. N., Wati, D. A., & Pratiwi, A. R. (2022). Hubungan Makanan Siap Saji (Fast Food) Dengan Kejadian Status Gizi Pada Remaja SMP Negeri 1 Gading Rejo Tahun 2021. *Journal of Holistic and Health Sciences*. <https://doi.org/10.51873/jhhs.v6i1.91>
- Saraswati, S. K., Rahmaningrum, F. D., Zidane Pahsyah, M. N., Paramitha, N., Wulansari, A., Ristantya, A. R., Sinabutar, B. M., Pakpahan, V. E., & Nandini, N. (2021). Literature Review : Faktor Risiko Penyebab Obesitas. *Media Kesehatan Masyarakat Indonesia*. <https://doi.org/10.14710/mkmi.20.1.70-74>

- Sitoayu, L., Aminatyas, I., Angkasa, D., Gifari, N., & Wahyuni, Y. (2021). Hubungan Konsumsi Makanan Cepat Saji, Tingkat Stres Dan Kualitas Tidur Terhadap Status Gizi Pada Remaja Putra SMA DKI Jakarta. *Indonesian Journal of Human Nutrition*. <https://doi.org/10.21776/ub.ijhn.2021.008.01.6>
- Sopiah, L., Lestari, W., Suraya, R., Yulita, Y., & Vera Nababan, A. S. (2021). Faktor Yang Berhubungan Dengan Obesitas Remaja Di Kelurahan Bunut Barat Kecamatan Kisaran Barat. *J. Nursing and Health Science*. <https://doi.org/10.58730/jnhs.v1i1.12>
- Sriwahyuni, Junaidin, Noyumala, N., Alfiah, A., & Tangkelayuk, V. (2021). Pola Makan Terhadap Kejadian Obesitas Pada Anak. *Jurnal Asuhan Ibu Dan Anak*. <https://doi.org/10.33867/jaia.v6i2.268>
- Sugiyono. (2019). *Metodologi Penelitian Kuantitatif, Kualitatif dan R & D*.
- Widyastuti, N., Dieny, F. F., & Fitranti, D. Y. (2016). Asupan Lemak Jenuh Dan Serat Pada Remaja Obesitas Kaitannya Dengan Sindrom Metabolik. *Jurnal Gizi Klinik Indonesia*. <https://doi.org/10.22146/ijcn.22756>