



LITERATURE REVIEW: RISK FACTORS FOR OBESITY IN ADOLESCENTS

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ABSTRACT

Adolescent obesity is a significant global health problem that can persist into adulthood and lead to various degenerative diseases such as hypertension, coronary heart disease, and type 2 diabetes mellitus. The prevalence of obesity among adolescents in Indonesia is quite high, with 2018 Basic Health Research (Riskesdas) data showing that 31.0% of 15-year-olds suffer from central obesity. The high rates are often associated with multifactorial causes, including both genetic and external factors such as disproportionate dietary patterns and a lack of physical activity. Objective to analyze the relationship between various lifestyle factors such as diet, physical activity, sleep duration, and screen time with the incidence of obesity in adolescents using the literature review method. The review shows that unhealthy dietary patterns, such as the consumption of junk food and fast food, as well as excess energy intake, have a significant relationship with the incidence of obesity. Additionally, a lack of physical activity is proven to be a dominant risk factor. Concurrently, an increase in screen time is identified as having a strong relationship with obesity, as it reduces time for physical activity. Findings from one of the journals also show that peer influence has a significant correlation with junk food consumption behavior in adolescents, which can ultimately affect their nutritional status. The incidence of obesity in adolescents is a multifactorial problem that is highly influenced by a combination of poor dietary habits, a lack of physical activity, a sedentary lifestyle as measured by screen time, and social factors such as peer influence. Interventions to address obesity must be comprehensive, focusing not only on the individual but also on their social environment.

Keywords: adolescents; dietary patterns; obesity; physical activity; peer influence

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INTRODUCTION

Obesity is a public health problem that continues to increase globally, including among adolescents (Kayu & Masood, 2024). Adolescence is an important phase in individual development, during which significant physical, psychological, and social changes occur (Marlia et al., 2018). However, during this period, unhealthy lifestyle behaviors such as high-calorie diets, low physical activity, and increased use of gadgets have become factors that contribute to the increasing prevalence of obesity (Tsamara et al., 2020).

According to the World Health Organization, more than 340 million children and adolescents aged 5–19 worldwide are overweight or obese, and this figure tends to increase annually (WHO, 2023). In Indonesia, the results of the 2018 Basic Health Research (Riskesdas) showed that the prevalence of obesity in adolescents aged 13–15 years reached 16%, and this prevalence shows an increasing trend compared to previous years (Kemenkes RI, 2018). This condition indicates a shift in

adolescent lifestyles towards unhealthy behaviors, such as consuming fast food, sugary drinks, and decreased physical activity due to sedentary habits (Hendra & Rahmad, 2019).

Obesity in adolescents not only impacts physical aspects such as the risk of non-communicable diseases (type 2 diabetes mellitus, hypertension, dyslipidemia), but also affects mental health, including low self-confidence and an increased risk of depression (S. R. Putri & A, 2015). The increasing prevalence of obesity, especially among adolescents, has become a significant global health challenge in recent decades (Kayu & Masood, 2024). Lifestyle factors that play a significant role in the incidence of obesity in adolescents and young adults include unhealthy diets, lack of physical activity, inadequate sleep duration, and increased screen time (Putra et al., 2022).

Poor dietary habits, such as consuming fast food and junk food high in fat and low in fiber, have become common habits among adolescents (Chen et al., 2019). Furthermore, lack of physical activity and increased screen time, such as watching television or using gadgets, are strongly correlated with decreased energy expenditure and an increased risk of obesity (Astuti et al., 2022). Furthermore, social factors, such as the influence of peer groups, are also beginning to be recognized as playing a role in shaping behaviors that lead to obesity (Kholifah et al., 2020) (Putra et al., 2022).

Therefore, understanding the risk factors contributing to obesity in adolescents is crucial for effective control and prevention. Through this literature review, researchers sought to identify and analyze various risk factors associated with obesity in adolescents, including individual (genetics, eating behavior, physical activity), environmental (family, peers, school), and socioeconomic factors. The results of this review are expected to provide a scientific basis for designing promotive and preventive interventions to reduce obesity rates among adolescents and support the development of a healthy and productive young generation.

METHOD

The design used in this research is a literature review. A literature review is a search and research conducted by reading and analyzing various journals, books, and other published manuscripts related to the research topic to produce a written text addressing a specific topic or issue. This literature study used SPIDER, which, according to Methley, can be used for qualitative research, other methods, or a combination of both. SPIDER stands for Sample, Phenomenon of Interest, Design, Evaluation, and Research Type. The SPIDER used in several literatures in this literature review includes the Sample (S) category, which consists of adolescents with overweight or obesity; the Phenomenon of Interest (PI) category, which consists of the use of digital media and technology, such as smartphone-based applications, social media (Instagram), and digital educational media (e-booklets and flipbooks) as health promotion and nutrition education tools; the Design (D) category, which consists of a pretest-posttest control group design; the Evaluation (E) category, which consists of knowledge, attitudes, and behavioral changes (eating patterns, breakfast habits, and fast food consumption habits); and the Research (R) category, which consists of qualitative and quantitative research conducted between 2021 and 2025. The keywords used were "obesity," "adolescents," "screen time," "diet," and "physical activity." The selected articles met the inclusion criteria: journal publication within the last 5 years (2021–2025), obese adolescents as subjects, and open access articles. The search for research articles published on the internet was conducted through open access channels, namely Google Scholar. A total of 21,146 clinical articles in 2021 and 2025 obtained 10 articles.

RESULT

After searching for scientific articles through Google Scholar and PubMed using the keywords obesity, adolescent, screen time duration, dietary pattern, physical activity, and peer influence, conducted by previous researchers from both Indonesia and abroad, the literature to be reviewed was selected based on the following inclusion and exclusion criteria:

Inclusion:

- a) Literature retrieved between 2021 and 2025.
- b) Articles that can be accessed as full PDFs.
- c) Discussing factors of obesity in adolescents, including screen time duration, diet, physical activity, and peer influence.

Exclusion:

- a) Articles published before 2021.
- b) Articles that do not discuss screen time, diet, physical activity, and peer influence.

With the inclusion and exclusion criteria, 10 articles were found that met the inclusion criteria from a review of 21,146 clinical and research articles published between 2021 and 2025, as follows:

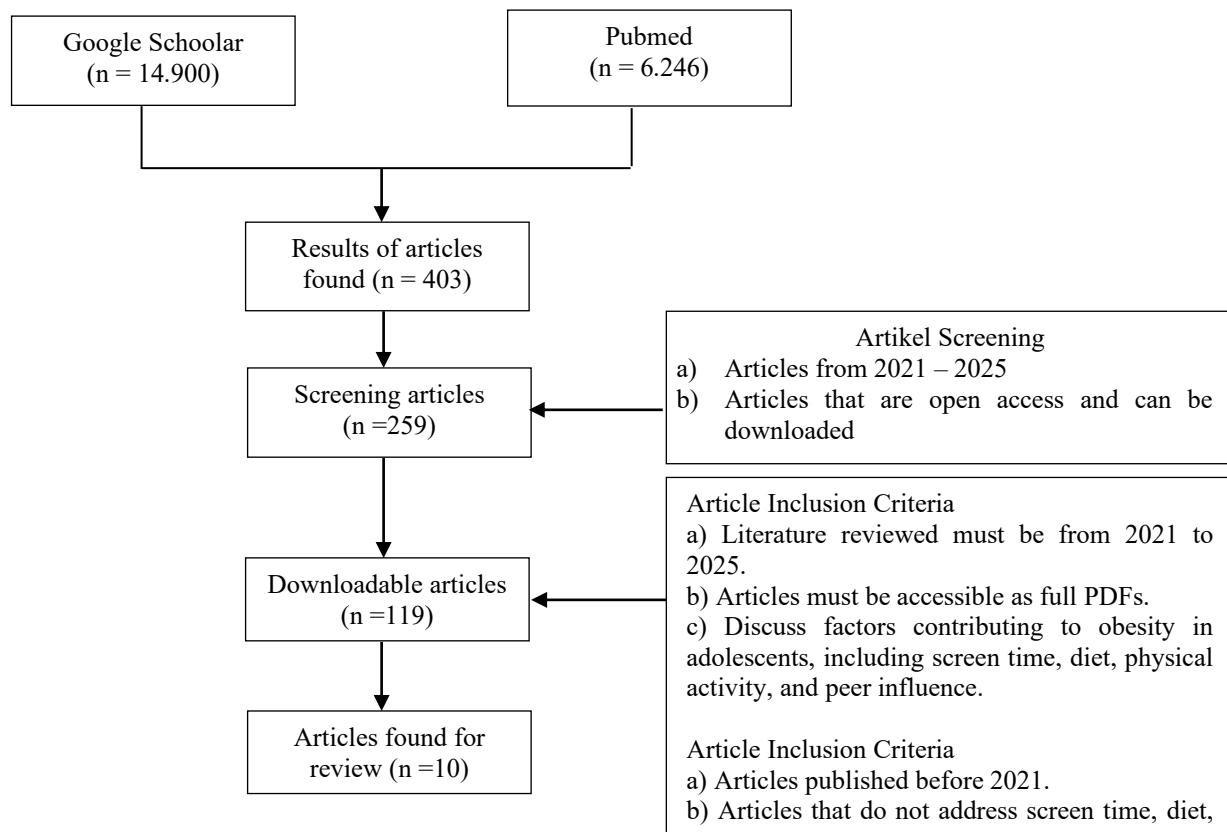


Table 1.
Characteristics of the Articles Analyzed

Author name and title	Research result	Findings	Implications
Azizah, Nurul et al (2025) The relationship between nutritional knowledge, physical activity and eating patterns with the incidence of obesity at Madrasah Ibtidaiyah Nurul Huda, Kupang city.	A significant relationship was found between eating patterns (p=0.000) and physical activity (p=0.000) with obesity, but there was no significant relationship with nutritional knowledge (p=0.298).	Diet and physical activity are stronger determinants of obesity than nutritional knowledge.	Nutrition education must place more emphasis on practical implementation and behavior change, not just the transfer of information.
Rezeki, <i>et al.</i> , (2023) Relationship between screen time, junk food eating habits, physical activity and the incidence of obesity in adolescents at MAN 14 East Jakarta.	There is a significant relationship between screen time, junk food eating habits, and physical activity and obesity (p<0.05).	Excessive screen time, high consumption of junk food, and lack of physical activity are major risk factors for obesity	Intervention programs should target integrated lifestyle modifications, namely reducing screen time and junk food consumption, as well as increasing physical activity.

Author name and title	Research result	Findings	Implications
Suraya, et al (2020) The Influence of Snack Food Consumption, Physical Activity, Screen Time, and Sleep Duration on Obesity in Adolescents.	All variables studied (snack food consumption, physical activity, screen time, and sleep duration) have a significant effect on the incidence of obesity	Obesity in adolescents is the result of a combination of several unhealthy lifestyle factors.	Not just one dominant factor, but interactions between factors. Obesity prevention must use a holistic approach that includes improving diet, increasing physical activity, and managing sleep and screen time.
Timotius, et al (2024) The Relationship between Smartphone Screen Time and the Incidence of Obesity in People Aged 15 – 21 Years	There is a significant relationship between smartphone screen time and the incidence of obesity in the young adult population	Increased use of smartphones and time spent in front of screens is one of the main triggers of obesity in modern society.	The importance of education about the negative impacts of excessive smartphone use and promoting an active lifestyle to prevent obesity.
Agustin, <i>et al.</i> , (2025) Agustin, et al., (2025) The relationship between eating frequency and physical activity and the incidence of obesity in female students at the Faculty of Health Sciences, As-Syafi'iyah Islamic University.	This research shows that there is a significant relationship between eating frequency and physical activity and the incidence of obesity	Irregular eating patterns, including high frequency of eating, and lack of physical activity, are the main risk factors for obesity in female students.	Lifestyle interventions need to target improved diet and increased physical activity.
Dewita, Ebni (2021) The Relationship between Dietary Patterns and the Incident of Obesity in Adolescents at SMA Negeri 2 Tambang.	This research found a very significant relationship between excessive eating patterns and the incidence of obesity in adolescents. The p-value obtained is 0.000 ($p \leq 0.05$), indicating that the relationship is statistically significant.	More than half of respondents have a pattern of overeating (51.9%) and are also obese (50.8%). These findings strongly indicate a direct and positive correlation between overeating patterns and the incidence of obesity in the adolescent population studied.	The results of this study indicate that excessive eating is the dominant risk factor in causing obesity in adolescents. The implication is that obesity prevention interventions and programs in schools must focus on education and behavioral modification regarding eating patterns, especially in managing excess food intake.
Yadie <i>et al.</i> , 2025 The Relationship between Knowledge About Fast Food Consumption and Physical Activity with the Occurrence of Obesity in Class XI Adolescents at SMK Negeri I Palangka Raya	The chi-square test results show that the p-value for knowledge of fast food consumption is 0.528 and for physical activity is 0.052. Both values are greater than 0.05.	No significant relationship was found between teenagers' knowledge about fast food consumption and their level of physical activity and the incidence of obesity.	Knowledge about nutrition alone is not enough to change behavior and prevent obesity. Interventions that focus on real behavior change are needed.
Ningrum, Astika et al (2023) The relationship between screen time, physical activity and sleep duration on the incidence of obesity in adolescents.	This research found that screen time, physical activity and sleep duration have a significant relationship with obesity in adolescents.	Unhealthy lifestyles, such as excessive screen time, lack of physical activity, and insufficient sleep duration, collectively contribute to the risk of obesity.	Obesity prevention interventions in adolescents should include an emphasis on reducing screen time, promotion of physical activity, and education about the importance of adequate sleep.
Saputri, Ela et al (2024) The relationship between eating patterns and physical activity with the incidence of obesity in adolescents at SMA Negeri 1 Abuki	There is a significant relationship between diet ($p=0.001$) and physical activity ($p=0.002$) with the incidence of obesity. The OR (Odds Ratio) value for diet is 11.23, and for physical activity is	Adolescents with unhealthy eating patterns have an 11.23 times greater risk of becoming obese, while adolescents with low physical activity	Obesity prevention programs in schools should target improving diet and increasing physical activity through structured activities.

Author name and title	Research result	Findings	Implications
	9.07.	have a 9.07 times greater risk.	
Saufa Yarah & Melia (2021) Relationship between Junk Food Consumption Information and the Role of Peers with the Incidence of Obesity in Adolescent Girls at Abulyatama High School, Aceh Besar Regency. .	This research found a significant relationship between the role of peers and consumption of junk food in adolescent girls. The p-value obtained was 0.004, which indicates that the relationship is statistically significant ($p < 0.05$). The Odds Ratio (OR) value found was 7.654. This means that teenagers who have peers who often consume junk food have a 7.6 times greater risk of consuming this food.	The main finding from this journal is that the role of peers is a very strong and significant factor in influencing junk food consumption habits in young women. Although knowledge about junk food was also studied, social influence from the circle of friends was shown to have a stronger correlation to eating behavior.	The implication of this research is that intervention programs for preventing and treating obesity in adolescents should not only focus on nutritional education and changing individual behavior. More effective strategies need to include a social dimension, such as involving peer groups or creating a social environment that supports healthy eating habits. In other words, interventions should target adolescents' social networks to achieve more sustainable behavior change.

DISCUSSION

Obesity among adolescents and college students is an increasingly worrying health problem, with a continuing increasing prevalence trend according to various national surveys (Kemenkes, 2018). This phenomenon is driven by sedentary behavior, high-energy, low-fiber diets, and exposure to a culture of consuming ready-to-eat and fast food which is increasingly easily accessible to the younger generation (Amrynia & Prameswari, 2022). Psychosocial factors, motivation for healthy living, and digital literacy also influence decision-making regarding lifestyle (Pratikto & Kristanty, 2020).

Excessive screen time is a significant risk factor for obesity in adolescents. Increased use of smartphones and other digital devices is directly correlated with a sedentary lifestyle, which in turn reduces daily energy expenditure (Raharjo & Winarko, 2021). Peer-reviewed journals consistently highlight the link between screen time, whether for entertainment or social media, and increased Body Mass Index (BMI). This pattern often displaces time spent on physical activity, creating a positive energy imbalance that contributes to the accumulation of body fat (Wahyuni et al., 2021). Diet and physical activity are two main factors that have consistently been found to have a significant relationship with the incidence of obesity in adolescents (Amrynia & Prameswari, 2022). Overeating patterns have a significant relationship with obesity in adolescents at SMA Negeri 2 Tambang, with a p-value of 0.000 (Khomalasari et al., 2024). These results indicate that overeating patterns are a very strong factor in determining obesity status. Similarly, research by Nolita et al., (2023) also showed a significant relationship between eating patterns and obesity incidence in adolescents in Deli Serdang Regency, although without specifying the p-value.

Besides diet, lack of physical activity is also a dominant risk factor. Research by Lestari et al., (2018) shows that physical activity has a significant relationship with the incidence of obesity in adolescents at MAN 14 East Jakarta, with a p-value = 0.004. Likewise, R. N. Putri & Fadhila, (2019) found that physical activity was significantly associated with obesity in female students at As-Syafi'iyah Islamic University, although the statistical value was not stated in the abstract. These findings confirm that a sedentary lifestyle, where energy expenditure is lower than intake, is a major cause of body fat accumulation.

A sedentary lifestyle, as measured by screen time, was also shown to have a strong association with obesity. This study examined smartphone screen time and obesity in people aged 15-22 years. The results showed a significant association with a p-value of 0.000 and an odds ratio (OR) of 13.322, meaning that adolescents with excessive screen time were 13 times more likely to become obese than those without. These results are consistent with findings from other studies that also show that time spent in front of screens, such as using devices or television, directly reduces time spent on physical activity, thereby increasing the risk of obesity (Hendra & Rahmad, 2019).

Apart from individual behavioral factors, the social environment also plays an important role. Peer influence is a factor that cannot be ignored, especially in shaping teenagers' eating habits. Research by Amrynia & Prameswari, (2022) found a significant relationship between peer influence and junk food consumption among young women at Abulyatama High School, with p-value = 0.004 and OR = 7.654. This OR value shows that teenagers who have peers who frequently consume junk food are 7.6 times more likely to consume this food. This indicates that eating behavior is not only influenced by personal preferences, but also by the norms that exist in their friendship group.

CONCLUSION

Based on an analysis of ten journals, it can be concluded that obesity in adolescents is a multifactorial health problem, which cannot be attributed to a single cause. Findings consistently show that unhealthy eating patterns, such as excessive energy intake, have a highly significant relationship with obesity. Furthermore, lack of physical activity has also been identified as a dominant risk factor, with studies showing a significant correlation between low physical activity and obesity. A sedentary lifestyle, indicated by increased screen time, also has a strong impact, with adolescents with excessive screen time being at high risk of obesity.

Furthermore, the social environment plays a crucial role, with peer influence significantly correlated with unhealthy food consumption behaviors, such as junk food, which ultimately impacts adolescents' nutritional status. Therefore, obesity prevention strategies must adopt a holistic approach that focuses not only on nutrition education and physical activity promotion, but also considers broader social and behavioral factors.

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