

The Existence of Obesogenic Environmental Exposure to Obesity in Adolescents Aged Over 15 Years in DKI Jakarta: A Literature Study

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Abstract

Obesity in adolescents is a growing health problem, particularly in urban areas such as Jakarta, characterized by a modern and instantaneous environment. Obesogenic environments are characterized by high access to fast food, increased sedentary behavior, low physical activity, and easy use of digital services, which encourage unhealthy lifestyle changes. This study aims to examine the existence of obesogenic environmental exposure on obesity incidence in adolescents aged 15 years and over through a literature review of 10 national and international journals published between 2021 and 2026. The results of the review indicate that obesogenic environmental factors are closely related to the increased risk of obesity in adolescents. Consumption of high-calorie foods, sugary drinks, fast food habits, and low physical activity are dominant factors contributing to weight gain. In addition, socioeconomic factors, the urban environment, peer influence, and easy access to online food delivery services also reinforce the formation of sedentary behavior in adolescents. Adolescents living in urban areas tend to be more susceptible to obesity than adolescents in rural areas due to high exposure to a practical lifestyle and minimal physical activity. Thus, obesogenic environments play a significant role in increasing the prevalence of obesity among adolescents aged 15 and over in Jakarta. Therefore, promotional and preventive efforts are needed through health education, increased physical activity, and the creation of an environment that supports healthy lifestyles to reduce obesity rates among adolescents.

INTRODUCTION

Adolescence is a phase when humans experience rapid physical, psychological, and social growth (Elbes & Oktaviani, 2022; Husnaini, 2022; Islam et al., 2022; Jia et al., 2022; Rahimi & Fathi, 2024; Tayyab et al., 2023). During this period, adolescents are also vulnerable to various changes in their environment. These changes can shape adolescent behavior patterns (Suha, Ghina Raniya & Rosyada, Amrina, 2022). However, with the changing times and the rapid flow of information, adolescents are increasingly exposed to unhealthy behavior patterns that can lead to obesity.

The prevalence of obesity increases every year in every country, both high-income countries and middle- and low-income countries (Ahmed & Konje, 2023; Danpanichkul et al., 2024; Daran et al., 2023; “Obesity Rise Plateaus in Developed Nations and Accelerates in Developing Nations,” 2026). According to the World Obesity Federation, Indonesia is classified as having a high risk of obesity both overall and in children, namely being ranked 4th globally in terms of the highest absolute number of school-age children and adolescents predicted to be obese by 2030. Riskesdas (1) data in 2013 showed this prevalence at 14.8%, increasing to 21.8% in Riskesdas 2018 data. The incidence of obesity within a five-year period, there was approximately a 47% increase in the prevalence of obesity from the initial value.

Obesity, which was previously associated as a disease for adults, is now also starting to infect children and adolescents due to shifts in diet and lifestyle.

Healthy behavior patterns are characterized by fast food consumption, unhealthy habits such as smoking and lack of exercise, and low physical activity (Masyitoh & Budiono, Irwan, 2023) . Studies on modern eating habits show that people, especially teenagers and the younger generation, are increasingly consuming ultra-processed fast food rather than fresh, directly processed food (Mescoloto, Samantha Bittencourt et al., 2023) . Consuming instant foods that are high in calories, high in fat, and low in fiber leads to excessive energy consumption in adolescents (Widyastuti, Paula Agung et al., 2026) . Excessive energy consumption coupled with minimal physical activity increases the risk of obesity. When combined with other risk factors such as a sedentary lifestyle, smoking, and alcohol consumption, obesity in adolescents increases their risk of developing non-communicable diseases in the future. An obesogenic environment and low physical activity are factors suspected to be closely related to obesity in adolescents.

Other research shows that people in urban areas are more susceptible to obesity than those living in rural areas (Huang, Junjie et al., 2023) . This is due to the ease of access in urban areas, which supports the emergence of a sedentary lifestyle (Rahmawati, Wilda Aulia et al., 2023) . Urban residents have easier access to entertainment, fast food, and internet access that allows them to order food online. This further encourages minimal physical activity, thus increasing the risk of weight gain. While many obesity studies have been conducted on adolescent obesity, this study specifically examines the relationship between obesogenic environments and physical activity in early adolescents in the Special Capital Region of Jakarta Province.

The Special Capital Region of Jakarta (DK Jakarta) is one of Indonesia's metropolitan cities, serving as a melting pot for people from diverse backgrounds. People living in Jakarta come from various regions and seek a livelihood in the city. This is supported by its role as the nation's capital, enabling Jakarta to serve as a center of economics and education, offering a variety of transportation and infrastructure conveniences for the community. As urbanization increases, resulting in a population increase in Jakarta, people's lifestyles are gradually shifting to a faster and more instant lifestyle. Previous research, mostly conducted overseas or using general populations, has not fully reflected the conditions of young adolescents in urban Indonesia.

The novelty of this study lies in its focus on the specific context of DKI Jakarta a rapidly urbanizing metropolitan area with unique characteristics and its comprehensive synthesis of evidence on obesogenic environmental factors. Unlike previous studies that have examined isolated risk factors, this research employs a socio-ecological approach to understand the multiple levels of influence (individual, social, environmental, and policy) that contribute to adolescent obesity. By synthesizing evidence from national and international journals published in the last five years, this study provides an up-to-date understanding of the obesogenic environment in urban Jakarta and its relationship with adolescent obesity, offering insights that can inform targeted interventions for this population.

In addition to physical and behavioral factors, obesity is also significantly influenced by socioeconomic factors. Current research on obesity often focuses on studies conducted in Western countries such as Europe and America (Ashraf, Tanveer et al., 2025) . These findings may not be applicable to developing countries like Indonesia, regardless of demographic and socioeconomic factors. Therefore, analyzing the relationship between risk factors and obesity in countries with different socioeconomic and sociocultural characteristics is necessary to understand the contribution of these factors in a broader context.

METHOD

This study used a design literature review with a narrative synthesis approach. A thematic narrative analysis was used to examine the relationship between exposure to obesogenic environments and obesity among adolescents aged 15 and over in urban areas. This approach was chosen because it allows for the integration of research findings with varying characteristics, methods, and contexts, resulting in a comprehensive understanding of the environmental factors contributing to adolescent obesity. The thematic narrative synthesis was conducted by identifying key themes, comparing research findings, and developing a conceptual framework explaining the relationships between obesogenic environments, physical activity, consumption patterns, sociodemographic factors, and obesity incidence.

Literature searches were conducted through various academic databases and scientific sources, namely Google Scholar, PubMed, Scopus, ScienceDirect, and ProQuest. Article searches were conducted using a combination of keywords in Indonesian and English, including: *obesogenic environment, obesogenic exposure, adolescent obesity, youth obesity, physical activity, sedentary behavior, fast food consumption, ultra-processed food, urban adolescents, obese adolescents, obesogenic environment, physical activity, fast food, and sedentary behavior*. Articles searched were limited to publications from 2021–2026 to obtain relevant and up-to-date scientific evidence.

Inclusion criteria for this study included national and international scientific articles discussing the relationship between obesogenic environments and obesity in adolescents, physical activity factors, sedentary behavior, food consumption patterns, socioeconomic factors, and urban environmental characteristics. Articles must be available in full text, use quantitative, qualitative, systematic review, or literature review research designs, and be published between 2021 and 2026. Exclusion criteria included articles that did not address adolescents as the primary population, articles that did not specifically address obesogenic environmental factors, non-scientific publications, editorials, opinion pieces, and articles with incomplete data.

The selected articles were then extracted into a review matrix containing information on the researcher's name, year of publication, publication source, research objectives, concepts used, research methods, and main research results. Next, a thematic analysis was conducted by grouping the findings into several main themes, namely: (1) obesogenic environment as a risk factor for adolescent obesity, (2) the influence of physical activity on the incidence of obesity, (3) food consumption patterns and obesity risk, (4) the role of socioeconomic factors and urban characteristics, and (5) implications for obesity prevention in adolescents in urban areas. The results of the analysis are used to compile a conceptual synthesis regarding the relationship between obesogenic environments and the incidence of obesity in adolescents.

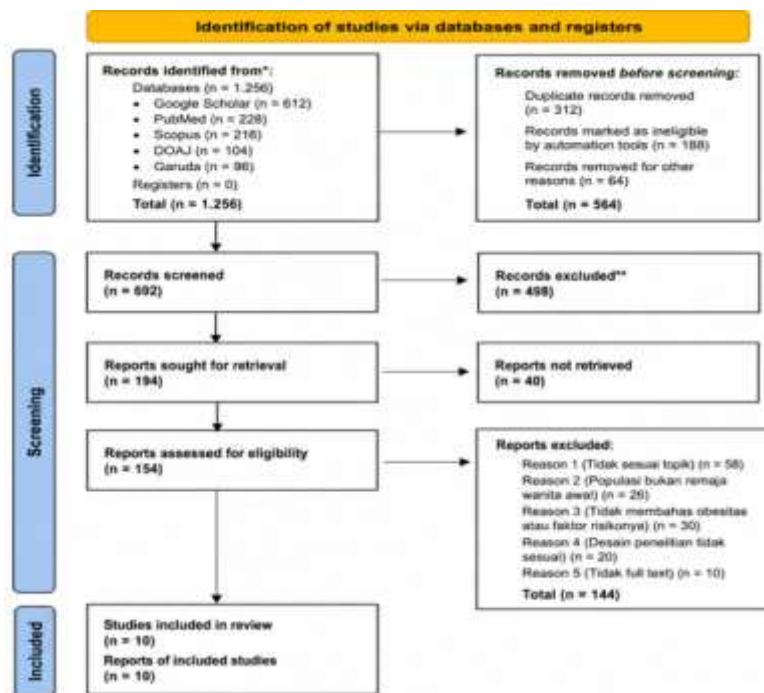


Figure 1 Prisma Flow Diagram

RESULTS AND DISCUSSION

Based on the results of the literature review and literature selection process using the PRISMA method, 10 articles were obtained that met the inclusion criteria and were further analyzed. These articles came from national and international journals that discussed the relationship between obesogenic environments, physical activity, dietary patterns, sociodemographic factors, and the incidence of obesity in adolescents. The synthesis results showed that most studies found a significant association between obesogenic environmental characteristics and an increased risk of obesity in adolescents.

Of the ten articles reviewed, seven showed that low physical activity was a factor consistently associated with increased obesity. Furthermore, six articles reported that consumption of high-energy foods, fast food, ultra-processed foods, and sugar-sweetened beverages contributed to weight gain and obesity in adolescents. Urban environmental factors such as easy access to fast food restaurants, online food delivery services, and increased sedentary behavior were also found to play a role in creating an environment conducive to obesity.

Obesogenic Environment as a Risk Factor for Adolescent Obesity

An obesogenic environment is one that encourages individuals to consume high-calorie foods and reduce physical activity. Studies have shown that urban environmental characteristics significantly contribute to the development of obesogenic behaviors in adolescents.

Rahmawati et al.'s research found that proximity to fast food restaurants and peer influence increased Western fast-food consumption among adolescents. This suggests that the physical and social environment can influence adolescents' food choices.

These findings are reinforced by Adimuntja's (2024). research, which shows that consumption of sugary drinks and sedentary behavior are significantly associated with obesity in adolescents. Environments that provide widespread access to high-sugar foods and drinks can lead to excessive energy consumption, ultimately increasing the risk of body fat accumulation. In urban areas like Jakarta, the availability of various fast-food outlets, minimarkets, and online food delivery services can accelerate the formation of unhealthy

consumption patterns. Furthermore, the development of digital technology also influences adolescent activity patterns. Prolonged use of gadgets is also a contributing factor to the increased risk of obesity (Zhang et al., 2024).

The Effect of Physical Activity on the Incidence of Obesity

Physical activity is a key determinant of the body's energy balance. Studies have shown that low levels of physical activity are closely linked to increased obesity rates in adolescents. Research by Suha and Rosyada found a significant correlation between physical activity and obesity among adolescents aged 13–15 in Indonesia. Similar findings were also found by Masyitoh and Budiono, (2023). who showed that low levels of physical activity increase the risk of overnutrition and obesity.

Physical activity is crucial for helping the body expend stored energy to balance the energy intake from food. Several previous studies have also demonstrated a link between obesity in adolescents and physical activity (Sembiring et al., 2022).

Physical activity affects a person's weight stability. Frequent physical activity burns more calories, which are used as energy for weight loss (Nisa et al., 2021). Conversely, low physical activity leads to an imbalance between energy intake and energy expenditure. This condition is further exacerbated by the increasing use of digital devices, which encourages a sedentary lifestyle. Adolescents who spend more time playing with gadgets, watching television, or using social media tend to have lower levels of physical activity, making them more susceptible to obesity.

There is scientific evidence that sedentary lifestyle habits are associated with lack of physical activity, continuous sleep, and lack of physical activity, factors that have a negative impact on increasing the percentage of fat, resulting in overweight and obesity (Platini et al., 2024).

Food Consumption Patterns and Obesity Risk

In addition to physical activity, dietary patterns are a crucial factor influencing adolescent nutritional status. A study by Mescoloto et al. (2023). showed that consumption of ultra-processed foods increasingly dominates the diets of children and adolescents in various countries. Ultra-processed foods are generally high in energy, sugar, salt, and fat but low in fiber and micronutrients. These high-risk foods are frequently consumed by adolescents in this modern era, and if consumed unwisely, can have negative health consequences. The prevalence of excess weight will continue to increase if these high-risk dietary patterns persist among adolescents (Wadhani & Ratnaningsih, 2021).

Research by Widyastuti et al. (2026). also shows that consumption of fatty foods and energy drinks is associated with an increased risk of obesity in Indonesian adolescents. These findings suggest that shifts in dietary patterns toward the consumption of instant and ready-to-eat foods are one of the factors accelerating the rise in obesity prevalence. In urban environments, the easy availability of fast food and aggressive marketing strategies further reinforce unhealthy eating behaviors among adolescents.

The Role of Socioeconomic Factors and Urban Characteristics

Socioeconomic factors also contribute to obesity. Research by Huang et al. (2023). shows that individuals living in urban areas are more likely to gain weight than those living in non-urban areas. Easy access to modern facilities leads to less physical activity in urban areas than in rural areas.

Furthermore, Ashraf et al.'s (2025). research confirms that environmental, behavioral, and psychosocial factors interact to influence obesity incidence. These findings align with the bio-socioecological approach described by Jebeile et al., (2022). which argues that obesity is the result of a complex interaction between biological, environmental, social, economic, and

individual behavioral factors. Therefore, obesity prevention efforts cannot focus solely on changing individual behavior but must also consider the social and physical environments in which adolescents live.

Implications for Obesity Prevention in DKI Jakarta

As a metropolitan area with a high level of urbanization, DKI Jakarta has various characteristics that support the formation of an obesogenic environment. Easy access to fast food, high use of digital technology, and reduced space for physical activity are challenges in controlling adolescent obesity. Based on the results of the literature review, effective interventions need to be implemented through a multisectoral approach involving schools, families, communities, and the government. Among urban adolescents, consuming fast food has become a habit or trend. This is due to its affordable price and attractive promotions. Fast food restaurants serve a relatively large number of dishes containing high levels of salt and fat. Therefore, adolescents who frequently consume fast food will have negative impacts on adolescents, one of which is becoming overweight (Amin & Sulaiman, 2025).

Early detection of obesity cases is a crucial step to ensure faster and more effective interventions to reduce the prevalence of obesity in Indonesia (Pertiwi & Niara, 2022). Physical activity promotion programs in schools, restrictions on the marketing of unhealthy foods to children and adolescents, the provision of green open spaces that support physical activity, and community-based nutrition education are some strategies that can be implemented. Furthermore, strengthening public health policies that support the creation of healthy environments is a crucial step to reduce the increasing prevalence of obesity among adolescents in urban areas.

CONCLUSION

From the various articles reviewed above, it can be concluded that the study on the association of obesogenic environment and physical activity with obesity in early adolescence in DKI Jakarta is highly urgent. First, the various studies above have documented how the prevalence of obesity among children and adolescents has increased over the past 20 years. Data from the 2013 Basic Health Research (Riskesmas) showed an obesity prevalence of 14.8%. This figure increased to 21.8% according to the 2018 Basic Health Research (Riskesmas). This means that in approximately five years, there has been a 47% increase in obesity prevalence from the initial value. As an urban area, Jakarta serves as a kind of miniature where people from various backgrounds in Indonesia live and earn a living. This condition is ideal for conducting research on obesity because it provides a diverse sample population. For future research, several priorities are identified. First, quantitative studies are needed to measure the specific contribution of obesogenic environmental factors including access to fast food, food delivery services, and recreational facilities to obesity incidence among adolescents in DKI Jakarta. Second, longitudinal studies are required to establish causal relationships between obesogenic environmental exposure and weight gain over time, particularly during the critical transition from early to late adolescence. Third, interventional studies should be conducted to evaluate the effectiveness of multi-component interventions that address both environmental and individual-level risk factors in reducing adolescent obesity in urban settings. Fourth, qualitative research should explore the perceptions and experiences of adolescents, parents, and educators regarding the obesogenic environment and their perspectives on effective prevention strategies. Fifth, comparative studies between different urban areas in Indonesia would help identify context-specific factors and inform the development of tailored interventions for diverse settings.

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