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Unhealthy Lifestyle Habits and Implications of Adolescent Obesity in Southeast Asia: Literature Review

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ABSTRACT

Obesity among children and adolescents has become a serious global health problem. This is demonstrated by WHO data with child and adolescent obesity rates in Southeast Asia increasing with the prevalence of obesity ranging from 31% in Southeast Asia. This study aims to explore current scientific evidence that can inform the formulation of more effective adolescent obesity prevention and intervention strategies in the region. Between 2020-2024, searches were sourced from Google Scholar and Pubmed, using Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) with exclusion criteria, and 8 relevant articles were obtained for analysis. The results showed that the increasing prevalence of adolescent obesity in Southeast Asia is evidenced by several contributing factors including, lack of physical activity due to gadgets, parental roles, poor diet, and family and socioeconomic environments that limit access to health. It was concluded that the lack of physical activity due to gadgets, the role of parents, poor diet, family's role and socio-economic environment that limits access to health are factors that cause adolescent obesity. Integrated efforts need to be made through nutrition and physical activity education since school age, empowering the role of parents in shaping healthy eating patterns at home, and providing facilities that encourage active lifestyles.

***Keywords** : Obesity ; Adolescent ; South East Asia ; Factor ; Prevalence*

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INTRODUCTION

Overweight and obesity among children and adolescents have become a serious global health problem (1). Adolescent obesity has become a serious and growing public health problem in the Southeast Asian region, as indicated by WHO data, with child and adolescent obesity rates in Southeast Asia increasing by 48% between 2010 and 2016 (2). Along with modernization and urbanization, the lifestyle habits of adolescents have undergone drastic changes, particularly in terms of diet, physical activity, and daily routines. Fast food, sugary drinks, and high consumption of refined carbohydrates are increasingly replacing traditional foods that were once healthier and more nutritious (3). At the same time, technological developments also influence sedentary behavior in adolescents, such as the habit of staring at a cell phone or computer screen for extended periods, which leads to a significant decrease in physical activity (4).

The prevalence of adolescent obesity in Southeast Asia has increased significantly in the past two decades. In Indonesia, a systematic review showed that adolescents have poor dietary habits, such as low consumption of protein and vegetables and high consumption of fast food and sugary drinks (5). Results from the Indonesian Health Survey in 2023 showed that 4.1% of adolescents aged 13 - 15 years and 3.3% of adolescents aged 16 - 18 years were obese. This is very different from the results from the 2018 Basic Health Research, which reached 19.8% and 16.2% in the same age groups (6). Meanwhile, another study in Malaysia showed that 32.6% of adolescents were overweight or obese, with 70% of them habitually skipping breakfast and more than 72% having poor sleep quality (4). This lifestyle is a significant risk factor that increases the likelihood of obesity and other metabolic diseases at an early age (7). Teenagers' low awareness of the importance of physical activity worsens health, as energy from food is not burned optimally and accumulates as fat. In addition,

high-calorie and low-fiber diets can exacerbate this condition. In fact, fiber helps control body weight and inhibits the absorption of cholesterol from fast food (8). In Southeast Asia, fast food consumption is increasingly widespread, not only as a modern trend but also as a symbol of social status (9).

United Nations Thailand shows that in 2015, 56% of students drank carbonated beverages daily, and the prevalence continues to increase. The prevalence of daily consumption of sugary sweetened beverages by children aged 2-5, 6-9, and 10-14 years increased from 10.5%, 14.5%, and 19% in 2009 to 12.5%, 20.4%, and 19.8% in 2015 (10). Meanwhile, in Indonesia, 56.4% of adolescents aged between 15 and 19 years drank sugar-sweetened beverages at least once every day (11). This suggests that a cultural shift in food consumption has occurred widely in the region, not only in big cities but also in semi-urban areas.

Socioculturally, family values and habits influence adolescents' lifestyles. In families where parents work full-time, instant food consumption increases for practical reasons, making unhealthy diets commonplace. Lack of nutritional supervision and nutritional knowledge from parents also increases the risk of obesity from school age (12). In addition, adolescents from low-income families tend to have difficulty accessing healthy foods and more often consume cheap foods high in calories but low in nutrients (13). These inequalities exacerbate the burden of nutrition and widen health disparities between community groups.

The urgency of this review lies in the importance of understanding the link between unhealthy lifestyle habits and increasing rates of adolescent obesity in Southeast Asia. Therefore, this literature review aims to explore the current scientific evidence that can inform the formulation of more effective adolescent obesity prevention and intervention strategies in the region.

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METHODS

This study uses a literature review method with a framework using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA). The article search used two database sources, namely Google Scholar and PubMed. These two platforms help ensure that the information used is relevant, accurate, and scientifically sound. However, the exclusion of other major databases such as Scopus or ProQuest may limit the comprehensiveness of the literature gathered. The Google Scholar database uses the keywords "lifestyle", "adolescent obesity", AND "Southeast Asia" with the results of the article search, there are 3,850 articles; the PubMed database with the keywords "lifestyle", "factors", "obesity", 'adolescence', "young adult", AND "Southeast Asia" with 227 articles. Exclusion criteria included articles published before 2020, those with limited access, non-relevant regional focus, and articles that did not use literature review or systematic review designs. Other exclusion criteria included literature not focused on adolescent obesity and unhealthy lifestyles, using methods other than quantitative or qualitative, and duplicate articles. Inclusion criteria included national and international articles, published within the last 5 years, full text, open access, and articles using quantitative or qualitative research methods.

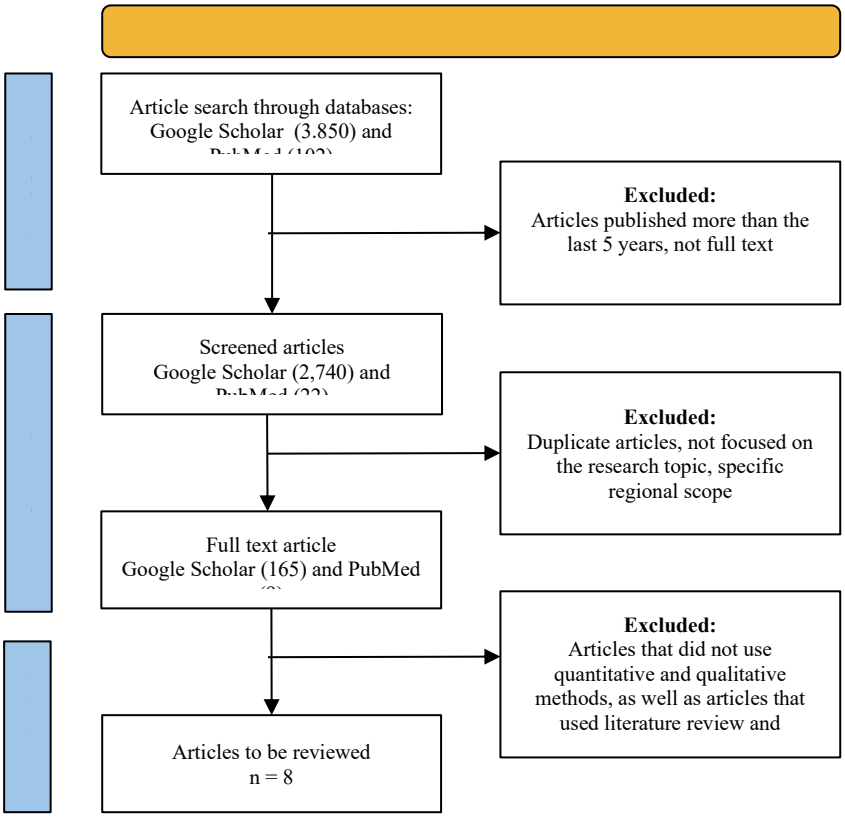

Figure 1. PRISMA Flowchart

RESULTS

This study used eight articles as references for the review. Each article was analyzed based on several indicators, such as author, title and year of publication, location, data collection methods, and research results presented. From the screening results, there are eight literatures that are considered to meet the criteria and are relevant to the topic discussed.

Table 1
Article Review Results

No.	Author and Year	Title	Location	Method	Results
1.	Fransisca Handy Agung, Rini Sekartini, Nani Cahyani Sudarsono, Aryono Hendarto, Meita Dhamayanti, Retno Asti Werdhani and Susan M. Sawyer (2022)	*The barriers of home environments for obesity prevention in Indonesian adolescents*	Indonesia	Qualitative Study (interview)	This study involved 19 adolescent and parent pairs from urban, suburban and rural areas. A total of 8 adolescents were overweight and 11 were obese, with an age range of 10-19 years.
2.	Phaik Ling Quah, Benny Kai Guo Loo, Nurul Syaza Razali, Nurul Sakinah Razali, Chin Chye Teo, Kok Hian Tan (2021)	*Parental perception and guideline awareness of children's lifestyle behaviours at ages 5 to 14 in Singapore*	Singapura	*Cross-sectional*	In a sample of 100 children (mean age: 9 years), 31% were classified as overweight or obese. A substantial proportion were physically inactive; 32% did not engage in moderate-intensity physical activity, while 43% did not participate in vigorous-intensity activity. Both screen time and sleep duration increased during weekends. Parental awareness of health

					guidelines was highest for sleep (80%), followed by screen time (59%) and physical activity (51%).
3.	Huong Duong Phan, Thi Ngoc Phuong Nguyen, Phuong Linh Bui, Thanh Tung Pham, Tuan Vu Doan, Duc Thanh Nguyen, Hoang Van Minh (2020)	*Overweight and obesity among Vietnamese school-aged children: National prevalence estimates based on the World Health Organization and International Obesity Task Force definition*	Vietnam	*Cross-sectional*	According to the World Health Organization (WHO), the prevalence of overweight and obesity among Vietnamese children is 17.4% and 8.6%, respectively. Data from the International Obesity Task Force (IOTF) report slightly lower figures, at 17.1% for overweight and 5.4% for obesity. The prevalence is higher among males. Parental body mass index (BMI) was significantly associated with the child's nutritional status. Among boys, age and ethnic minority status were identified as significant risk factors.
4.	Hanan Al-Haroni, Nik Daliana Nik Farid,	*Effectiveness of education intervention,*	Malaysia	*Cluster Randomized Controlled*	The results obtained from this research, which will be published

	Mohamad Shafiq Azanan (2024)	*with regards to physical activity level and a healthy diet, among Middle Eastern adolescents in Malaysia: A study protocol for a randomized control trial, based on a health belief model*			in open-access, peer-reviewed global journals, will also be disseminated by the principal investigator to educational and medical institutions, as well as at national and international conferences.
5.	Pika Asyera Sinulingga, Lita Sri Andayani, Zulhaida Lubis (2021)	*Pengaruh Sekolah Secara Online terhadap Perilaku Sedentari yang Berisiko Obesitas pada Remaja Berumur 15-19 Tahun*	Indonesia	*Cross-sectional*	Online schooling has been shown to influence sedentary behaviour associated with an increased risk of obesity in adolescents aged 15–19 years. The greater the impact of online schooling on sedentary behaviour, the higher the risk of obesity among adolescents.
6.	Mohamad, M. S., Abdul Maulud, K. N., & Faes, C (2023)	*A practical illustration of spatial smoothing methods for disconnected regions with*	Malaysia	*Cross-sectional* based on a national survey	The study identified geographical disparities in the prevalence of overweight among children aged 5–17 years in Malaysia, with a higher prevalence

		INLA: spatial survey on overweight and obesity in Malaysia			observed in the western region.
7.	Ivanovitch, K., Keolangsy, S., & Homkham, N (2020)	*Overweight and Obesity Coexist with Thinness among Lao's Urban Area Adolescents*	Laos	*Cross-sectional*	The prevalence of obesity and underweight among adolescents was 23.3% and 10.3%, respectively. Although 78% of adolescents demonstrated good nutrition knowledge, 67% still exhibited poor eating habits. Significant factors associated with obesity included low physical activity and not living with parents. Additionally, receiving nutrition information from teachers was associated with a reduced risk of obesity (adjusted odds ratio [aOR] = 2.05).
8.	Chakraborty, P. A., Talukder, A., Haider, S. S., & Gupta, R. D. (2022)	*Prevalence and factors associated with underweight, overweight and obesity among 15-49-year-old*	Timor Leste	*Cross-sectional*	The study found that 55.2% of respondents were of normal weight, 25.5% were underweight, and 19.3% were overweight or obese. Factors significantly associated

	men and women in Timor-Leste	with overweight or obesity included age, gender, region of residence, type of settlement, education level, economic status, and marital status.

DISCUSSION

Trends and Prevalence of Adolescent Obesity

According to the WHO, obesity is defined as a condition in which an individual has a Body Mass Index (BMI) greater than 30 and can pose serious health risks (22). The fact that many people worldwide still suffer from obesity indicates that obesity remains a global health issue, with obesity prevalence ranging from 31% in Southeast Asia and Africa to 67% in the United States; for the age group 5–19 years, more than 390 million children and adolescents were overweight in 2022, up from 8% in 1990 to 20% in 2022. The number of obese children and adolescents also increased from 2% (31 million) to 8% (160 million) over the same period (13). In Vietnam, the prevalence of obesity among children reached 17.4%. When combined with cases of overweight, this figure rises to 32.2% in urban areas and 21.6% in rural areas, indicating a significant difference between regions with varying levels of urbanization (16).

In Malaysia, approximately 24% of children aged 5 to 17 years were estimated to be overweight in 2015, equivalent to around 1.4 million children. However, these figures mask significant variations at the district level. Further research findings show that there is nearly a twofold difference in the prevalence of childhood overweight among districts in Malaysia, ranging from 17% to 34% (23).

Risk Factors Associated with Adolescent Obesity in Southeast Asia

Several factors contribute to the increase in obesity in this region, including:

Lack of Physical Activity

In Singapore, 30-40% of children aged 5-14 years do not regularly engage in moderate to vigorous physical activity. Watching TV is the main sedentary activity, especially on weekends. Early access to devices increases screen viewing time (SVT), which impacts sleep quality, and about 18.8% of adolescents sleep less than 8 hours on school days. The use of devices at home also greatly influences adolescent behavior (15).

Meanwhile, adolescents in Vietnam with a high body mass index (BMI) play games and watch television more often, and the longer the duration of television viewing, the higher the risk of obesity. Differences in obesity rates between regions are influenced by changes in lifestyle (16).

Based on research that has been conducted, online learning with minimal physical activity is proven to increase sedentary behavior that can lead to obesity in adolescents aged 15-19 years. A total of 49.1% of respondents were classified as having a high risk of sedentary behavior, and 41.2% of them were at risk of obesity. The pandemic situation and the habit of sitting in front of a screen for a long time without sufficient physical activity reinforce sedentary lifestyles among adolescents (18).

Poor Dietary Habits

Unhealthy diets, such as excessive food consumption, high fat, simple carbohydrates, and low fiber, trigger overweight and obesity (24). Adolescents who frequently consume fast food are at risk of poor nutritional status because these foods are high in calories, fat, sugar, and sodium but low in fiber, vitamin A, C, calcium, and folate (25). In Laos, 67% of adolescents had a poor diet; 14% were overweight and 9.3% were obese (20).

The Role of Parents

Parents often claim they do not have time or feel too lazy to prepare healthy meals, considering factors such as affordability, ease of access, and convenience. Another challenge is the lack of information and support in guiding adolescents to adopt a healthy lifestyle (14). Looking at Singapore, where programs to help children and adolescents who are overweight or obese aim to make them more active, parents are also actively involved. Parents are always involved and participate in the same activities as their children. In this way, they can learn about healthy and active living alongside their children. Some studies also indicate that parental education influences children's eating patterns, highlighting the importance of parental involvement in reducing obesity rates (12).

Socioeconomic Disparities

Adolescents classified as socioeconomic class III (lower middle class) are 4.56 times more likely to be overweight or obese than those from higher socioeconomic classes. This relationship indicates that socioeconomic status plays a significant role in the risk of obesity among adolescents (26). Meanwhile, a study in Timor-Leste revealed that adolescents and young adults aged 15–24 years have twice the risk of being overweight or obese compared to younger age groups. This risk is also higher among individuals with higher levels of education and those from higher economic groups. In fact, the likelihood of being overweight or obese among the highest economic group is more than twice that of the lowest economic group. Factors such as age, gender, place of residence, type of settlement, educational attainment, economic status, and marital status are significantly associated with the occurrence of overweight or obesity (21).

Intervention Efforts to Reduce Obesity Rates in Southeast Asia

Promotion of Physical Activity

Promoting physical activity is an important strategy in combating the rise in adolescent obesity in Southeast Asia. Data from the WHO shows that around 80% of adolescents do not meet the recommended level of physical activity, which is a minimum of 150 minutes per week of moderate to high-intensity aerobic activity every day. This lack of physical activity significantly contributes to the rising prevalence of obesity and other non-communicable diseases (27). Other studies indicate that the effectiveness of physical activity interventions varies depending on the type and duration of implementation. Short-term interventions tend to yield more immediate impacts, while long-term interventions demonstrate more sustainable results over time. These findings confirm that community-based physical activity programs are an effective strategy for reducing the risk of obesity in adolescents in both the short and long term (28).

Reducing Screen Viewing Time

Excessive screen viewing time (SVT) has been identified as an important risk factor in the increasing prevalence of obesity among adolescents in Southeast Asia. A study revealed that adolescents with SVT exceeding 2 hours per day had a 1.63 times higher risk of being overweight compared to those with shorter SVT (29). Interventions to reduce SVT have proven effective in decreasing screen usage duration. However, another meta-analysis study found that reducing SVT alone is insufficient to significantly lower body mass index (BMI) in children and adolescents (30). Therefore, a more comprehensive approach is needed, such as replacing screen time with physical activity or adequate sleep, which has been proven effective in reducing the prevalence of obesity in adolescents.

Utilizing Apps for Health Screening

Studies show that using the OBEST app as an adjunct to standard care can improve healthy eating in obese children and adolescents. The intervention group was 4.5 times more likely to reduce fast food consumption than the control group after 6 months. The m-Health app was also effective in increasing physical activity and reducing sedentary behavior in adolescents and adults (31).

A meta-analysis of 28 randomized trials involving 5,643 participants showed that the m-Health app significantly increased total physical activity, reduced sedentary behavior, and decreased BMI (32). The app also improved muscle strength and agility, although it did not have a significant impact on moderate-heavy intensity physical activity, cardiorespiratory fitness, muscular endurance, flexibility, and waist circumference (30). The m-Health app also encourages the formation of a community of adolescents who support each other to be active in exercise, thus helping to prevent obesity

While these findings demonstrate the potential of m-Health interventions such as OBEST, challenges remain. Long-term adherence to the apps and equitable access especially among populations from varied socioeconomic backgrounds require further investigation to ensure their effectiveness and sustainability across diverse user groups.

CONCLUSIONS AND RECOMMENDATIONS

It can be concluded that the increase in adolescent obesity rates in Southeast Asia is closely related to changes in unhealthy lifestyle habits. Data from various countries, such as Indonesia, Vietnam, Malaysia, Singapore, Laos, and Timor-Leste, indicate that limited physical activity due to gadget use, parental roles, poor eating habits, and family and socioeconomic environments that restrict access to healthcare are contributing factors to adolescent obesity.

Socioeconomic factors are one of the causes of obesity in adolescents because parents' income and education levels vary. Parental roles also significantly influence adolescent obesity, as parents shape children's daily habits, including eating patterns, physical activity, and screen time. Eating patterns and physical activity levels play a crucial role in adolescent obesity, as a balanced nutrient intake combined with adequate physical activity helps maintain an equilibrium between energy intake and expenditure.

Therefore, to reduce adolescent obesity rates in Southeast Asia, a comprehensive, preventive, and educational approach is needed. This should include nutrition education and physical activity programs starting at school age, empowering parents to establish healthy eating habits at home, providing facilities that encourage an active lifestyle, implementing policy-level strategies such as introducing regulations to limit the sale of unhealthy foods in school environments, mandatory nutritional labeling, and taxation on sugar-sweetened beverages, and fostering cross-sectoral collaboration among health, education, and community stakeholders. The use of health screening apps as a means of improving healthy eating and physical activity behaviors should also be optimized with approaches that appeal to adolescents. In addition, periodic evaluation and follow-up research are important to ensure the effectiveness of the interventions implemented and adapt them to the needs of today's adolescents.

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