

Adolescent Overweight and Obesity in Bangladesh: A Scoping Review

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Abstract

The rising prevalence of overweight and obesity among adolescents is a growing public health concern worldwide, including in Bangladesh. This study conducted a scoping review to examine the prevalence and key risk factors associated with adolescent overweight and obesity in Bangladesh. The review followed the Arksey and O'Malley framework for scoping reviews and adhered to PRISMA guidelines for study identification and selection. Relevant literature published between January 2011 and December 2021 was identified through electronic databases, including PubMed and Google Scholar. Based on predefined inclusion criteria, seven studies were included in the final analysis. The findings indicate that several behavioral and lifestyle factors are associated with adolescent overweight and obesity in Bangladesh. Two studies reported a positive association between frequent fast-food consumption and overweight/obesity, while another study found that higher meal frequency increased the risk. Regular consumption of junk food and frequent restaurant dining were also linked to a higher prevalence of overweight and obesity. In contrast, one study reported that adolescents with higher fruit and vegetable intake had a lower prevalence of overweight and obesity. Sedentary behavior and limited physical activity were also identified as contributing factors. However, the available evidence remains limited, and few studies have explored effective intervention strategies. Further research is needed to better understand the determinants of adolescent overweight and obesity and to develop evidence-based interventions that promote healthier dietary practices and active lifestyles among adolescents in Bangladesh.

Keywords: *Adolescents · Overweight · Obesity · Dietary habits · Physical activity · Bangladesh · Non-communicable diseases*

Introduction

Overweight and obesity have emerged as major global public health challenges in recent decades. While undernutrition remains a persistent concern in many low- and middle-income countries, the prevalence of overweight and obesity is rapidly increasing, creating a dual burden of malnutrition. This growing trend is particularly concerning among adolescents, as excessive weight gain during

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adolescence can lead to serious health consequences later in life.

Obesity and overweight, ironically, when undernutrition still remains a big nutritional issue in many, including low-developing countries, have spread like a pandemic and by 2022 are predicted to outweigh undernutrition in terms of prevalence rate. Overweight and obesity generally result from an imbalance between energy intake and energy expenditure. Unhealthy dietary habits, increased consumption of energy-dense foods, and reduced physical activity are widely recognized as key contributors to this imbalance. These conditions significantly increase the risk of developing non-communicable diseases (NCDs), including cardiovascular diseases, type 2 diabetes, and certain cancers.

According to the World Health Organization (WHO), approximately 1.9 billion adults aged 18 years and older were overweight in 2016, and more than 650 million of them were classified as obese. Alarmingly, the prevalence of overweight and obesity among children and adolescents has also increased dramatically over the past few decades. Globally, the number of overweight or obese children and adolescents aged 5–19 years rose from 11 million in 1975 to over 340 million in 2016.

Childhood overweight and obesity have emerged as major public health problems in both developing and developed countries, as their prevalence has increased significantly over the past two decades (Jahnavi et al., 2011). In Bangladesh, rapid urbanization, changing dietary patterns, and increasingly sedentary lifestyles are contributing to a growing prevalence of overweight and obesity, particularly among adolescents. Increased consumption of fast food, sugar-sweetened beverages, and highly processed foods, combined with reduced physical activity and increased screen time, are emerging as key behavioral risk factors. Changes in dietary and physical activity patterns are often the result of environmental and societal changes, as well as the lack of supportive policies in sectors such as health, agriculture, transport, urban planning, environment, food processing, distribution, marketing, and education.

In Bangladesh, the latest Multi Cluster Indicator Survey (MICS) 2019 found the overweight rate among children aged 5 and under to be 8.4 percent and the obesity rate to be 0.8 percent. While these figures may seem low, in 2012–13, when the earlier MICS was carried out, the overweight proportion was 1.6 percent. Thus, over a span of 6/7 years, the proportion has risen by 50% or so. The present report is a scoping review related to adolescent O-O in Bangladesh.

Below, we first provide in Section II a situational review of the general obesity problem in Bangladesh, which serves as the background to the specific obesity among adolescents.

Section III provides the objective, followed by definitional issues and methods of the study in Section IV

Section V continues by analyzing adolescent obesity nationwide and identifying knowledge gaps. Lastly, in Section VI, suggestions and recommendations for future actions are provided.

Despite this growing concern, research focusing specifically on adolescent overweight and obesity in Bangladesh remains limited. Existing studies are scattered across different disciplines and vary in terms of study design, population groups, and reported outcomes. As a result, there is a need to systematically map the available evidence to better understand the prevalence and determinants of overweight and obesity among adolescents in Bangladesh.

A scoping review provides an appropriate approach for synthesizing existing literature, identifying research gaps, and providing an overview of the current evidence base. Therefore, this study aims to review and synthesize the available research on the prevalence and risk factors of overweight and obesity among adolescents in Bangladesh.

Findings from the Bangladesh Literature Review

There is now a burgeoning literature on overweight, obesity, and associated factors. In Bangladesh, obesity and overweight among children, adolescents, women, and, less frequently, males have been investigated to understand their patterns and associated factors, including food habits, lifestyle, rural-urban differences, and intra-urban residential differences.

The relevant literature shows that socioeconomic status, occupation, education, and regional and urban-rural context have an association with overweight or obesity among children and women. Studies indicate that the prevalence of obesity was higher among children from high socioeconomic classes, whereas the prevalence of underweight children was higher in lower socioeconomic classes. The association between socio-economic status (SES) and overweight and obesity is reported as significant and positive. One study reported that children and adolescents with higher SES and urban residence were 18 times more likely to become overweight or obese compared to those with low SES and rural residence. (8, 9, 10, 13, 15)

Furthermore, it has been observed that income and assets play a key role in the odds of rich people being obese compared to poor people. The probability of being overweight and obese was higher among the richest women relative to the poorest women (2, 11, 15, 17, 23), however, the middle, richer, and richest rural women had higher odds of being overweight compared with women in the

lowest wealth index group (6, 11, 14, 16, 18, 19, 20, 21, 22).

One study showed that parents' occupation has a significant influence on the level of obesity among children. But this was true more for fathers' occupation, which was significant, not for that of the mother, which was insignificant. A higher rate of overweight and obesity was noted among those adults (businessmen, servicepersons, and housewives) who had less scope to be involved in physical activities. They were 38 percent more likely to be overweight and obese compared to another group of adults who had more physical activities. Another study showed that working urban women had a 21% and 46% lower probability, respectively, of being overweight or obese compared to those who do not work outside the home (2, 4, 13, 15, 17, and 24). Residence does matter. It has been observed that the prevalence of overweight/obesity among urban residents is higher than that among rural residents (1, 3, 6, 8, 10, 11, 15, 16, 17, 18, 19, 20, 21, 22, and 25). Moreover, studies revealed that overweight /obesity has a significant prevalence among those who eat junk food and restaurant food, don't follow a balanced diet, and sleep at noon on a regular basis. In the case of female students, skipping breakfast highly affects the outcome of being overweight or obese. Consumption of carbohydrates, protein, and fat was significantly associated with general obesity and central obesity (2, 4, 5, 7, 9, 12, 13, and 23).

Previous research indicates that people from Asia, especially women in Bangladesh, hold specific cultural beliefs and attitudes towards exercise. One study found that home-based activities, such as regular exercise for 30 minutes/day, are a protective factor against overweight/obesity. The same study also noted a positive association between engaging in sedentary activities for more than 4 hours/day and being overweight/obese. Additionally, among adults who did not perform any physical work, the prevalence of overweight and obesity was 50% (1, 4, 5, 7, 8, 9, 10, 12, 14, 20, and 23).

Major Factors Leading to O-O

Several factors that may lead to overweight and obesity include unhealthy eating or dietary practices, lack of physical activity, genetic factors, and certain medical conditions. Among these, the first two are the major ones. Unhealthy dietary or eating habits include

- frequent eating of large amounts of processed or fast food
- eating much more than is necessary or comfort eating
- frequent eating out of the home, which usually has much more fat
- drinking too many sugary drinks or alcoholic beverages

In each case, too much of calorie is consumed than is necessary for a healthy body.

When physical inactivity, either due to the sedentary nature of work or for other reasons, is added to the above kind of eating habits, the calorie so consumed is not expended and, if continued for a long time, may result in excess energy being stored by the body as fat. When such accumulated fat exceeds a certain threshold, as measured by BMI, people become overweight or obese.

The issue of genetic factors behind O-O It is not entirely clear, but eating habits, including unhealthy ones as discussed above, often run in families. Similarly, there are certain rare medical conditions, such as underactive thyroid glands and Cushing syndrome, which may result in O-O. On the other hand, certain medications such as corticosteroids, epilepsy and diabetes medicines, certain depressants, and medicines for schizophrenia may also lead to O-O.

While the immediate factors are dietary practice, lifestyle, and other factors as discussed above, these themselves are also influenced by various social, economic, and other issues. The above brief literature review on Bangladesh's general overweight and obesity reflects all of these in one form or another.

Overall observation: This scoping review examined the available literature on overweight and obesity among adolescents in Bangladesh and identified key behavioral and lifestyle factors associated with this emerging public health concern. The findings suggest that although the number of available studies is limited, there is growing evidence that adolescent overweight and obesity are increasing in Bangladesh, particularly in urban settings. The initial picture we get is that the studies have generally focused on situational analysis and on identifying correlating factors, but not so much on what may have been done to arrest the trend. The studies underscore the urgent need to promote healthy lifestyles with a view to effectively addressing the increasing problem among adolescents of overweight and obesity. Given the already large volume of literature, an immediate issue is to conduct a scoping review to identify policy perspectives rather than undertake any fresh analysis. This may be examined in the context of Bangladesh. Similarly, the perceptions of primary caregivers, such as mothers' perceptions, also matter, as shown by one study that even when adolescents are obese, parents may not think so. This means one needs to understand why such perceptions exist or whether they will persist.

The reviewed studies indicate that dietary behaviors and physical activity patterns are among the most frequently reported determinants of adolescent overweight and obesity. Several studies identified frequent consumption of fast food, junk food, and sugar-sweetened beverages as potential contributors to increased body weight among adolescents. These findings are consistent with global research, which has shown that increased consumption of energy-dense and highly

processed foods plays a major role in the rising prevalence of overweight and obesity among young populations.

Sedentary behavior and limited physical activity were also identified as important factors associated with overweight and obesity. Activities such as prolonged television viewing, increased screen time, and reduced participation in outdoor games may contribute to lower energy expenditure among adolescents. Similar trends have been reported in many low- and middle-income countries undergoing rapid urbanization and lifestyle transitions. The findings related to gender differences in overweight and obesity were inconsistent across the reviewed studies. While some studies reported higher prevalence among girls, others found higher rates among boys. These inconsistencies may reflect differences in study design, geographic location, and sample characteristics. Cultural norms, gender roles, and differences in physical activity opportunities may also influence these patterns and require further investigation.

A situation analysis of trends and ways forward by the World Bank 2019 reported that adolescent overweight and obesity increased from 13 to 23 percent between 2012 and 2014 and findings from the study showed that the Dhaka division has comparatively high rates of overweight and obesity. Another important observation from this review is the concentration of studies in urban settings. Urban adolescents may be more exposed to unhealthy dietary environments, including greater availability of fast food outlets, increased consumption of processed foods, and more sedentary lifestyles. As urbanization continues to expand in Bangladesh, these factors may further contribute to the rising prevalence of overweight and obesity among adolescents.

Despite these insights, the review also highlights significant gaps in the current evidence base. Most studies focused on identifying risk factors rather than evaluating interventions to prevent or control adolescent overweight and obesity. Furthermore, limited research has explored the role of school environments, family influences, and community-level interventions in shaping adolescent dietary behaviors and physical activity patterns.

Addressing adolescent overweight and obesity requires a multi-sectoral approach involving the health, education, and policy sectors. Schools can play a particularly important role in promoting healthy behaviors by integrating nutrition education, encouraging regular physical activity, and providing supportive environments for active lifestyles. In addition, public health policies aimed at reducing the consumption of unhealthy foods and promoting healthier dietary choices may improve adolescent health outcomes.

Overall, the findings of this review underscore the need for more comprehensive

research and targeted interventions to address the growing burden of overweight and obesity among adolescents in Bangladesh.

Objective

Given that adolescent O-O Ultimately, leading to the adult population O-O, there is an imperative to understand it better. The present study has been undertaken to understand the association between measured overweight and obesity and food habits and physical activities among adolescents, and to explore background factors associated with these immediate factors.

This information is expected to provide guidance for future policy-making and/or implementation to improve physical activity and dietary habits among the targeted adolescent group in Bangladesh, as well as nutritional outcomes.

Methods

The methods section is divided into two sub-sections: definitional issues and, secondly, literature review methods. First, the definitional issues.

Concept of O-O and Measurement

Obesity and overweight indicate that a person has accumulated excess body fat. A simple measure of O-O is body mass index (BMI). BMI is measured as:

A person's weight in kilograms is divided by the square of the person's height in meters (kg/m^2).

According to the WHO

An adult with a BMI of 25 or higher is overweight. If the BMI is 30 or more, then the person is obese.

For children, the measure is different. For children under 5 years of age:

- *Overweight is weight-for-height greater than 2 standard deviations above the WHO Child Growth Standards median; and*
- *Obesity is weight-for-height greater than 3 standard deviations above the WHO Child Growth Standards median.*

Thus, for children, overweight and obesity are the opposite of wasting.

For children between 5 and 19 years, the measures are again somewhat different.

- *for overweight, BMI-for-age greater than 1 standard deviation above the WHO Growth Reference median; and*
- *For obesity, BMI is greater than 2 standard deviations above the WHO*

Growth Reference median.

- *At the age of 19 years, the first one translates to a BMI equal to 25, and for the second one, it is 30.*

There are, however, debates regarding the WHO threshold points for BMI indicating overweight or obesity. Particularly for different groups of people by age and sex, as well as by where they are originally from (i.e., geographic region), the threshold should differ. Some have called BMI-based estimates rather conservative. In this study, we attempted to review those articles analyzing adolescent nutritional outcomes that used O-O definitions according to the following criteria:

WHO definition for overweight and obesity, with a cutoff value of body mass index of 25 and 30, respectively, for both sexes, which has been widely used for overweight ($> 1SD$) and obese ($> +2SD$) growth reference median.

CDC: overweight (85th–95th percentile), obese (>95 th percentile) of the distribution of BMI.

IOTF: overweight (23.0–25.0 kg/m²), obese (>25.0 kg/m²)

Methods for Literature Review

We conducted the scoping review using the following steps, as suggested by Arksey and O' Malley from the University of York. We have followed this framework for this review.

Stage 1: Identifying the research question

Stage 2: Identifying the relevant studies

Stage 3: Study selection

Stage 4: Charting the data

Stage 5: Collating, summarizing, and reporting the results

Stage 1: Identifying the Research Question

Since the third policy cycle, NIPN has identified policy topics related to overweight/obesity. To identify the research question, we have reviewed literature, reports, etc., to understand why obesity is a problem, and provided an overview of the obesity trend in the country. This has been reported earlier briefly. The available literature seems to bear out that obesity is basically a function of two factors: eating far more than is needed and not burning the energy. Medical and genetic factors are rare. The policy question then is: Why/how are food habits and physical activities risk factors for being overweight/obese for adolescents, and what are the background factors associated with these immediate factors that lead to adolescents being overweight or obese?

Stage 2: Identifying the Relevant Studies

The second step was to identify research papers in the broad area of interest by searching peer-reviewed published literature on PubMed and Google Scholar. The well-known PRISMA (Papers Reporting Items for Systematic Reviews and Meta-Analyses) Flow chart for literature search strategy has been used to identify relevant literature (Figure 1). Available titles were gathered using key terms and selected using the said inclusion and exclusion criteria. The literature was searched for the following specific keywords/ terms: obesity, overweight, physical activities, food habits, adolescents, and Bangladesh. Search terms were combined in PubMed using Boolean operators (AND, OR, NOT) to narrow the results.

Stage 3: Selection of Literature

The inclusion criteria for selecting articles for review were original journal articles with an abstract, full text in the main body, clear exposition of the introduction to the researchable problem, methods of investigation, results obtained, and the discussion based on them, and a conclusion. Because of the large volume of literature, the authors limited themselves to papers published more than a decade ago, from January 2011 to December 2021. The other requirement was that the papers be in English because the researchers had limited knowledge of or proficiency in other international languages. Duplicates, titles, and abstracts that were not related to adolescent obesity (see later) were excluded. Also, the papers have to address a Bangladesh-specific relevant nutrition problem or issue.

Inclusion Criteria

Publications were included if these described the prevalence, determinates of obesity and/or overweight as its primary or secondary outcome and its associated risk factors are physical activities and or food habits; The term physical activities included if related issues such as physical activities, attitudes, practice, sedentary activities, time-wasting, exercise, physical activeness, watching TV, having played outdoor and indoor games, walking or cycling and physical education. Subsequently, the terms we included related to food habits, such as dietary patterns, frequency of food consumption, restaurant foods, junk foods, meal frequency, soft drinks, etc.

Study respondents were Bangladeshi adolescents aged 10-19 years; we selected only studies specific to Bangladesh. In this review, adolescents are defined as individuals aged 10–19 years, according to the World Health Organization.

Some studies with broader age ranges were included when adolescents constituted a substantial portion of the study population or when adolescent data were reported separately.

Written in English, and the publication year was between 2011 and 2021

Exclusion Criteria

- Excluded the publication if the sample cases of the studies were fewer than 10 and older than 19 years of age
- Excluded if participants were disabled, had some health problems, were pregnant, had mental disorders, or had any diseases
- Countries other than Bangladesh, LMIS, South Asia, or Global.
- Studies were excluded due to duplication or overlapping

After completing all these steps, the selected titles were searched, and the full research articles of the screened abstracts were downloaded and checked for selection against the inclusion and exclusion criteria. The full texts of the literature were studied, and relevant articles were included. Articles that were not fully accessible or not relevant to the target indicators were excluded. After access to the full articles, further inclusion was based on the key priority areas related to Adolescent Obesity, as well as those analyzing Bangladesh issues. Using a standardized protocol, two reviewers extracted the following information from each study: study design, duplication, and defining indicators. Disagreements were resolved by consensus. A total of 511 titles were identified, and abstracts were retrieved in the first step; 7 full research articles were finally selected for analysis (Fig 1 - PRISMA flow chart). The abstract and results section of each selected article was carefully read to generate the results.

PRISMA Flow Chart

The initial search of electronic databases identified 511 records. After screening titles and abstracts, 164 articles were excluded as not relevant to the topic. The remaining 347 articles were further assessed for eligibility. Among these, 13 duplicate or overlapping records were removed. Additional exclusions were made for studies conducted outside Bangladesh (n=100), studies published outside the specified time period (n=15), studies involving participants with disabilities or specific diseases (n=16), articles not written in English (n=15), and studies that did not include adolescents within the defined age range (n=97).

After applying these criteria, the remaining articles were reviewed in greater detail. Fifty-nine studies were excluded because their objectives were not directly related to adolescent overweight or obesity, and 25 articles were excluded due to a lack of full-text access. Finally, seven studies met all inclusion criteria and were included in the scoping review.

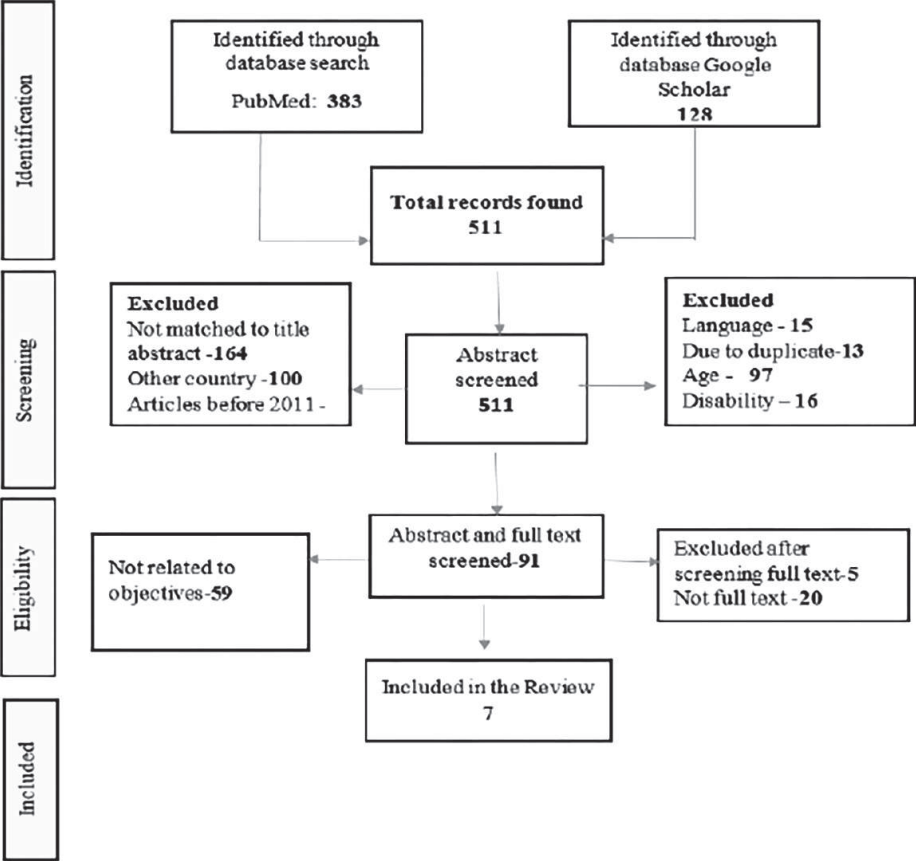


Figure 1. PRISMA Flow Chart

Stage 4: Charting the Data

Data were charted using Excel. The data extraction file is attached in the annex, though a summary table has been inserted here as Table 1. Summary of the Studies. We inserted the informations related to the study population, methodology, risk factors, and outcome measures, which are as follows:

- Study Name, Author, Year of Publication,
- Study Population, Number of Participants, Study Site
- Sampling Technique
- Risk Factors
- Outcome measurements and
- Results

Table 1. Summary of the Studies

Outcomes	•Overweight	•Obesity	•Overweight	•Obesity	•Overweight	•Obesity	•Overweight	•Obesity	•Overweight	•Obesity
Location	Country wide	Urban	Urban	Urban	Urban	Urban	Urban	Urban	Country wide	
Sample Size (N)	20 studies	N = 112 (Boys=67, Girls=45)	N = 198 (99 cases and 99 controls)	N = 426	N = 898	N = 1768 (980 boys; 788 girls)	N = 2989			
Sampling Technique	N/A	Not found	purposeful sampling technique	systematic random sampling	Not found	purposive sampling	Clustered sampling technique and a standardized scientific sample selection process.			
Sex	M & F	M & F	M & F	M & F	M & F	M & F	M & F	M & F		
Age group /Mean age	0 - 19 years	7 - 14 years	10-15 years corresponding to class 5 to class 10 mean age = 13.1 years	18 - 24 years	13 - 16 years	6-12 years	aged= 11-17 years mean age = 14.2			
Study Population	Children and adolescents	School Children	School children and adolescents	University students	School children in Dhaka	School children	Adolescents			
Study Design	Systematic review	Cross sectional study	a case-control study	A cross-sectional study	Cross-sectional study	cross-sectional study	cross-sectional study			
Year of the Data Collection	Studies published between 1998 and 2015	Not found	Seven schools located in Dharmadi, Mohammadpur and Siddeswar area in Dhaka, Bangladesh during October through November 2007	Study was carried out from March to April, 2014	November 2012 - January 2013	Study was conducted from June 2012 to May 2013 in different areas of Dhaka city	2014			
Date of Pub	2017	2014	2013	2014	2020	2018	2019			
Author Name	a) T. Biswas et al.	b)M. N. Rahman et al.	c)Meghah Uddin Bhuiyan et al.	d)Shatabdi Goon et al.	e)A. Khan et al.	f)N. Sultana et al	g) Md. Mostawared Ali Khan et al.			

Results

Seven studies met the inclusion criteria for this scoping review. Among these, one study was a systematic review, one used a case–control design, and the remaining five were cross-sectional studies. Most studies were conducted in urban settings, while only two included both urban and rural populations. Overall, the available studies indicate that the prevalence of adolescent overweight and obesity in Bangladesh has increased over time, although estimates vary across studies due to differences in study populations and methodologies.

The findings related to gender differences in overweight and obesity were inconsistent. Some studies reported higher prevalence among girls, while others found higher prevalence among boys. These variations may reflect differences in sample characteristics, geographic locations, and measurement approaches used in the individual studies. Therefore, conclusions regarding gender differences should be interpreted cautiously.

Prevalence

Biswas *et al.* (2017) in their systematic review showed that the prevalence of overweight/obesity is increasing over time.

Additionally, the study indicates that sedentary activities, or the absence of exercise at home, and having at least one overweight parent were the risk factors for being overweight/ obese in adolescent children. Rahman *et al.* (2014) revealed in a cross-sectional study that the prevalence of overweight among girls is higher than in boys, but the prevalence of obesity among boys is higher than in girls. Another study by Sultana *et al.* (2018) in a cross-sectional study painted just the opposite picture, i.e., the prevalence of overweight among boys is higher than in girls, and obesity among girls is higher than in boys. Khan *et al.* (2019) in another cross-sectional study found males to have a higher prevalence than girls for both obesity and overweight.

Risk Factors

Most of the studies identified that physical activity-related issues and dietary habits are risk factors for overweight and obesity in adolescents. Moreover, with these two associated factors, 2 studies (a,f) showed that having at least one overweight parent and a family history of obesity is positively associated with overweight and obesity.

Food Habit

Dietary behaviors were frequently identified as potential risk factors for adolescent overweight and obesity. Two studies reported a positive association between frequent consumption of fast food and overweight or obesity among adolescents. One study also found that higher meal frequency may be associated

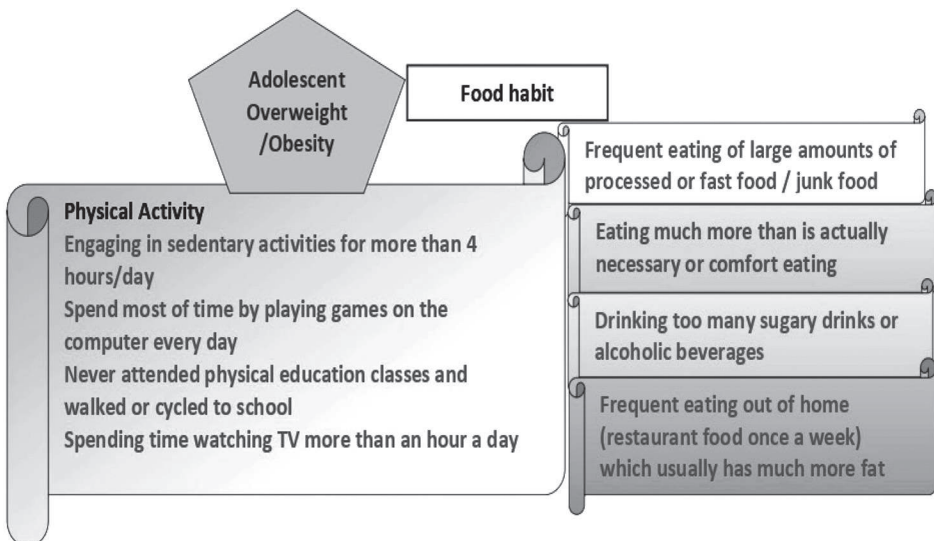
with a greater likelihood of being overweight. In addition, regular consumption of junk food and eating in restaurants were reported among adolescents with higher body weight in one study. Another study found that adolescents who reported higher consumption of fruits and vegetables had a lower prevalence of overweight and obesity. However, given the limited number of studies examining these factors, these associations should be interpreted cautiously.

Physical Activity and Sedentary Behavior

Several studies identified physical inactivity and sedentary behaviors as important factors associated with overweight and obesity among adolescents. Activities such as prolonged screen time, watching television, and spending long hours on computers were linked to a higher prevalence of overweight or obesity in some studies. In contrast, adolescents who engaged in regular physical exercise, outdoor games, or active commuting, such as walking or cycling to school, were less likely to be overweight or obese. These findings suggest that physical activity may play a protective role, although further research is needed to confirm these associations.

Salient Points from the Scoping Review

The scoping review on overweight/obesity among Bangladeshi adolescents revealed that the prevalence of overweight/ obesity is increasing over time. While the number of studies under review was not large, there is a commonality in the findings: most studies identified that physical activity-related issues and food/dietary habits are risk factors for overweight and obesity in adolescents. Diagram 1 below shows the two most important types of background factors that influence the prevalence of obesity/overweight.



What are the Gaps in Knowledge and Understanding

Based on the short review, if the selected studies represent a fair sample of adolescent overweight and obesity in the country, and given the results of the general situation review, this is likely to be a fair sample, food habits and physical activities are major determinants of O-O. Higher levels of wealth, income, and having O-O Urban parents are at risk. However, overall, including the general review, there appear to be certain gaps in understanding, particularly regarding interventions to curb the rising trend towards O-O. These may be listed as follows:

- Limited information or analysis exists on any appropriate design and implementation plan and interventions aimed at promoting healthy lifestyles and behaviors among adolescents
- There is little discussion or analysis of cost-effective intervention measures for early detection and control of risk factors associated with overweight and obesity among adolescents
- No research on educational curriculum activity in schools for a healthy lifestyle and food habits.
- Parents/teachers' awareness related to physical activities and food habits of adolescents to reduce obesity has not been identified clearly or emphasized
- Did not find any research on the impact of obesity of Adolescent club/ adolescent groups/ peer counselors
- While junk food habits have been analyzed as to their effects on O-O, specific food ingredients, such as high use of salt/ sugar in such food and their effect on obesity, do not seem to have been focused on.

Policy Implications

The findings from this review highlight the potential importance of dietary habits and physical activity patterns in shaping adolescent overweight and obesity in Bangladesh. Several studies identified frequent consumption of fast food, junk food, and sugary drinks as possible contributors to increased body weight among adolescents. At the same time, sedentary behaviors such as prolonged screen time and limited physical activity were also reported as associated factors.

Given that adolescents spend considerable time in schools, school-based interventions may play an important role in promoting healthier behaviors. These may include strengthening physical education programs, encouraging participation in sports and outdoor activities, and integrating nutrition education into school curricula. In addition, public health awareness campaigns targeting parents, teachers, and adolescents could help promote healthier dietary habits and more active lifestyles.

Policy initiatives may also consider regulating the availability and marketing of unhealthy food and beverages, particularly those high in sugar and salt, while promoting access to healthier food options. However, further research is needed to identify effective and context-specific interventions to address adolescent overweight and obesity in Bangladesh.

Limitations

This review has several limitations. First, only 7 studies met the inclusion criteria, limiting the strength and generalizability of the conclusions. Second, most of the included studies were conducted in urban areas, which may not fully reflect conditions in rural populations. Third, variations in study design, sampling methods, and measurement criteria across studies may affect the comparability of results. Finally, some studies included broader age ranges, and adolescent-specific findings were sometimes limited. Future research with larger and more representative samples is needed to better understand the determinants of adolescent overweight and obesity in Bangladesh.

Conclusion

This scoping review examined the available evidence on overweight and obesity among adolescents in Bangladesh and identified several behavioral and lifestyle factors associated with this growing public health issue. The findings suggest that unhealthy dietary habits, frequent consumption of fast food and sugary beverages, and sedentary lifestyles may contribute to the increasing prevalence of overweight and obesity among adolescents.

However, the number of available studies remains limited, and most existing research focuses primarily on identifying risk factors rather than evaluating intervention strategies. Future research should therefore focus on generating more comprehensive evidence on the determinants of adolescent overweight and obesity, including the influence of family environments, school settings, and community factors.

Policy makers and public health practitioners should consider developing integrated strategies that promote healthier dietary behaviors and increased physical activity among adolescents. School-based interventions, public awareness campaigns, and supportive policy measures to improve food environments may play an important role in addressing this emerging health challenge in Bangladesh.

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