

**Dietary Factors Influencing Childhood Obesity: A Systematic Review****Eesha Abdul Ghafar**

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**Author Details****Keywords:** Childhood Obesity; Pediatric Obesity; Dietary Patterns; Sugar-Sweetened Beverages; Ultra-Processed Foods; Breakfast Skipping; Family Meals; Body Mass Index; Nutrition; Obesity Prevention .**Received on 25 Jan 2026****Accepted on 18 Feb 2026****Published on 01 Mar 2026****Corresponding E-mail & Author\*:****Eesha Abdul Ghafar**University of Agriculture,  
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**Abstract**

Childhood obesity is a serious global public health issue linked to serious metabolic, cardiovascular, and psychological issues. The development of childhood and adolescent obesity is mostly influenced by dietary variables. With an emphasis on dietary patterns, meal behaviors, and the intake of certain foods and beverages by children and adolescents between the ages of 2 and 18, this systematic review sought to summarize the most recent research on the dietary determinants impacting childhood obesity. The PRISMA 2020 guidelines were followed in conducting the review. For research published between 2013 and 2025, four electronic databases PubMed, Google Scholar, SciSpace, and ArXiv were searched. Cohort studies, cross-sectional studies, randomized controlled trials, systematic reviews, meta-analyses, and dietary intervention studies that looked at relationships between dietary exposures and obesity outcomes (BMI, BMI z-scores, prevalence of overweight/obesity, and body fat percentage) were all

considered eligible. 22 studies were included in the qualitative synthesis after duplicates were eliminated through hand screening. A narrative synthesis approach was chosen since study designs and outcome measures varied widely. Research has repeatedly

shown that unhealthy eating habits that include a lot of sugar-sweetened drinks (SSBs), ultra-processed foods, refined grains, and fast food are positively connected to a higher risk of being overweight or obese. In contrast, healthy dietary patterns rich in fruits, vegetables, whole grains, legumes, and fiber were protective against excess adiposity. Regular breakfast consumption and structured family meals were associated with healthier weight outcomes, whereas breakfast skipping and screen-based eating behaviors increased obesity risk. Socioeconomic and environmental factors further modified dietary behaviors and obesity outcomes. Dietary factors are major determinants of childhood obesity. Promotion of healthy dietary patterns, reduction in SSB and ultra-processed food consumption, and reinforcement of structured meal behaviors are essential components of effective obesity prevention strategies. Multi-level interventions integrating policy, environmental, and family-based approaches are recommended to curb the global burden of childhood obesity.

## **Introduction**

The multiple adverse health effects of childhood obesity have led to its acknowledgment as a significant global health issue. Childhood obesity has been found to be strongly correlated with characteristics like inadequate nutrition and sedentary behavior, according to an epidemiological study (Umano et al., 2025). A significant global public health issue is childhood obesity. In many developing nations, the prevalence is still low, while it is higher in Western and industrialized nations. South America and the eastern Mediterranean have a higher prevalence of obesity (around 30–40%) than Europe (20–30%), Southeast Asia (10–20%), the Western Pacific (10–20%), and Africa (10–20%). Statistics show that 155 million people, or one in ten school-age children, are obese. Children are considered obese if they have a body fat excess that is large enough to harm their health. When the calories consumed exceed those expended, obesity is likely to occur (Kumari et al., 2022).

Increased childhood obesity causes a number of comorbidities that can appear as early as childhood or adolescence, including obstructive sleep apnea, hypertension, left ventricular hypertrophy, acanthosis nigricans, insulin resistance and type 2 diabetes, nonalcoholic fatty liver disease, polycystic ovarian syndrome, orthopedic problems, and poor psychological health. Furthermore, there is an independent correlation between juvenile obesity and cancer, metabolic and cardiovascular disorders, and early death in later life (Vourdoumpa et al., 2025). Behavioral, genetic, and environmental factors influence the age and rate of excessive adiposity development, complicating and making unique the origins of obesity. Furthermore, an obese phenotype's etiologic status that is, how and when it first appeared has a significant impact on long-term health consequences as well as the immediate response to intervention (Archer et al., 2022). Children's eating habits have changed dramatically as a result of urbanization, changes in global food systems, and the greater availability of cheap, high-calorie foods. These changes have led to excessive energy consumption and poor diet quality (Oliveira et al., 2025).

Dietary factors are widely recognized as central determinants of energy balance and body weight regulation in children. Practices related to diet remain a crucial factor in diminishing the chances of excessive weight gain among children. In order to encourage healthy growth and avoid obesity-related problems in later life, a well-balanced diet is essential (Elsayed et al., 2025). It is commonly known that during the first two years of life, breastfeeding and suitable supplemental feeding are early nutritional determinants that influence a child's future risk of obesity. Besides parenting style, which is influenced by the educational attainment of parents, dietary patterns, eating behaviors, portion sizes, frequency of meals, and family meals are essential dietary traits to focus on for preventive interventions during childhood and adolescence. It is advisable to promote physical activity and diminish sedentary habits. Socioeconomic circumstances greatly affect the adherence of children and families to obesity prevention programs.

Moreover, it is highly advisable to set up public regulations and standards regarding food quality to promote healthy lifestyle choices (Verduci et al., 2022). In an attempt to comprehend the importance of nutritional factors within the context of childhood obesity, a thorough examination of the body of current literature is necessary. With a focus on the types of food, eating behaviors, and food habits of children and adolescents, the purpose of this systematic review is to systematically review and synthesize the latest findings on the nutritional aspects that influence childhood obesity. The aim of this systematic review is to provide evidence-based information to inform practice and future research by reviewing the findings of various types of studies.

## **Methodology**

### **Study Design and Reporting Framework**

This systematic review was carried out in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement 2020 guidelines. The purpose of this systematic review was to gather the literature on the connection between dietary variables and childhood obesity in children and adolescents between the ages of two and eighteen.

### **Search Strategy**

A detailed and structured electronic literature search was conducted using four electronic databases: SciSpace, Google Scholar, PubMed, and ArXiv. The literature search was conducted for studies published between 2013 and 2025 to capture the latest and most relevant evidence. Boolean operators (AND, OR) were used to connect the keywords for dietary variables and obesity outcomes. The keywords used in the search strategy included “childhood obesity,” “pediatric obesity,” “adolescent overweight,” “dietary patterns,” “food intake,” “meal patterns,” “sugar-sweetened beverages,” “fast food,” “ultra-processed foods,” “breakfast skipping,” and “body mass index.” The search strategy retrieved 621 records from all the databases. After the removal of the duplicate records, a total of 230 unique records were obtained for screening.

### **Eligibility Criteria**

Trial inclusion was based on whether they investigated the relationship between dietary variables and outcomes related to obesity in children or adolescents. The types of studies that were eligible for inclusion were systematic reviews, meta-analyses, longitudinal cohort studies, cross-sectional studies, randomized controlled trials, and dietary intervention trials. Studies were to be excluded if they were conducted exclusively in adults, if they investigated the genetic component without exposure to diet, editorials, and commentaries, or if they did not include outcomes that could be measured, such as BMI or z-scores of BMI. Only English-language publications were considered.

### **Study Selection Process**

230 record titles and abstracts were evaluated for relevancy after duplicates were eliminated. For full-text screening, a total of 75 studies were found. Twenty-two studies were selected for the final qualitative synthesis based on the methodological quality and the implementation of the qualifying criteria. As advised by PRISMA, a structured method for screening was used in the selection process.

### **Data Extraction**

A pre-made framework was used for data extraction in order to ensure accuracy and consistency. Author and publication year, nation, study design, sample size, age group, dietary exposure, obesity outcome measures, and important findings were among the extracted data. The dietary assessment instruments included validated dietary scores such as the Mediterranean Diet Score and Healthy Eating Index, food frequency

questionnaires, 24-hour dietary recalls, and food diaries. The prevalence of overweight and obesity, body fat percentage, body mass index, BMI z-scores, and metabolic parameters were the primary tools used to assess the obesity outcomes.

### Quality Assessment

Pre-made quality assessment instruments that were suitable for the study design were used to assess the included studies' quality. The observational studies were appraised using pre-designed quality assessment checklists, while the systematic reviews and meta-analyses were evaluated for methodological quality and potential biases. Most of the included studies were found to have moderate to high quality.

### Data Synthesis

Because of the heterogeneity in study design, population, dietary exposure, and outcome, a meta-analysis was not performed. Rather, a narrative synthesis method was used. Results were organized into thematic categories such as dietary habits, meal practices, and food and beverage consumption. The consistency of associations, direction, and magnitude of effects was assessed to determine stable patterns.

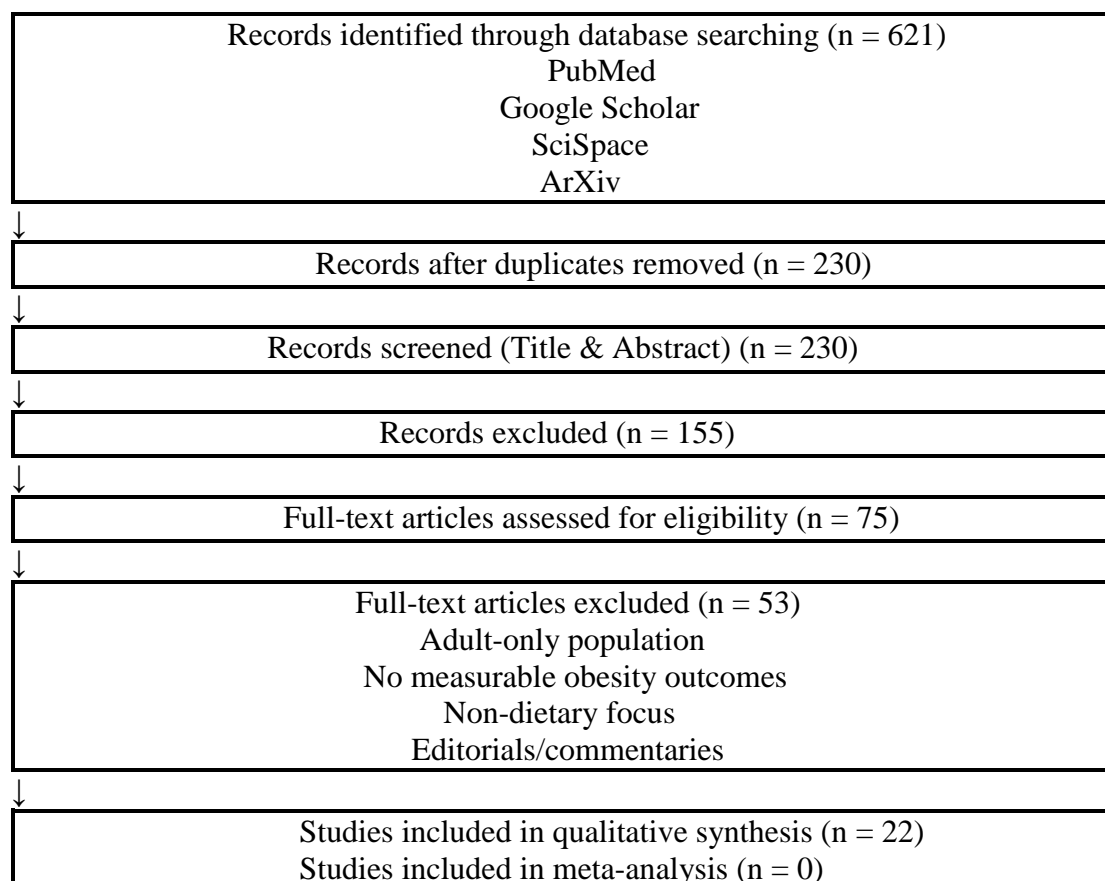
## Results

### Study Selection

#### PRISMA Flow Summary

621 entries were found in the database search. Following the elimination of duplicates, the titles and abstracts of 230 studies were used to determine their eligibility. Seventy-five of these full-text articles were considered for inclusion. 53 studies were eliminated after the full-text articles were evaluated because they did not meet the requirements for inclusion. Ultimately, the final qualitative synthesis had 22 studies.

**Figure 1. PRISMA Flow Diagram**



## **Characteristics of Included Studies**

The 22 included studies comprised of systematic reviews, meta-analyses, longitudinal cohort studies, cross-sectional studies, and intervention-based research. Study populations included children and adolescents from diverse geographical regions, including Europe, Asia, the Middle East, and South America. Dietary exposures assessed across studies included sugar-sweetened beverage consumption, ultra-processed food intake, dietary pattern adherence, meal frequency, breakfast consumption, and family meal practices. Obesity-related outcomes were measured using BMI, BMI z-scores, overweight and obesity prevalence, body fat percentage, and metabolic risk indicators. The information in this article is based on twenty-two research studies. These sources have been consistently integrated into the entire review, including the introduction.

## **Dietary Factors Associated with Childhood Obesity**

Childhood obesity is one of the most significant health challenges of the twenty-first century. Children and teenagers are significantly impacted by obesity. First, children who are fat are five times more likely to stay obese as adults, which has an impact on adult longevity. Second, children who are fat run the risk of developing associated problems such as metabolic abnormalities, heart conditions, orthopedic issues, and psychological difficulties (Calcaterra et al., 2023). Overweight and obesity are significant public health issues worldwide. A nutritious diet is essential for a child's healthy development, while a poor diet is a preventable risk factor for noncommunicable diseases such as obesity. Throughout childhood, the consumption of ultra-processed foods and sugar-sweetened beverages may elevate body fat percentage, BMI/BMI z-score, or the risk of being overweight. While avoiding overconsumption, rigorous dietary rules ensure that enough food is consumed to support continuing metabolic demands. The main reason for childhood obesity is a positive energy balance brought on by sedentary lifestyles, which increase caloric intake and decrease energy expenditure. Obesity is a complex pathogenic mechanism (Calcaterra et al., 2023). It has been discovered that eating more fast food and sugar-sweetened beverages is one of the dietary risk factors for being overweight in kids and teenagers. Furthermore, eating more whole grains and sweet baked goods was linked with a lower risk of becoming overweight or obese, while eating more meat and refined grains was linked with a higher likelihood (Jakobsen et al., 2023). The most comprehensive data on dietary patterns is provided by a new systematic review and meta-analysis that gathered data from 29 prospective studies examining associations between food patterns and the risk of childhood overweight/obesity. The association between dietary patterns and overweight/obesity in children and adolescents was examined in the systematic review and meta-analysis. According to PRISMA guidelines, 29 prospective studies (2013-2023) were retrieved, of which 18 were meta-analyzed. The dietary patterns were defined using an priori and a posteriori approach and were categorized as healthy or unhealthy. Higher levels of HDP were inversely associated with Ov/Ob, lower BMI, and smaller BMI change. Conversely, UDP was positively associated with Ov/Ob. In conclusion, the significance of healthy dietary pattern adherence appears to be a protective factor against Ov/Ob in childhood, although with caution due to the heterogeneity of the definitions of healthy dietary patterns (Kyrkili et al., 2024).

Food habits and the danger of childhood obesity were examined in a systematic review that focused on both the priori and posteriori approaches. The specific food items and groups that loaded into the detrimental dietary patterns varied across populations and cultures, although these patterns were consistently found to have a positive association with obesity risk, as concluded in this analysis. This emphasizes how crucial it is to take regional and cultural dietary realities into account when developing dietary recommendations for the prevention of obesity (Liberati et al., 2020). Particularly useful evidence regarding the temporal association between food patterns and the

development of obesity comes from longitudinal investigations. An energy-dense, high-fat, low-fiber diet is looking ahead linked to higher levels of adiposity and excess adiposity, according to a longitudinal study of children and adolescents in the UK who were tracked from the ages of 7 to 15. This validates comparable findings found in the same cohort between the ages of 5 and 9 and links dietary energy density, fat, and fiber intake as unique risk factors in the development of childhood and adolescent obesity. Beyond weight status, dietary patterns also influence metabolic health outcomes. Although several studies identified no correlation between diet quality and the results under investigation, this systematic review and meta-analysis indicates that high compliance to food quality scores has a favorable influence on obesity measurements and MetS in children and adolescents. In particular, adherence to MD supports its preventive impact against obesity and cardiovascular disease and is consistent with the evidence currently available in adults (Larruy-García et al., 2024). A study examined associations between food habits and both weight status and metabolic risk factors in children and adolescents, finding that healthy dietary patterns were associated with favorable metabolic profiles even after adjusting for BMI. Three food habits in Korean children and adolescents: the FFS, WRK, and OSV patterns. The FFS pattern's high intake was linked to a higher risk of insulin resistance among these dietary patterns. Counseling and education aimed at avoiding childhood and adolescent obesity will benefit from these findings. This evidence suggests that promoting healthy dietary patterns may confer metabolic benefits beyond weight management alone (Oh et al., 2021).

### **Meal Patterns and Eating Behaviors**

When it comes to meal patterning, breakfast is the most researched meal. Breakfast consumption was positively correlated with BMI and body fat mass % at follow-up when it was done daily at baseline as opposed to less frequently (less than seven times per week), but not with the odds of OV/OB. A systematic analysis by (Saltaouras et al. 2024) that examined patterns of eating and the danger of obesity in children and adolescents suggests that having breakfast regularly may help childhood overweight/obesity. On the other hand, skipping breakfast was found to have avoided the potential to negatively impact weight status. However, the authors pointed out that there was significant change in the definition and measurement of breakfast between studies. Missing breakfast is a global public health issue that leads to childhood obesity. Given dietary nutrient patterns, which are characterized by higher sodium and fat density despite reduced daily caloric intake, it is possible to conclude that children who skipped breakfast had higher levels of obesity and cardiometabolic risk factors (Gutkowska et al., 2025). The relationship between eating frequency and childhood obesity has been examined in multiple studies with mixed findings. A meta-analysis of eating frequency and obesity in children and adolescents was carried out by (Kaisari et al., 2024). Some studies found no association or even positive associations, which may indicate reverse causation, whereby children with obesity eat more frequently. However, other evidence suggested that higher eating frequency might be associated with lower obesity risk through effects on appetite regulation and metabolic rate (Kyrkili et al., 2024).

Family meals as part of a more comprehensive analysis of whole diet patterns, pointing out that family meals are a part of intricate family dynamics and that their protective benefits could manifest in a number of ways, such as better portion control, lower screen time during meals, and higher-quality diets (Rycroft et al., 2017). One risk factor for childhood obesity has been found to be eating while watching television. Avoiding eating while watching TV may help prevent juvenile overweight and obesity, according to (Saltaouras et al., 2024). Families have a better chance of establishing and sustaining regular, healthy family mealtimes if parents and intervention experts can pinpoint and remove the obstacles to family dinners. Additionally, children will have the opportunity

to participate in more family meal planning and preparation, which will assist them in gaining vital life skills to help students focus and keep up healthy meal routines for themselves and their future families. Children who eat meals with their families also have a lower chance of developing childhood obesity and other related health issues (Jones et al., 2023).

### **Specific Foods and Beverages**

Sugar-sweetened beverages (SSBs) represent a dietary risk factor for childhood obesity that has been identified consistently as one of the most important. A Systematic review and meta-analysis looked at links between particular foods and drinks and childhood and teenage overweight/obesity. Evidence on several food groups and their connections to obesity outcomes was included in this thorough analysis. With numerous studies showing a positive correlation between SSB consumption and the risk of obesity, the evidence supporting SSBs is especially strong. Significant energy is provided by SSBs without encouraging fullness, which results in an insufficient amount of liquid calorie compensation in the following meals. Furthermore, consuming a lot of sugar from drinks may encourage fat storage and metabolic dysregulation (Jakobsen et al., 2023). Dietary sources of free sugars include sugar-sweetened beverages (SSBs). There is a clear correlation between SSB consumption and weight increase. Children's consumption of sugar-sweetened beverages is influenced by a variety of factors, such as economic considerations, personal characteristics and behaviors, environmental factors, and the characteristics and actions of parents. Evidence points to a detrimental relationship between SSB consumption and weight and diseases associated with obesity. Decreased feelings of fullness and an insufficient reduction in energy intake during meals after consuming liquid calories are the main ways that SSB consumption is connected to weight gain risk. Fast food consumption has increased dramatically among children and adolescents and represents a major contributor to poor diet quality and obesity risk (Calcaterra et al., 2023). Junk food intake should be decreased by limiting TV commercials and raising taxes on junk food since it has been shown to raise the risk of both general and abdominal obesity. In children and adolescents, eating sweets has been linked to both central and overall obesity. Additionally, there was a strong correlation between drinking sweetened beverages and overall obesity. Fast food and salty snack consumption did not, however, significantly correlate with either obesity or hypertension. A number of strategies, such as limiting TV commercials and raising taxes on junk food, are proposed to lower the intake of junk food (Payab et al., 2015). The connection between teenage BMI and fast-food exposure using the BCS and historical information on the origins of fast food in the UK. We examined whether fast food proximity, time since opening, and a developed intensity measure that accounts for the closeness and duration of many outlets affect BMI using data on the establishment and location of all fast-food outlets prior to 1986. There is no proof that adolescent BMI and a variety of exposure measurements in the family environment are positively correlated (Pahuja et al., 2024).

Fruits and vegetables are consistently identified as elements of healthy food habits linked with lower obesity risk. These foods are nutrient-dense, high in fiber, and low in energy density, promoting satiety while providing essential micronutrients. The systematic review discovered that food habits high in fruits and vegetables were linked with lower BMI and reduced obesity risk. The quality of carbohydrate sources influences obesity risk, with whole grains associated with better weight outcomes compared to refined grains. Whole grains contain fiber, which is a satiety factor and may also affect the composition of the metabolic and gut microbiota. Whole grains were a food pattern characteristic that decreased the risk of obesity, whereas refined grains were a characteristic of unhealthy food patterns and were associated with an increased risk of obesity (Kyrkili et al., 2024). The high level of adherence, which happened when children who made changes early in the intervention were able to maintain the changes,

explained a significant part of the behavioral dynamic during the intervention. The late or early behavior change, which happened when children made changes to their behavior after the early to middle part of the intervention, explained a less significant part of the behavioral dynamic. It may be necessary to follow behavioral goals earlier in order to predict weight loss for energy-expenditure lifestyle behaviors such as exercise and screen time. Weight loss might be assisted by a gradual increase in compliance with other health-related behaviors (Woo et al., 2023).

**Table 1. Summary of Dietary Risk Factors and Associations**

Dietary Factor	Direction of Association	Strength of Evidence	Key Mechanism
Sugar-Sweetened Beverages	Positive ↑ Obesity Risk	Strong	Low satiety, excess liquid calories
Ultra-Processed Foods	Positive ↑ Obesity Risk	Strong	High energy density, additives
Fast Food	Positive ↑ Obesity Risk	Moderate	High fat, sodium, refined carbs
Refined Grains	Positive ↑ Obesity Risk	Moderate	High glycemic load
Healthy Dietary Patterns (MD/DASH)	Negative ↓ Obesity Risk	Strong	Fiber, nutrient density, satiety
Fruits & Vegetables	Negative ↓ Obesity Risk	Strong	Low energy density, fiber
Whole Grains	Negative ↓ Obesity Risk	Moderate–Strong	Satiety, gut microbiota
Breakfast Skipping	Positive ↑ Obesity Risk	Moderate	Metabolic dysregulation
Family Meals	Negative ↓ Obesity Risk	Moderate	Structured eating environment

## Discussion

The findings of the review emphasize the importance of general dietary practices in the development of obesity in children. A dietary pattern characterized by the consumption of large amounts of fruits, vegetables, whole grains, beans, and fiber-rich foods is rich in essential nutrients and bioactive compounds that can improve satiety, metabolism, and inflammation, thus acting as a protective factor in regulating body weight. However, a dietary pattern characterized by high consumption of energy-dense, nutrient-poor foods such as ultra-processed foods, sweet breakfast cereals, fried foods, and confectionery products resulted in an increased risk of adipose tissue accumulation due to the high caloric density of these foods. Apart from individual nutrients, dietary patterns are a cumulative measure of behaviors that influence energy balance over time, thus acting as a better predictor of the risk of obesity than individual nutrients. Meta-analytic data has demonstrated that the risk of overweight and obesity can be reduced by practicing healthy dietary habits such as the Mediterranean and DASH diets, which improve nutrient adequacy and modulate appetite through complex interactions between fiber, protein, and glycemic load.

Sugar-sweetened beverages have been found to be one of the major sources of excessive energy intake in children. The consumption of liquid calories causes the avoidance of normal satiety cues, resulting in increased total energy intake in a day without a corresponding reduction in solid food. In addition, frequent consumption of SSBs has been associated with insulin resistance, lipid disorders, and metabolic programming, especially during periods of critical growth. Ultra-processed foods, on the other hand,

are known to be highly energy-dense, low in fiber, high in added sugars, and high in additives that increase their palatability, thus favoring their habitual overconsumption. The marketing of foods to children, including the use of cartoon characters, toys, and online advertisements, further increases their preference, leading to unhealthy eating behaviors in childhood that persist in adolescence and adulthood. The concomitant consumption of SSBs and ultra-processed foods is a modifiable risk factor with important public health implications, underlining the need for policies such as taxation, labeling, and restrictions on marketing to children.

In addition to food quality, the temporal and social contexts of eating are also considered in the development of obesity. Breakfast habits have been shown to be associated with positive weight outcomes, possibly because of their role in regulating appetite, glucose, and compensatory overeating. It has been found that skipping breakfast is associated with higher BMI, insulin resistance, and unfavorable cardiometabolic risk factors. Family meals also have some advantages, as they provide a meal context that encourages mindful eating, portion control, and balanced eating. Family meals also offer opportunities for parents to practice healthy eating habits, avoid screen time during meals, and improve family cohesion, which indirectly supports healthy lifestyle practices. However, inconsistencies in the definition of meal frequency, timing, and content make it difficult to conclude, and there is a need for standardized measurement tools in future studies. Childhood obesity is a complex problem that is affected by a variety of socioeconomic, cultural, and environmental factors. A lower socioeconomic status is also a predictor of a higher prevalence of obesity, which could be attributed to a lack of access to healthy food, increased exposure to energy-dense processed foods, and reduced opportunities for physical activity. Urbanization and food environments are associated with dietary behaviors, but the findings for fast food density are inconclusive, suggesting that individual and household-level factors could interact and moderate the impact of environmental factors. Food marketing, especially online and social media marketing, has a significant influence on children's food preferences and behaviors, leading to unhealthy food behaviors. In conclusion, the findings above emphasize the importance of a comprehensive approach to the prevention of obesity that not only addresses individual dietary behaviors but also addresses structural aspects such as policy and food environment changes and socioeconomic inequalities.

### **Implications for Prevention and Policy**

The findings of this systematic review highlight the importance of holistic and multi-level approaches in the prevention of childhood obesity. These approaches should focus on the promotion of healthy eating habits, a decrease in the consumption of SSBs and ultra-processed foods, the promotion of healthy meal habits, and the enhancement of socioeconomic and environmental factors that contribute to healthy eating. School- and community-based interventions, which have employed a combination of nutrition education, behavioral, and environmental approaches, have been effective in the promotion of healthy eating habits. At the policy level, interventions such as the sugary drink tax, the adoption of front-of-pack labeling, the regulation of marketing to children, and the promotion of healthy food availability could help create supportive environments that make healthy choices easier. It is essential to note that these interventions should be tailored to the culture and context, taking into consideration the differences in food availability, food preferences, and family structures.

### **Limitations**

There are some restrictions that need to be acknowledged. There is considerable heterogeneity in the methods of dietary assessment, the description of eating habits, and the criteria used for the measurement of obesity. Since several of the research studies included in this systematic review were observational in nature, it is challenging to draw

results regarding causality. There is also the potential for bias in self-reported dietary data. Socioeconomic variables were not controlled in all studies. The reality that a number of different populations were included in the systematic review makes it easier to generalize the findings but also makes it more difficult to draw conclusions.

### **Future Directions**

Future studies should aim at conducting large-scale longitudinal and randomized controlled trials to enhance causal inferences. Harmonization of definitions and tools for the measurement of dietary patterns is required to enhance comparisons. Low- and middle-income countries require greater attention due to the increased prevalence of childhood obesity globally. Understanding the intricacies of obesity would be aided by research that takes into account the interaction of nutritional, genetic, behavioral, and environmental factors. It is also advised to conduct policy-level intervention studies that look into the taxation of beverages with added sugar and the control of food marketing.

### **Conclusion**

This systematic review of 22 studies clearly indicates that nutritional components are the primary reason for obesity in children. The increased risk of obesity is largely caused by unhealthy eating habits, excessive intake of sugar-sweetened beverages and ultra-processed foods, and irregular meal schedules. Conversely, a nutritious diet that comprises a lot of fruits, vegetables, and whole grains appears to be protective. Early life dietary patterns and family-based meal practices are crucial in determining long-term weight outcomes. Enhancing dietary interventions, improving public health policies, and encouraging healthy meal practices in children are key strategies in reducing the prevalence of childhood obesity worldwide.

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