

1 **Lifestyle Determinants and Health Outcomes Associated with Childhood**  
2 **Obesity: A Systematic Review of Current Evidence.**

3

4 **Background**

5 Childhood obesity has emerged as a major global health concern. Increasing  
6 prevalence among children and adolescents is closely associated with  
7 behavioral and environmental factors such as poor diet, inadequate sleep, and  
8 reduced physical activity.

9 **Objective**

10 To review existing scientific evidence regarding lifestyle determinants and  
11 health consequences associated with childhood obesity.

12 **Methods**

13 A systematic review of selected peer-reviewed studies was conducted. Articles  
14 examining childhood obesity prevalence, behavioral determinants, metabolic  
15 mechanisms, and long-term health outcomes were analyzed.

16 **Results**

17 Evidence indicates that short sleep duration, sedentary lifestyle, high intake of  
18 sugar-sweetened beverages, and low levels of physical activity significantly  
19 contribute to increased obesity risk among children.

20 **Conclusion**

21 Childhood obesity is influenced by multiple modifiable lifestyle factors.  
22 Preventive strategies should focus on improving sleep hygiene, encouraging  
23 physical activity, and promoting healthy dietary patterns.

24 **Keywords**

25 Childhood obesity, lifestyle determinants, sleep deprivation, sedentary behavior,  
26 diet, physical activity.

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31 **1. Introduction(PRISMA Item 3 – Rationale)**

32 Childhood obesity is one of the most serious public health challenges of the 21st  
33 century. According to the World Health Organization, the prevalence of  
34 overweight and obesity among children has increased dramatically in recent  
35 decades.

36 Obesity during childhood is associated with numerous health complications  
37 including cardiovascular disease, insulin resistance, and psychological  
38 problems. Early onset obesity also increases the likelihood of obesity persisting  
39 into adulthood.

40 Lifestyle behaviors such as reduced physical activity, increased sedentary screen  
41 time, consumption of calorie-dense foods, and insufficient sleep play a critical  
42 role in the development of obesity.

43 Studies by Karine Spiegel and Shahrad Taheri demonstrated that sleep  
44 deprivation disrupts appetite regulation hormones such as leptin and ghrelin,  
45 increasing hunger and caloric intake.

46 Understanding these behavioral and physiological factors is essential for  
47 developing effective strategies to prevent childhood obesity.

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## 49 **2. Objectives(PRISMA Item 4)**

### 50 **Primary Objective**

51 To examine lifestyle factors associated with childhood obesity.

### 52 **Secondary Objectives**

- 53 1. To analyse global trends in childhood obesity.
- 54 2. To evaluate behavioral determinants including sleep, diet, and physical  
55 activity.
- 56 3. To examine metabolic mechanisms linking lifestyle behaviors to obesity.

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## 62 **3. Methodology**

63 **Study Design(PRISMA Item 5 – Eligibility Criteria)**

64 Systematic review of selected research articles.

65 **Inclusion Criteria**

- 66 • Peer-reviewed articles
- 67 • Studies involving children and adolescents
- 68 • Research addressing obesity determinants or outcomes

69 **Exclusion Criteria**

- 70 • Non-human studies
- 71 • Studies unrelated to paediatric obesity

72 **Data Sources(PRISMA Item 6 – Information Sources)**

73 Literature was reviewed from scientific databases including:

- 74 • PubMed
- 75 • Scopus
- 76 • Google Scholar

77 **Data Extraction(PRISMA Item 9 – Data Collection Process)**

78 Information extracted included:

- 79 • Study design
- 80 • Population characteristics
- 81 • Key outcomes related to obesity determinants

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83 **4. Results(PRISMA Item 16 – Study Results)**

84 **4.1 Global Prevalence of Childhood Obesity(PRISMA Item 20 – Results of**  
85 **Individual Studies)**

86 Epidemiological studies show a steady increase in childhood obesity across  
87 many countries due to rapid urbanization, dietary changes, and reduced physical  
88 activity levels.

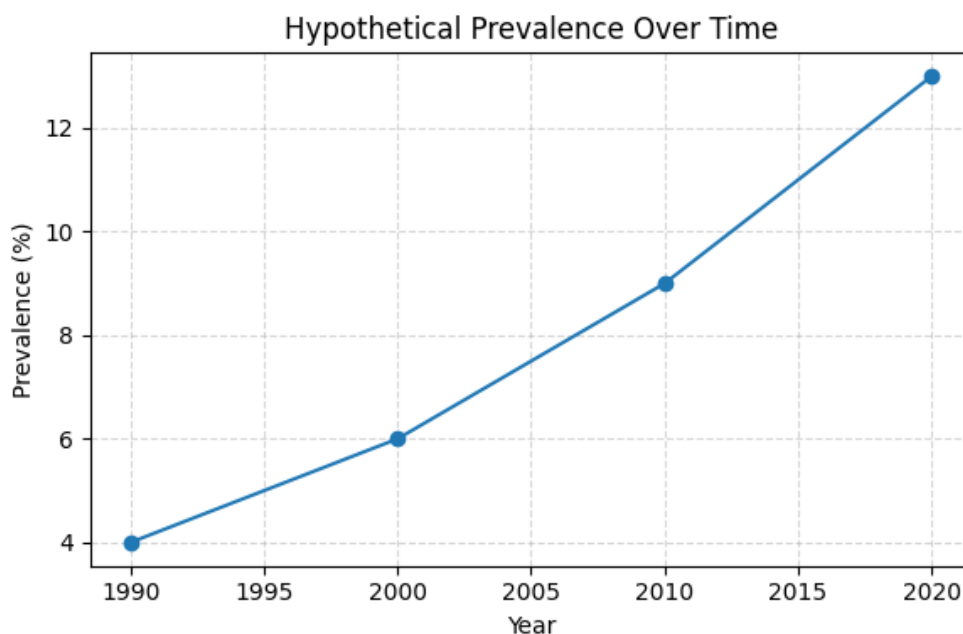
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91 **GRAPH 1**

92 **Global Trend in Childhood Obesity**

Year	Prevalence (%)
1990	4
2000	6
2010	9
2020	13



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94 **Interpretation:**

95 The data illustrates a progressive increase in childhood obesity prevalence over  
96 three decades.

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98 **4.2 Sleep Duration and Obesity (PRISMA Item 20)**

99 Insufficient sleep alters metabolic regulation and appetite control mechanisms,  
100 contributing to increased energy intake and weight gain.

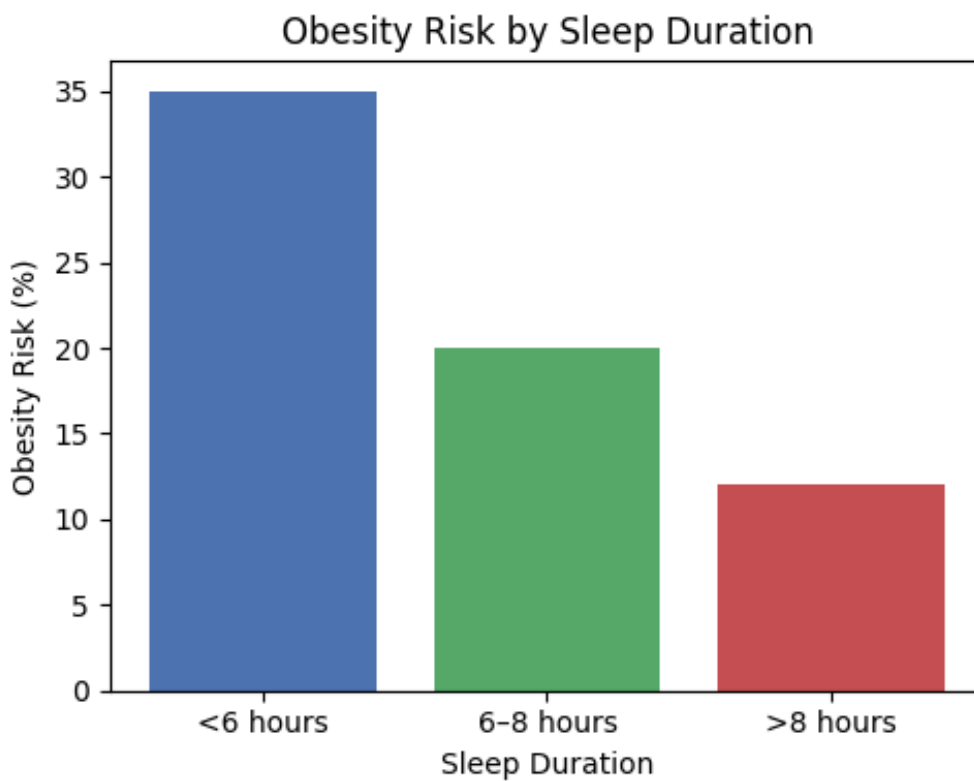
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103 **GRAPH 2**

104 **Sleep Duration vs Obesity Risk**

Sleep Duration	Obesity Risk (%)
<6 hours	35
6–8 hours	20
>8 hours	12



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106 Interpretation:

107 Children sleeping fewer than 6 hours show the highest obesity risk.

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109 **4.3 Sedentary Behaviour(PRISMA Item 20)**

110 Sedentary activities such as prolonged screen time reduce energy expenditure  
111 and contribute to weight gain.

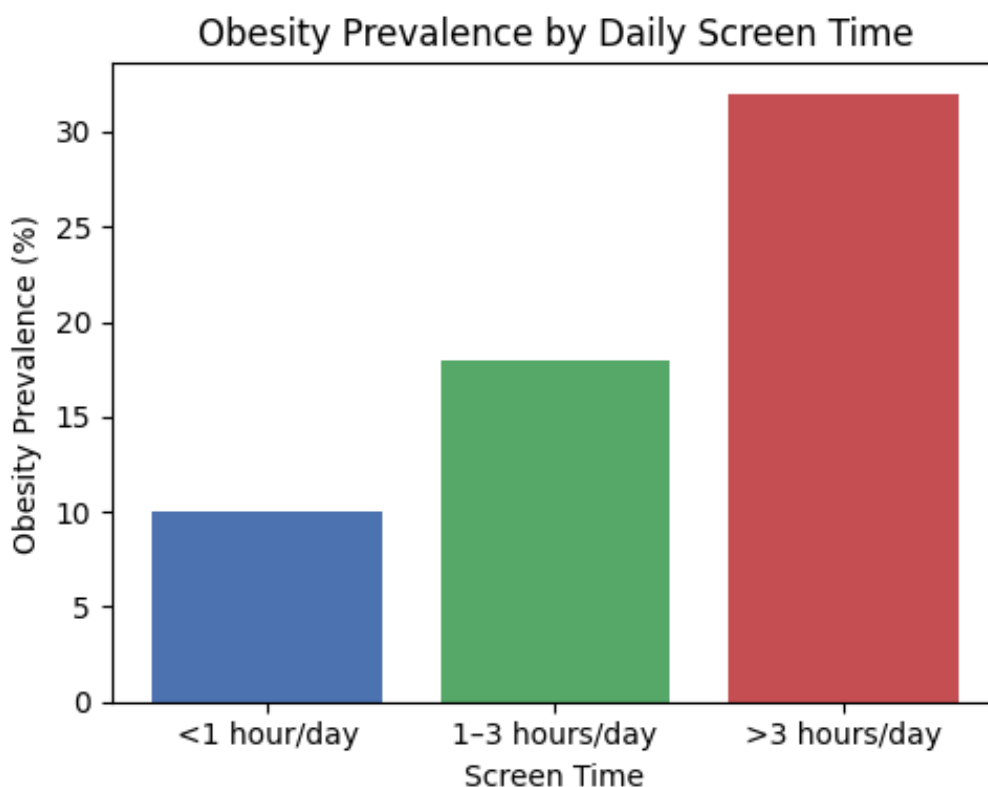
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114 **GRAPH 3**

115 **Screen Time and Obesity Prevalence**

Screen Time	Obesity Prevalence (%)
<1 hour/day	10
1–3 hours/day	18
>3 hours/day	32



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117 Interpretation:

118 Higher screen time correlates with increased obesity prevalence.

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120 **4.4 Dietary Factors(PRISMA Item 20)**

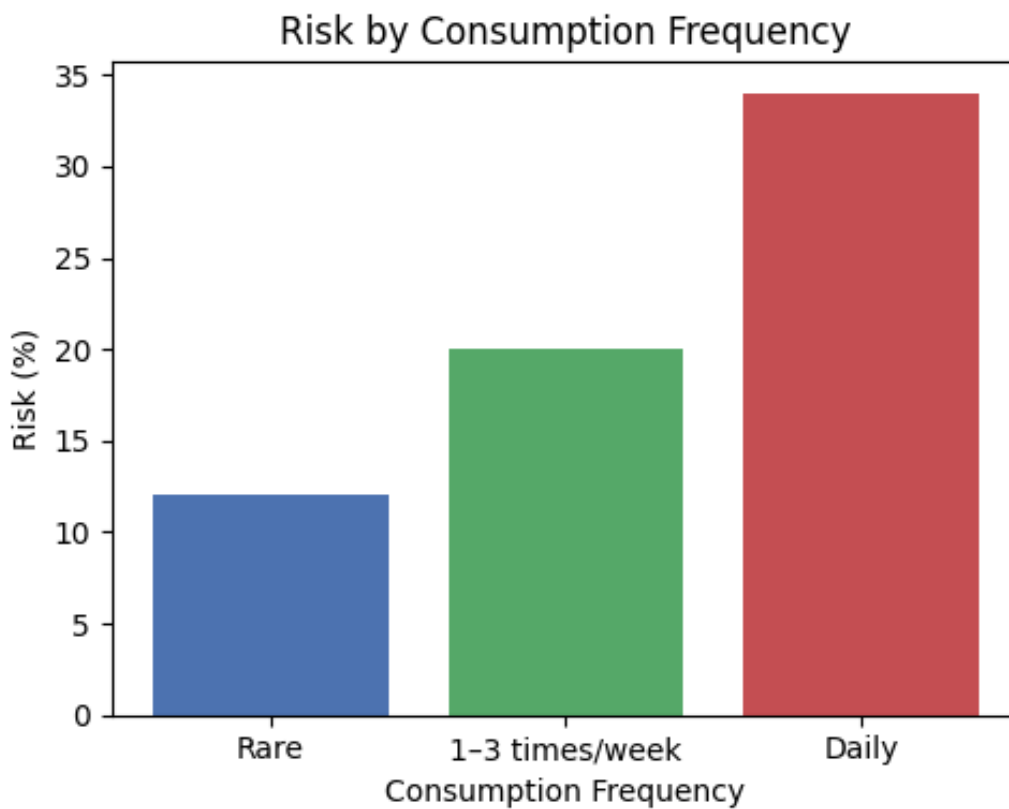
121 Consumption of sugar-sweetened beverages and high glycemic index foods  
122 significantly contributes to childhood obesity.

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124 **GRAPH 4**

125 **Sugar-Sweetened Beverage Consumption and Weight Gain Risk**

Consumption Frequency	Risk (%)
Rare	12
1-3 times/week	20
Daily	34



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127 Interpretation:

128 Daily consumption shows the highest weight gain risk.

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130 **4.5 Physical Activity(PRISMA Item 20)**

131 Regular physical activity plays a crucial role in maintaining energy balance and  
132 preventing obesity.

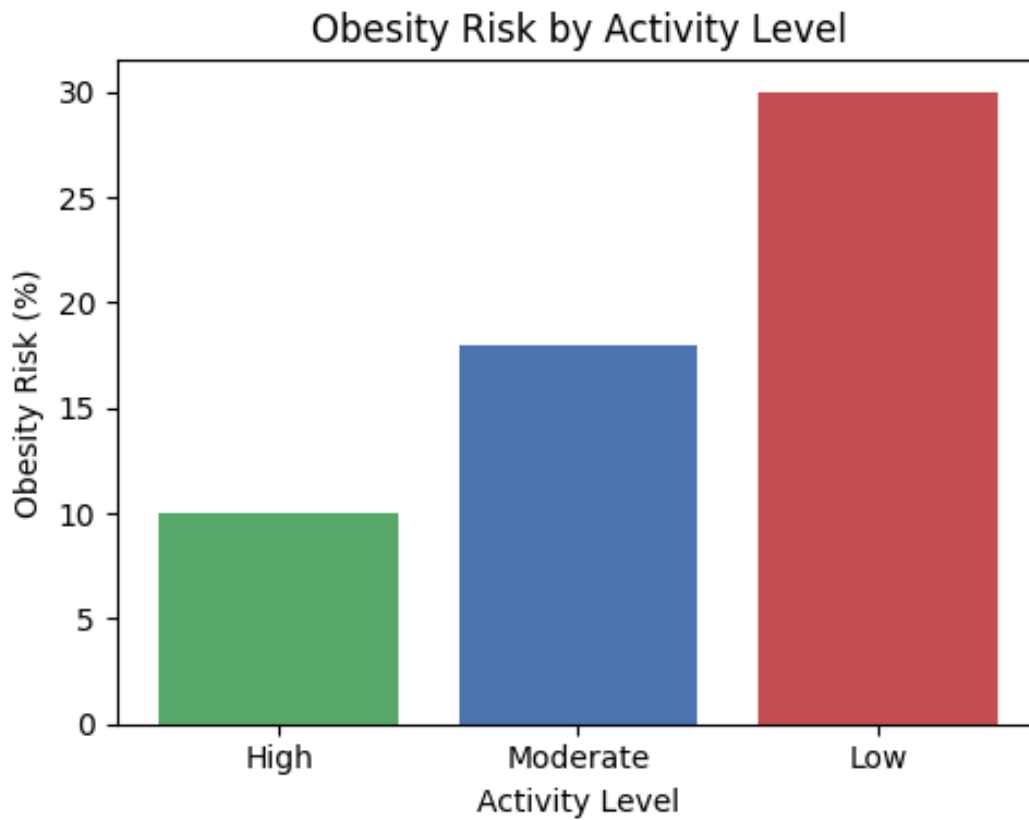
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135 **GRAPH 5**

136 **Physical Activity Level and Obesity Risk**

Activity Level	Obesity Risk (%)
High	10
Moderate	18
Low	30



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138 Interpretation:

139 Lower physical activity levels are associated with increased obesity risk.

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141 **5. Discussion(PRISMA Item 23)**

142 The findings of this review highlight the multifactorial nature of childhood  
143 obesity. Behavioral and lifestyle factors significantly influence energy balance  
144 and metabolic regulation.

145 Short sleep duration contributes to hormonal changes that increase appetite and  
146 caloric intake. Sedentary lifestyle behaviours, particularly excessive screen  
147 time, reduce energy expenditure and promote weight gain.

148 Dietary patterns characterized by high consumption of refined carbohydrates  
149 and sugar-sweetened beverages further contribute to obesity risk by increasing  
150 insulin secretion and promoting fat storage.

151 Encouraging physical activity and healthy lifestyle behaviours is essential for  
152 preventing obesity in children.

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## 154 **6. Public Health Implications(PRISMA Item 23b – Implications)**

155 Effective strategies to reduce childhood obesity include:

- 156 • Promoting healthy sleep habits
- 157 • Reducing sedentary screen time
- 158 • Encouraging regular physical activity
- 159 • Improving dietary quality

160 School-based and community interventions may play a key role in addressing  
161 these factors.

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## 163 **7. Conclusion(PRISMA Item 26)**

164 Childhood obesity is a growing global health concern influenced by multiple  
165 lifestyle factors. Evidence from reviewed studies indicates that inadequate  
166 sleep, sedentary behavior, unhealthy dietary habits, and reduced physical  
167 activity significantly increase obesity risk.

168 Addressing these modifiable factors through public health interventions and  
169 lifestyle modifications is critical for preventing obesity and improving long-  
170 term health outcomes in children.

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176 **8. References(PRISMA Item 27)**

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