

PREVALENCE OF OBESITY AND OVERWEIGHT IN SCHOOL-AGED CHILDREN: A CROSS-SECTIONAL STUDY

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Abstract

Background: The increasing incidence of childhood obesity and overweight is a major global public health concern. In order to determine the prevalence of obesity and overweight among school-age children, this cross-sectional study looked at the relationship between gender, age, socioeconomic level, physical activity, and food habits. **Material and Methods:** In this study, 100 children between the ages of 6 and 12 were assessed. Participants were classified as obese (BMI \geq 95th percentile) or overweight (BMI \geq 85th and $<$ 95th percentile) based on the Body Mass Index (BMI) calculated using growth charts relevant to each participant's age and gender. The study examined the prevalence in relation to gender, age groups (6–8 and 9–12 years), socioeconomic status, degree of physical activity, and eating patterns. **Results:** Among the population, 18% were overweight and 20% were obese. Obesity and overweight were slightly more common in males (21% and 19%, respectively) than in females (19% and 17%). Children aged 9-12 years showed higher rates of obesity (28%) and overweight (23%) compared to younger children. Those from lower socioeconomic backgrounds had increased prevalence of obesity (30%) and overweight (25%) versus those from higher socioeconomic backgrounds (10% obesity and 13% overweight). Physical activity less than one hour per day was associated with higher obesity (26%) and overweight (22%) rates. Moreover, a diet high in sugary drinks and fast food correlated with increased obesity (29%) and overweight (24%), while a balanced diet was linked to lower prevalence rates. **Conclusion:** The study highlights significant correlations between obesity, overweight, and factors such as age, gender, socioeconomic status, physical activity, and dietary habits among school-aged children. It emphasises the necessity of focused initiatives to encourage exercise and a balanced diet.

INTRODUCTION

The increasing incidence of childhood obesity and overweight is a major global public health concern.^[1] These illnesses pose a serious risk for developing a number of chronic illnesses that can persist into adulthood and increase the chance of premature death, such as diabetes, cardiovascular disease, and several types of cancer.^[2,3] Obesity has a complicated aetiology that involves interactions between environmental, genetic, and lifestyle variables.^[4] Among these, eating patterns and exercise levels are important modifiable risk factors that can be addressed by public health initiatives.^[5] School-aged children, typically defined as those between the ages of 6 and 12 years, represent a critical demographic.^[6] This period is vital for

establishing lifelong habits and preferences that affect body weight and overall health. Furthermore, the school environment and socioeconomic status play significant roles in shaping children's dietary patterns and opportunities for physical activity.^[7,8] Research indicates that disparities in obesity and overweight prevalence among children often reflect broader socioeconomic inequalities, highlighting the need for comprehensive strategies that address these root causes.

Given the complex interplay of factors contributing to childhood obesity and overweight, it is essential to conduct empirical studies that elucidate specific patterns and determinants within diverse populations. Such studies can inform targeted interventions aimed at reducing the prevalence of these conditions and their associated health risks.

This cross-sectional study seeks to contribute to this body of knowledge by examining the prevalence of obesity and overweight among school-aged children and exploring the associations with gender, age, socioeconomic background, physical activity levels, and dietary habits. Through this research, we aim to provide actionable insights that can support public health strategies to combat the rising tide of obesity and overweight in childhood.

MATERIALS AND METHODS

Study Design and Setting: This cross-sectional study was conducted at the Government Medical College, Nagarkurnool, over a period from June 2023 to November 2023. The purpose of the study was to evaluate the prevalence of overweight and obesity in school-age children and look into any relationships with different lifestyle, socioeconomic, and demographic factors.

Participants: Utilising a stratified random sampling technique, a total of one hundred school-age children, ages 6 to 12, were chosen to guarantee representation of various age groups and genders. Inclusion criteria included children enrolled in schools within the Nagarkurnool district and those whose parents or guardians provided informed consent. Exclusion criteria were children with known endocrine disorders or those on medications affecting body weight.^[9]

Data Collection: Parents or guardians completed a structured questionnaire that gathered information on the children's dietary preferences, physical activity levels, socioeconomic situation, and demographics. To ensure accuracy, weight and height measurements were obtained by qualified staff members utilising standardised tools and techniques. These measures were used to calculate each participant's Body Mass Index (BMI).

BMI Classification: Using the World Health Organisation (WHO) growth charts as a guide, the children were categorised as normal weight, overweight, or obese based on their BMI for age and gender-specific percentiles. Children were categorised as overweight if their BMI fell between the 85th and 95th percentiles for their age and sex, and as obese if their BMI fell between the 95th and 95th percentiles.

Statistical Analysis: SPSS software (version 25.0) was used to analyse the data. The study population's demographic and socioeconomic data were compiled using descriptive statistics. A percentage of the entire sample was computed to represent the prevalence of obesity and overweight. To investigate the relationships between the prevalence of obesity and overweight and factors such as gender, age, socioeconomic status, physical activity, and eating habits, chi-square tests were used. For every analysis, a p-value of less than 0.05 was deemed statistically significant.

Ethical Considerations: The Government Medical College, Nagarkurnool's Institutional Ethics Committee examined and approved the study procedure. Every individual participant in the study, or their parents/guardians, gave their informed consent.

RESULTS

The purpose of our cross-sectional study was to assess the prevalence of overweight and obesity in one hundred school-age children, ages six to twelve. With 52 men (52%) and 48 women (48%), the cohort's gender composition was almost equal. Each child's body mass index (BMI) was calculated using growth charts tailored to their age and gender. BMI percentiles were used to classify the prevalence of obesity and overweight; a BMI of ≥ 95 th percentile indicated obesity, while a BMI in the 85th to < 95 th percentile for age and gender indicated overweight. Prevalence of Obesity and Overweight by Gender Analysis revealed that 21% of males were obese, compared to 19% of females. The prevalence of overweight was 19% in males and 17% in females, indicating a slightly higher incidence of both obesity and overweight among male participants. [Table 1]

Prevalence of Obesity and Overweight by Age Group

Significant differences were observed across age groups, with children aged 9-12 years showing a higher prevalence of obesity (28%) and overweight (23%) compared to those aged 6-8 years, who exhibited a prevalence of 12% for obesity and 13% for overweight. This suggests an increasing trend in BMI classification with age. [Table 2]

Prevalence of Obesity and Overweight by Socioeconomic Background

Our findings also underscored the impact of socioeconomic status on obesity and overweight prevalence. Children from lower socioeconomic backgrounds demonstrated a significantly higher prevalence of obesity (30%) and overweight (25%) than those from higher socioeconomic statuses, where the prevalence rates were 10% and 13%, respectively. [Table 3]

Impact of Physical Activity on BMI

The study further explored the relationship between physical activity levels and BMI. Children who engaged in less than one hour of physical activity per day were more likely to be obese (26%) or overweight (22%) compared to those who were active for more than one hour daily, who exhibited obesity and overweight rates of 15% and 13%, respectively. [Table 4]

Impact of Dietary Habits on BMI

Dietary habits were significantly correlated with obesity and overweight prevalence. A high intake of sugary drinks and fast food was associated with higher rates of obesity (29%) and overweight (24%). Conversely, a balanced diet correlated with lower prevalence rates of 12% for obesity and 10% for

overweight, highlighting the importance of dietary choices in managing BMI. [Table 5]

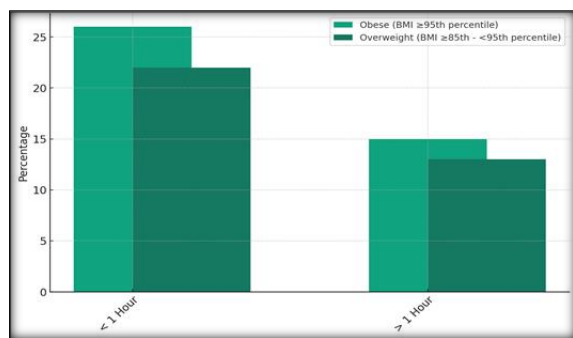


Figure 1: Impact of Physical Activity on BMI

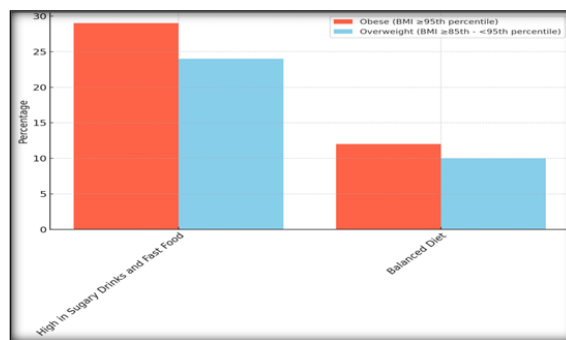


Figure 2: Impact of Dietary Habits on BMI

Table 1: Prevalence of Obesity and Overweight by Gender

Gender	Number of Participants	Obese (BMI ≥95th percentile)	Overweight (BMI ≥85th - <95th percentile)
Male	52	21% (11 out of 52)	19% (10 out of 52)
Female	48	19% (9 out of 48)	17% (8 out of 48)

Table 2: Prevalence of Obesity and Overweight by Age Group

Age Group	Obese (BMI ≥95th percentile)	Overweight (BMI ≥85th - <95th percentile)
6-8 years	12%	13%
9-12 years	28%	23%

Table 3: Prevalence of Obesity and Overweight by Socioeconomic Background

Socioeconomic Status	Obese (BMI ≥95th percentile)	Overweight (BMI ≥85th - <95th percentile)
Lower	30%	25%
Higher	10%	13%

Table 4: Impact of Physical Activity on BMI

Physical Activity per Day	Obese (BMI ≥95th percentile)	Overweight (BMI ≥85th - <95th percentile)
Less than 1 hour	26%	22%
More than 1 hour	15%	13%

Table 5: Impact of Dietary Habits on BMI

Dietary Habits	Obese (BMI ≥95th percentile)	Overweight (BMI ≥85th - <95th percentile)
High in sugary drinks and fast food	29%	24%
Balanced diet	12%	10%

DISCUSSION

Our cross-sectional study revealed a significant prevalence of obesity (20%) and overweight (18%) among school-aged children in Nagarkurnool, underscoring a pressing public health concern. These findings are consistent with global trends that indicate a rising incidence of childhood obesity and overweight, attributed to changing lifestyle patterns, dietary habits, and physical activity levels.^[10]

The observed prevalence rates align with other regional studies, suggesting that obesity and overweight are not confined to high-income countries but are also a growing issue in lower-income regions. This comparison is crucial for understanding the global scope of childhood obesity and highlights the need for targeted interventions across diverse socioeconomic settings.^[11]

Gender Differences

The slightly higher prevalence of obesity and overweight among males compared to females in our study could be attributed to gender-specific behavioral patterns, such as differences in physical activity levels and dietary preferences. This finding aligns with some studies while contrasting with others that report higher rates among females, highlighting the complex interplay of genetic, environmental, and cultural factors influencing obesity.^[12]

Age and Socioeconomic Factors

Our results demonstrated a significant increase in obesity and overweight prevalence among older children (9-12 years), suggesting that age is a critical factor in the development of these conditions. Furthermore, children from lower socioeconomic backgrounds exhibited higher

prevalence rates, a finding that reflects the broader determinants of health, including access to nutritious food, recreational spaces for physical activity, and educational resources on healthy lifestyles.^[13,14]

Physical Activity and Dietary Habits

The association between less physical activity and higher prevalence rates of obesity and overweight emphasizes the importance of promoting regular physical activity among children. Additionally, the correlation between diets high in sugary drinks and fast food with increased obesity and overweight prevalence highlights the need for nutritional education and interventions aimed at encouraging healthier eating habits.^[15]

Implications for Public Health Policy

These findings call for the implementation of comprehensive public health strategies that address the multifaceted causes of obesity and overweight in children. Such strategies could include promoting physical education in schools, improving access to healthy foods, and creating public awareness campaigns on the importance of a balanced diet and regular exercise.

Limitations

One of the shortcomings of our study is its cross-sectional design, which makes it impossible to draw conclusions about causality. Bias may also be introduced by using self-reported dietary and physical activity data. To investigate the causal links between lifestyle factors and childhood obesity, more longitudinal research are required.

CONCLUSION

Based on the findings, it can be said that there is a critical need for interventions targeted at enhancing dietary practices and boosting physical activity because of the high incidence of obesity and overweight among school-age children in Nagarkurnool. Our study contributes valuable knowledge into the patterns of obesity and overweight in this population, offering a foundation for future research and public health initiatives.

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