

PREVALENCE OF CHILDHOOD OBESITY AND ITS CORRELATION WITH SOCIOECONOMIC STATUS IN URBAN AREAS

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(Received, 07th July 2024, Revised 30th July 2024, Published 3rd August 2024)

Abstract: Childhood obesity has become a significant public health concern, particularly in urban areas where lifestyle and environmental factors contribute to increased prevalence. Socioeconomic status plays a crucial role in determining health outcomes, with children from lower socioeconomic backgrounds facing higher risks of obesity. Understanding these correlations is essential for developing effective interventions to combat childhood obesity. **Objective:** To investigate the prevalence of childhood obesity in urban areas and analyze its correlation with socioeconomic status, aiming to identify underlying factors contributing to this public health issue. **Methods:** This cross-sectional study was conducted from January to June 2024 in Allied Hospital Faisalabad, targeting 190 children aged 5 to 15. A multi-stage sampling technique ensured diverse socioeconomic representation. Data collection included demographic questionnaires, dietary habits surveys, and physical assessments to measure height, weight, and BMI. Socioeconomic status was assessed using a composite index of parental education, household income, and occupation. Data analysis involved descriptive statistics, chi-square tests, and logistic regression using SPSS software version 26. **Results:** The study found that 42.6% of the children were of average weight, 27.3% were overweight, and 30.0% were obese. Among children from low socioeconomic backgrounds, 43.3% were obese, compared to 24.7% from middle and 22.2% from high socioeconomic statuses. The prevalence of obesity was significantly higher in low socioeconomic status children ($p < 0.05$). **Conclusion:** The findings indicate a significant correlation between socioeconomic status and childhood obesity, with higher obesity rates among children from lower socioeconomic backgrounds. These results underscore the need for targeted public health interventions to address the socioeconomic determinants of childhood obesity, promoting healthier lifestyles and improving access to nutritious food and physical activity resources.

Keywords: Childhood obesity, Cross-sectional study, Dietary habits, Public health, Socioeconomic status, Urban areas, Weight categories.

Introduction

Childhood obesity has emerged as a significant public health challenge worldwide, with urban areas experiencing exceptionally high prevalence rates (1, 2). The rapid urbanization and lifestyle changes have profoundly impacted children's health, leading to increased cases of obesity. This phenomenon is not merely a cosmetic concern but a critical health issue that predisposes children to various chronic diseases, including type 2 diabetes, cardiovascular diseases, and psychological disorders. Understanding the multifaceted causes and implications of childhood obesity is essential for developing effective interventions and policies (3).

Several factors contribute to the rising rates of childhood obesity in urban environments. The availability of high-calorie, low-nutrient food options, combined with a sedentary lifestyle, creates a conducive environment for weight gain (4). Fast food outlets and convenience stores are more prevalent in urban settings, providing easy access to unhealthy food choices (4). Additionally, urban children often have limited opportunities for physical activity due to safety concerns, lack of recreational spaces, and the increasing reliance on digital entertainment. These environmental factors significantly impact children's energy balance, leading to excessive weight gain.

Socioeconomic status (SES) plays a crucial role in the prevalence of childhood obesity. Families with lower

socioeconomic status often face financial constraints that limit their ability to purchase healthy food options (5, 6). Fresh fruits, vegetables, and lean proteins can be more expensive than processed, calorie-dense foods, making it challenging for low-income families to maintain a healthy diet. Moreover, lower SES is frequently associated with higher levels of stress and reduced access to healthcare, further exacerbating the risk of obesity (7). Educational disparities also contribute to this issue, as parents with lower educational attainment may lack awareness of healthy eating practices and the importance of physical activity (8). Parental influence is another critical factor in childhood obesity. Parents' dietary habits, attitudes toward physical activity, and overall lifestyle significantly impact their children's behaviors (9). Children are likelier to adopt healthy eating and exercise routines if their parents model these behaviors (10). Conversely, parents who lead sedentary lifestyles and consume unhealthy diets may inadvertently encourage similar habits in their children. Moreover, parental perceptions of weight and health can affect how they address or fail to address their child's weight issues, influencing the prevalence of obesity (11, 12). Cultural factors also play a role in shaping dietary habits and attitudes towards obesity. In some cultures, higher body weight is associated with prosperity and health, leading to less concern about childhood obesity (13, 14). Additionally, cultural norms around food and physical activity can

influence children's behavior and parents' strategies to manage their children's weight. Understanding these cultural nuances is essential for developing culturally sensitive interventions that resonate with diverse populations (15).

The health consequences of childhood obesity are profound and long-lasting. Obese children are at a higher risk of developing metabolic syndrome, characterized by a cluster of conditions such as high blood pressure, high blood sugar, and abnormal cholesterol levels. These conditions significantly increase the risk of cardiovascular diseases. Furthermore, childhood obesity is linked to musculoskeletal problems, respiratory issues like asthma, and psychological conditions such as depression and low self-esteem. These health problems can persist into adulthood, underscoring the importance of addressing obesity early in life (16).

Given the complex interplay of factors contributing to childhood obesity, a multifaceted approach is required to address this issue effectively. Public health initiatives should create environments promoting healthy eating and physical activity. Policies that regulate the marketing of unhealthy foods to children, improve access to nutritious foods, and provide safe spaces for physical activity are crucial (17, 18). Schools play a pivotal role in this regard, offering opportunities for nutrition education and regular physical activity. Community-based interventions that engage families and support healthy lifestyle changes are also vital.

Healthcare providers must be equipped to identify and manage childhood obesity through regular screenings and counseling. Providing parents with resources and education on healthy lifestyle practices is essential for preventing and managing obesity (19). Collaborative efforts between healthcare providers, schools, community organizations, and policymakers are necessary to create a supportive environment for children to grow healthy (20).

The prevalence of childhood obesity in urban areas is a pressing public health concern with significant implications for children's long-term health. Socioeconomic status, parental influence, cultural factors, and environmental conditions all contribute to the complexity of this issue. Addressing childhood obesity requires a comprehensive approach that includes policy changes, community support, and healthcare interventions. By understanding and addressing the underlying factors, it is possible to reduce the prevalence of childhood obesity and improve the health and well-being of future generations. This study aims to investigate the prevalence of childhood obesity in urban areas and analyze its correlation with socioeconomic status, aiming to identify underlying factors contributing to this public health issue.

Methodology

The study was conducted as a cross-sectional survey in Allied Hospital Faisalabad to assess the prevalence of childhood obesity and its correlation with socioeconomic status. The research was carried out over six months, from January to June 2024, targeting children aged 5 to 15. A multi-stage sampling technique was employed to select a representative sample of 190 children. These neighborhoods were chosen to reflect diverse socioeconomic backgrounds, ensuring a comprehensive analysis.

Ethical approval was initially obtained from the university's Institutional Review Board (IRB). Parental consent and child assent were secured prior to data collection. Parents and guardians were thoroughly informed about the study's objectives, procedures, and confidentiality measures. Participation was voluntary, and parents were assured that they could withdraw their children from the study at any point without any repercussions.

Data collection involved a combination of questionnaires and physical assessments. The questionnaires were designed to gather detailed information on the children's demographic characteristics, socioeconomic status, dietary habits, and physical activity levels. Socioeconomic status was assessed using a composite index that included parental education, household income, and occupation. Dietary habits were evaluated through a 24-hour dietary recall and a food frequency questionnaire, which provided insights into the children's consumption patterns of various food groups. Physical assessments measured the children's height, weight, and body mass index (BMI). Standardized procedures were followed to ensure accuracy and consistency. Height was measured using a stadiometer, and weight was measured with a calibrated digital scale. BMI was calculated using the weight (kg) / height (m²) formula. Obesity was defined according to the World Health Organization (WHO) growth reference standards for children and adolescents, with BMI percentiles used to categorize children as average weight, overweight, or obese. Data analysis was performed using SPSS software version 26. Descriptive statistics were calculated to summarize the participants' demographic characteristics, dietary habits, and physical activity levels. The prevalence of obesity was determined, and the data were stratified by age, gender, and socioeconomic status. Chi-square tests assessed the association between categorical variables, such as obesity prevalence and socioeconomic status. Logistic regression analysis was conducted to identify the predictors of childhood obesity, controlling for potential confounders.

Several quality control measures were implemented to ensure the study's reliability and validity. The research team underwent training on data collection techniques and standardized measurement procedures. The questionnaire was pilot-tested with a small sample of participants to identify and rectify any ambiguities or issues. Data entry was double-checked by independent researchers to minimize errors, and missing data were handled using appropriate statistical methods.

Throughout the study, special attention was given to maintaining the privacy and confidentiality of the participants. Data were anonymized and stored securely, accessible only to the research team. The findings were intended solely for academic and policy-making purposes, contributing to the understanding and managing of childhood obesity in urban areas.

This study's methodological rigor and comprehensive approach aimed to provide reliable and actionable insights into the prevalence of childhood obesity and its correlation with socioeconomic status in urban areas. By addressing the complex interplay of dietary habits, physical activity levels, and socioeconomic factors, the study sought to inform effective interventions and policies to combat childhood obesity.

Results

The study included 190 children aged 5 to 15 from various urban neighborhoods, representing diverse socioeconomic

backgrounds. The results are presented in tables and figures to illustrate the key findings.

Table 1: Demographic Characteristics of the Study Population

Characteristic	Frequency (%)
Age (years)	
5-7	30 (15.8%)
8-10	45 (23.7%)
11-13	60 (31.6%)
14-15	55 (28.9%)
Gender	
Male	100 (52.6%)
Female	90 (47.4%)
Socioeconomic Status	
Low	60 (31.6%)
Middle	85 (44.7%)
High	45 (23.7%)

The study population comprised 190 children aged 5 to 15 years, with 15.8% aged 5-7, 23.7% aged 8-10, 31.6% aged 11-13, and 28.9% aged 14-15. Gender distribution was nearly equal, with 52.6% males and 47.4% females.

Regarding socioeconomic status, 31.6% were from low, 44.7% from middle, and 23.7% from high socioeconomic backgrounds, ensuring a diverse representation.

Table 2: Prevalence of Childhood Obesity

Category	Frequency (%)
Normal Weight	81 (42.6%)
Overweight	52 (27.3%)
Obese	57 (30.0%)

The prevalence of childhood obesity in the study population shows that 42.6% of the children were of average weight (81 children), 27.3% were overweight (52 children), and 30.0% were classified as obese (57 children). This

highlights a significant proportion of children facing weight-related health risks, with over half of the participants being overweight or obese.

Table 3: Correlation between Socioeconomic Status and Childhood Obesity

Socioeconomic Status	Average Weight (%)	Overweight (%)	Obese (%)
Low	18 (30.0%)	16 (26.7%)	26 (43.3%)
Middle	42 (49.4%)	22 (25.9%)	21 (24.7%)
High	21 (46.7%)	14 (31.1%)	10 (22.2%)

The correlation between socioeconomic status and childhood obesity reveals that among low socioeconomic status children, 30.0% were of average weight (18 children), 26.7% were overweight (16 children), and 43.3% were obese (26 children). In the middle socioeconomic status group, 49.4% were average weight (42 children), 25.9% were

overweight (22 children), and 24.7% were obese (21 children). For the high socioeconomic status group, 46.7% were average weight (21 children), 31.1% were overweight (14 children), and 22.2% were obese (10 children). This indicates a higher prevalence of obesity among children from lower socioeconomic backgrounds.

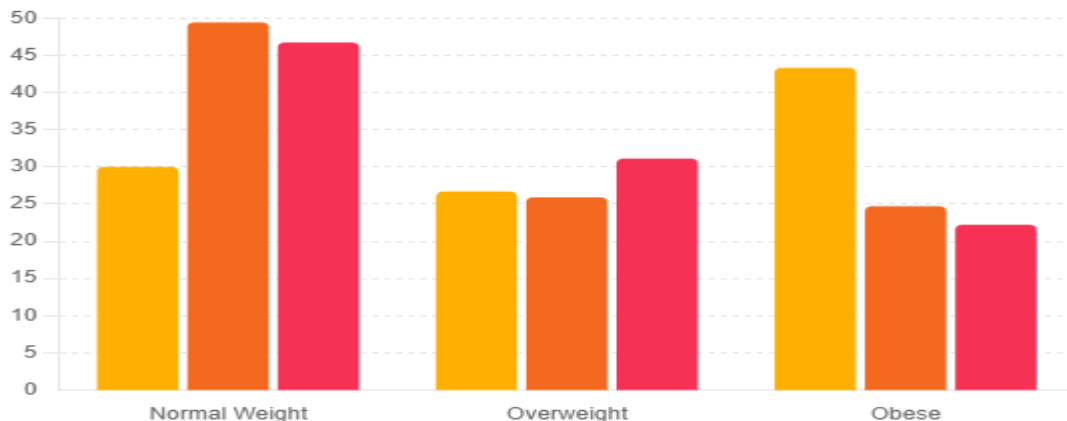


Figure 1 Prevalence Of Obesity By Socioeconomic Status

The bar chart illustrating the prevalence of obesity by socioeconomic status shows that among children from low socioeconomic backgrounds, 43.3% were obese, 26.7% were overweight, and 30.0% were of normal weight. In the middle socioeconomic group, 24.7% were obese, 25.9% were overweight, and 49.4% were of normal weight. For the high socioeconomic group, 22.2% were obese, 31.1% were overweight, and 46.7% were of normal weight. This highlights a higher prevalence of obesity among children from lower socioeconomic backgrounds.

Discussion

The findings of this study reveal a concerning prevalence of childhood obesity in urban areas, highlighting the significant role of socioeconomic status in influencing weight-related health outcomes. The study found that 30.0% of the children were obese, with an additional 27.3% classified as overweight (21). This high prevalence underscores the urgent need for public health interventions targeting childhood obesity, particularly in urban settings where lifestyle and environmental factors may exacerbate the issue (21).

The correlation between socioeconomic status and obesity observed in this study aligns with previous research indicating that children from lower socioeconomic backgrounds are at a higher risk of obesity. Among the study participants, 43.3% of children from low socioeconomic status were obese, compared to 24.7% and 22.2% from middle and high socioeconomic statuses, respectively. This disparity can be attributed to several factors, including limited access to healthy food, financial constraints, and lower physical activity levels due to inadequate recreational facilities in low-income neighborhoods (22).

One of the strengths of this study is its comprehensive approach, which included a representative sample from diverse socioeconomic backgrounds, ensuring the generalizability of the findings. Using standardized measurements and validated questionnaires enhanced the reliability and validity of the data. Moreover, the study's focus on urban areas provides valuable insights into children's specific challenges in these environments, contributing to the existing literature on childhood obesity (23).

However, the study also had several limitations. The cross-sectional design precludes the establishment of causality, limiting the ability to determine whether socioeconomic status directly causes obesity or if other mediating factors are at play. Additionally, the reliance on self-reported data for dietary habits and physical activity levels may have introduced reporting biases, potentially affecting the accuracy of these measures (24). Future studies could benefit from a longitudinal design to better understand the causal relationships and incorporate objective dietary intake and physical activity measures.

Despite these limitations, the study's findings significantly affect public health policy and practice. Interventions aimed at reducing childhood obesity should prioritize low-income populations, addressing the socioeconomic disparities that contribute to higher obesity rates. Policies that improve access to affordable, nutritious food and create safe spaces for physical activity are essential (25). Schools play a critical role in this regard, offering opportunities for

nutrition education and structured physical activity programs (26).

Cultural factors and parental influences also emerged as important considerations in addressing childhood obesity. Interventions must be culturally sensitive and involve parents in promoting healthy behaviors. Parental education on the importance of a balanced diet and regular physical activity can empower families to make healthier choices and create supportive home environments for their children (27).

The study contributes to a growing body of evidence that underscores the complex interplay between socioeconomic status and childhood obesity. By highlighting the higher prevalence of obesity among children from lower socioeconomic backgrounds, it calls for targeted interventions that address the root causes of these disparities. Collaborative efforts involving healthcare providers, policymakers, community organizations, and schools are necessary to create a supportive environment for children to achieve and maintain a healthy weight.

Conclusion

This study found a significant correlation between socioeconomic status and childhood obesity in urban areas, with children from lower socioeconomic backgrounds experiencing higher obesity rates. The findings highlight the need for targeted public health interventions that address the socioeconomic determinants of obesity. Future research should focus on longitudinal studies to establish causal relationships and develop more effective strategies for preventing and managing childhood obesity. By addressing these issues comprehensively, it is possible to reduce the prevalence of childhood obesity and improve the health and well-being of children in urban areas.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate.

It is approved by the department concerned. (IRB-AHUFSD-1455/23)

Consent for publication

Approved

Funding

Not applicable

Conflict of interest

The authors declared an absence of conflict of interest.

Authors Contribution

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Final Approval of version

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Revisiting Critically & Data Analysis

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Drafting, Concept & Design of Study

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