

Research Article

A Cross-sectional Study to Determine the Prevalence of Obesity among School-age Children in Selected Schools of Secunderabad

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A B S T R A C T

Background: One of the most important issues affecting public health in the twenty-first century is childhood obesity. Globally, the issue is wreaking havoc on numerous low- and middle-income nations. The rate of rapid increase in the prevalence is a factor to be pondered on. There were about 40 million overweight children among primary school-age children globally in 2022, as per the estimated records.

Methodology: A cross-sectional analysis was carried out in selected private schools in the Secunderabad region from July to October 2022. The study included 300 school-age children between the ages of 9 and 12 years and the prevalence of obesity was calculated using the body mass index (BMI).

Results: The maximum number of study participants (120, 40%) belonged to the overweight category, followed by obesity (95, 31.66%) and normal health status (85, 28.34%).

Conclusions: As per the study findings, it is recommended that continuous follow-up healthcare programmes with a focus on physical activities should be conducted. Healthy dietary patterns and regular intake of healthy balanced food serve as a basis for a healthy life and thereby help in reducing the risk of developing obesity at a very early age.

Keywords: BMI, Obesity, Prevalence, School-age Children, Overweight, Dietary Pattern

Introduction

In addition to the country's rapid economic transformation, India is also undergoing a nutritional transition, the effects of which are being felt in a rise in people's interest in healthful eating and increased levels of physical activity.¹ Its most striking impact is being seen in the country's youth. Many children today are overweight because of the obesogenic environment that permeates our society.²

Children, especially those from lower socio-economic backgrounds, have been forced by modern globalisation and its associated urbanisation to rely primarily on highly processed, calorie-dense, inexpensive, readily available, and nutrient-poor foods.³ According to a study,⁴ a major public health issue of the twenty-first century is the worrisome increase in childhood obesity in a number of developing countries.

In 2021, 39% of children under the age of 18 years were overweight, and 13% were obese; this is an increase of more than thrice since 1975^{1,5} as reported by the World Health Organization. The prevalence of overweight and obesity, once thought to be a problem only in high-income countries, is increasingly rising in low- and middle-income nations, especially in metropolitan areas. In most of the world's population, there are more deaths that occur due to obesity and being overweight compared to that being underweight. Obesity is primarily caused by an imbalance in the energy between calories consumed and calories burned. Globally, there has been a rise in the consumption of calorie-dense foods that are high in fat and sugar. Also, there is an increase in physical inactivity because of the changing modes of transportation, rising urbanisation, and the sedentary nature of many occupations. A lack of supportive policies in areas like health, agriculture, transportation, urban planning, environment, food processing, distribution, marketing, and education often leads to environmental and societal changes that may affect dietary and physical activity patterns causing various health issues, obesity being one of them. It is possible to avoid being obese only by a simple formula of making healthy changes in our lifestyle habits to lead a healthy and happy life.

Current rankings place obesity and excess weight as the sixth leading cause of death worldwide. Although the health consequences of obesity don't often emerge until adulthood, the variables underlying the disease's circumstances typically begin in infancy and continue throughout childhood.⁶ Children who are overweight or obese are at increased risk for developing chronic conditions later in life. Once regarded to be an issue only in high-income nations, childhood overweight and obesity are now increasing about 30% faster in low- and middle-income countries than in high-income ones.⁷

Factors such as the proliferation of online food ordering apps, rising student workloads that leave little time for extracurricular activities, expanding access to electronic cash systems, and parents' busy schedules, which prevent them from spending much time with their kids, all contribute to the gravity of the problem.⁸

This nutritional perspective has been challenged in recent years, and we now see it manifested in a variety of ways as a worldwide hunger problem.⁹ The novel and revolutionary yet easy technique of maintaining the balance of food intake through a well-balanced diet, together with sufficient physical exercise, and frequent health check-ups, will help us keep obesity at bay and treat undernourishment, diabetes, and other non-communicable diseases.¹⁰ Thus by trying to inculcate the above-mentioned aspects, we may be able to tackle the root causes of malnutrition all at once.

Knowing the full extent of this expanding problem is crucial

for developing and implementing effective yet preventative programmes and facilitating the trouble-free development of children into young adults.¹¹

The objective of this research, thus, was to quantify the amount of overweight and obese students attending specific private schools in the Secunderabad area and to make suitable recommendations.

Factors and Consequences related to Obesity in Children

There are many risk factors for childhood obesity, including genetics, unhealthy eating habits passed down through families, food advertising, food preferences (such as chips, pastries, junk food, and cool drinks), physical inactivity, increased screen time, skipping breakfast, and a few mental health conditions, such as depression.^{12,13}

Early start of diabetes mellitus, heart and circulation difficulties, oncological disorders like breast and colorectal malignancies, low self-esteem, social stigma, higher risk of asthma attacks, and in severely neglected instances, death in early adulthood are among outcomes associated with childhood obesity.¹⁴⁻¹⁶

Methodology

Type of Study

A cross-sectional analysis was used for this study with a qualitative approach to assess the level of obesity among school children. The study was conducted from July to October 2022.

Setting, Sample and Study Tool

The research study was conducted in selected private schools in the Secunderabad region. The sampling frame for the present study comprised the cumulative population of school-age children in selected schools.

Selection of Schools

A list of all private schools was obtained for school selection for the study. Information was gathered from the local authorities. 10% of the schools were chosen from the obtained list with the help of systematic random sampling technique, i.e., three private schools were considered for the study. Every tenth school was included in the study.

Selection of Participants

School-age children between the ages of 9 and 12 years were surveyed. All the students in a given grade were included in the study. Every student in the randomly chosen divisions from each standard who participated in the study was counted. Both males and females accounted for half of the study's sample size of 300 participants.

Various studies have found a prevalence of obesity and overweight that ranges between ten to thirty per cent. The

estimated prevalence (P) of obesity was set at 20% for the present study. As a measure of the estimate's accuracy, the desired precision of 2.5% on either side of the prevalence at a 95% confidence limit was used. According to this supposition, the sample size was estimated using the following formula:

$$N = Z^2 \times (P) (1-P) / d^2$$

Where

N: Sample size to be calculated

Z: Value for 95% confidence limit is 1.96

P: Desired precision

Therefore,

$$N = 1.96^2 \times (20) (1 - 20) / 2.5^2$$

$$N = 1459.2 / 5$$

$$N = 291.8$$

Thus, the sample size after calculation was rounded off to 300.

Ethical Concerns

The institution's ethical committee clearance was obtained before the start of the data collection after which the formal consent of school principals was obtained. Participants were interviewed using a questionnaire and their body mass index (BMI) was calculated using the World Health Organization's anthropometric standards after receiving informed consent.

Data Collection

After obtaining the participants' informed consent and explaining the study's goals to them, the study was begun. The questionnaire served as the means of data collection. The prevalence of obesity was calculated using general and demographic statistics as well as questions about respondents' ages, genders, and eating habits collected through the questionnaire. In order to gather information, interviews were used. All eligible people who expressed interest in taking part in the study were included. All information necessary for the study was gathered. The students' weights were accurately recorded using an Omron Model HBF-222T Scale while they were wearing only their uniforms and no shoes. The tests were administered by the researcher in each classroom at the designated time. Participants' heights were also measured using this method and were recorded to the nearest 0.1 cm as they stood barefoot against the wall. This assessment was done in front of the class by the researcher. A data entry sheet was created in Excel, and SPSS was used to analyse the information. Analysis was performed using tabular summaries of percentages and frequencies.

Results

The findings of the study offer a multifaceted picture of the prevalence of childhood obesity among school-aged children. The study's anthropometric calculations were performed with the aid of the software known as WHO AnthroPlus. In this study, the variable was whether or not schoolchildren were overweight or obese according to their Body Mass Index (BMI) for their age and gender. Overweight was defined as a body mass index (BMI) that falls between the 85th and 95th percentiles for a given individual's age, while obesity was defined as a BMI that falls at or above the 95th percentile (WHO Anthroplus software index, 2020). Demographic information was used to evaluate the students' eating, exercising, and other non-academic routines.

Table 1 shows that the highest number of study participants are in the age group of 11 years (103, 34.33%) followed by 9 years (80, 26.66%), 10 years (78, 26%) and 12 years (39, 13.1%).

Table 1. Distribution of the Study Participants as per their Ages (N = 300)

S. No.	Age in years	Frequency (f)	Percentage (%)
1.	9	80	26.66
2.	10	78	26
3.	11	103	34.33
4.	12 A	39	13.1

Table 2. Distribution of Study Participants based on Gender (N = 300)

S. No.	Gender	Frequency (f)	Percentage (%)
1.	Female	175	58.34
2.	Male	125	41.66

Table 3. Distribution of Study Participants based on Obesity Prevalence among School Children (N = 300)

S. No.	BMI Status	Frequency (f)	Percentage (%)
1.	Obesity	95	31.66
2.	Overweight	120	40
3.	Normal	85	28.34

Table 2 depicts the distribution of study participants based on gender wherein females were 175 (58.34%) followed by males 125 (41.66%).

Table 3 reveals that most of the participants were overweight (120, 40%) followed by obese students (95, 31.66%) and students with normal BMI status (85, 28.34%).

Discussion

The study hypothesises that a high percentage of school-aged children are overweight and that if this trend continues, children's health will be at a higher risk for a host of problems in the years to come. Overweight and obesity among school-aged children is a worldwide problem, and many studies have been undertaken to determine its extent.^{17,18}

There has been a lot of research done on the causes and effects of paediatric obesity, but a clear picture of the unpleasant realities of being overweight or obese remains elusive.¹⁹

Instilling good habits in children lays the groundwork for a lifetime of wellness.²⁰ The schools provide a fertile ground for contemplation on the health status of children and the combating of various health problems, obesity being one of them.^{21,22} Teaching children about personal cleanliness, character development, healthy lifestyle choices, eating habits, physical activity, and other related issues is one of the most important things schools can do.

A child's path to a healthy life can be paved with school health camps, followed by monthly check-ins, and supplemented with lessons on good eating and physical activity.²³ Additionally, the school should make a point of regularly updating its news coverage and incorporating the most up-to-date, evidence-based practises related to a child's health in an effort to better it. Parents must be provided with frequent health education classes to become aware and should strive to follow the same in the home environment.^{24,25}

Obesity in youngsters can be mitigated through dietary moderation and regular physical activity.²⁶ Walking, running, leaping, and a few other exercises can be ingrained in the youngster as part of a comprehensive plan for the child's health.

Many people get acquainted with the marketing and the preparation methods used by the food manufacturers of junk food items and this poses a risk factor towards obesity.²⁷ That's why it's important to educate different groups - from educators to carers to parents, on the most up-to-date, effective methods of educating children.

Recommendations

The following recommendations have been made:

Eating Habits: Children who regularly consume foods high in calories, such as those heavy in fat, sugar, etc., are more likely to be overweight. Instead, a healthy diet rich in

proteins, complex carbohydrates, vitamins, and minerals, with a minimum of fats and sugars, and plenty of water to stay hydrated should be consumed.

Levels of Physical Exercises and Activities: It is recommended that children should be encouraged to perform various levels of physical exercises like walking, swimming, running, jumping, etc., depending on their age group, as many studies have shown that children who try to engage themselves in watching televisions and playing video games and play stations develop a higher risk of increase in weight due to a lack of physical activity. This not only aids them in avoiding weight gain but also in maintaining a healthy physique.

Children with Obese Parents: Children who grow up in overweight families are at a higher risk of becoming overweight themselves. Obesity risk factors include heredity dietary patterns passed down through generations, and social norms established at home. Parents can help in preventing their children from being overweight by modelling healthy behaviours for them through participation in health education programmes or attending health seminars.

Other Causative Factors: Obesity is unlikely to be brought on by any underlying medical condition. Many factors, including endocrine problems and genetic anomalies, can lead to obesity. Regular annual health check-ups that include a full body inspection will help discover any underlying health problems, thereby reducing the likelihood of becoming overweight.

Limitations

- Due to the cross-sectional nature of the study, the underlying causes of obesity cannot be definitively established.
- Neither gender nor level of physical activity was taken into account.

Conclusion

Children who maintain a healthy weight for their height are better able to fight off illnesses, grow up to be confident and curious adults, and have the physical and mental stamina necessary to succeed in life. Reducing the prevalence of childhood obesity is anticipated to result from early treatments targeting these modifiable risk factors. Parents, educators, and school administrators all have a responsibility to show their support for school health initiatives that teach students the importance of making choices associated with good food and exercise and encourage them to lead more physically active lifestyles. To top it all off, it will lower their risk of developing a wide range of non-communicable diseases in future.

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Conflicts of Interest: None

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