Original Research Article

Childhood overweight and obesity among adolescent school children

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Abstract

Background: In India and other emerging countries, childhood obesity is becoming a rising healthcare issue. Obesity and overweight are linked to a variety of socioeconomic and environmental factors that influence eating habits and physical activity. Obesity is more common among wealthy youngsters in metropolitan areas than in rural areas. **Aims and Objectives:** The purpose of this study was to determine the prevalence of overweight and obesity among school-aged children. **Material and Methods:** In January 2019, a single center cross-sectional study was conducted on 396 youngsters aged 12 to 14 years at one school. A pre-designed questionnaire was utilised to collect demographic and lifestyle data. SPSS version 20 was used to statistically evaluate the data collected. The level of significance was determined to be 5%. **Results:** Overweight and obesity were found to be prevalent in 8% and 5% of the population, respectively. Obesity was found to be more frequent among females. Obesity is caused primarily by fast food, and it is exacerbated by a lack of physical activity. **Conclusions:** According to the findings of this study, 13% of youngsters were overweight or obese. This study suggests that physical activities, games, health education, and awareness programmes for students and instructors should be integrated into the educational system to combat and control obesity and overweight.

Keywords: lifestyle modification, urban children, health education

Introduction

India moved away from childhood malnutrition and toward better health and food security as a result of social-economic development, resulting in a decrease in the number of underweight, malnourished, and stunted-wasted children. Obesity and overweight are on the rise in both adults and children as a result of changing lifestyles and eating habits. After the United States and China, India placed third in terms of childhood obesity prevalence[1,2].

Overweight and obesity are the outcomes of abnormal or excessive fat accumulation. This poses a higher threat to one's health. Obesity is quantified using the body mass index (BMI), which is computed by multiplying a person's weight in kilogrammes by the square of their height in metres. Obesity is defined as a BMI more than or equal to 30 kg/m2, whereas overweight is defined as a BMI greater than or equal to 25 kg/m2[1, 2]. Obesity and overweight are both risk factors for the development of chronic diseases such as diabetes, cardiovascular disease (CVD), and cancer. Obesity was once thought to be an issue only in rich countries, but it has now spread to low- and middle-income countries, primarily among urban populations, due to lifestyle changes[1].

In India, several programmes are in place to tackle malnutrition, but the country has also created an obesity epidemic. Previous statistics from the National Family Health Survey (NFHS-4) showed that the number of obese people in India had doubled. This also brought up the issue that obesity is on the rise in metropolitan areas compared to rural areas[2].

In India, nutritional status varies greatly from region to region, with childhood malnutrition ranging from 20% to 80% in some areas. However, there is an increase in the frequency of childhood overweight and obesity in some areas[3].

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The purpose of this study was to determine the prevalence of overweight and obesity among school-aged children.

Material and methods

Three hundred and ninety-six school children aged 12 to 14 years old from school were researched. A pre-designed questionnaire based on the Global school-based student health survey[4] was used to collect demographic and lifestyle data. In January 2019, a cross-sectional single-center study was done.

Permission to conduct this study was obtained in advance from the Government Education Department and the school authorities. The parents and students who took part in the study gave their informed consent in writing.

Only children aged 12 to 14 years old were included in this study, and students with severe and persistent illnesses or who refused to participate were omitted.

The patient's height and weight were recorded using a digital weighing machine and metre tape to calculate their BMI. The age, sex, food habits, skipping breakfast, TV watching time, time spent on video games and social media, and time spent on physical activities and games were all recorded throughout the interviews.

Subjects were classed as consistently eating or not eating breakfast, skipping breakfast, or having an average breakfast in a week based on the data collected.

Physical exercise is defined as sixty minutes of moderate to strenuous physical activity each day for children. Brisk walking, dancing, and household duties are examples of moderate activity, while strenuous exercise includes running, rapid cycling, quick swimming, lifting large loads, and playing football, among other things.

BMI was calculated according to the WHO child growth reference and a set of thresholds based on single standard deviation spacing was used in the study.

BMI = Weight (Kg)/Height^2 (m^2) (weight in kilograms is divided by square of weight in meter)

Subjects were grouped as Underweight (18.5), Normal (18.5 and 24.9), Overweight (25 and 29.9) and Obese (30 and 39.9).

IBM SPSS ver. 20 software and Microsoft Excel were used to analyse the data. Numbers and percentages are used to represent data. The Chi-square test was used to evaluate the risk factors. For all of the analyses, a P value of 0.05 was considered statistically significant.

Results

Table 1. Body Mass Index distribution according to age groups

Age (years)	Normal	Underweight	Overweight	Obese	Total
12	60 (60)	33 (33)	5 (5)	2 (3)	100 (100)
13	62 (61.4)	31 (30.7)	5 (4.9)	3 (2.9)	101 (100)
14	140 (71.8)	19 (7.4)	22 (11.3)	14 (7.2)	195 (100)
Total	262 (66.2)	83 (20.91)	32 (8)	19 (4.8)	396(100)

Table 2. Body Mass Index distribution according to gender groups

BMI	Boys	Girls	Total
Normal	133 (67)	129 (65)	262 (66)
Underweight	43 (22)	39 (20)	82 (21)
Overweight	14 (7)	18 (9)	32 (8)
Obese	8 (4)	12 (6)	20 (5)
Total	198 (100)	198 (100)	396 (100)

Table 3. Behaviours among subjects

Factors/Behaviors	Overweight and obese		Underweight and Normal		p-value*
	Yes	No	Yes	No	
Breakfast skipping	17 (33)	35 (67)	41 (12)	303 (88)	p<0.001
Lack of physical activities	34 (65)	18 (35)	148 (43)	196 (57)	p=0.001
More indulgence in TV/video games/pc/mobile phones	29 (55)	23 (45)	155 (45)	189 (55)	p=0.095
Family history of overweight and obesity	8 (15)	44 (85)	28 (8)	316 (92)	p=0.042
Intake of Junk/Fast food/Carbonated sweet drinks	34 (65)	18 (35)	121 (35)	223 (65)	p<0.05

In this study, we observed that overweight and obesity is more prevalent among school going girls than boys.

Discussion

Between the ages of 12 and 14, we included 396 subjects of both sexes. Based on their BMI, the subjects were classified into four groups: normal, underweight, overweight, and obese. Obesity and overweight were found to be prevalent in 5% and 8% of the population, respectively, for a total prevalence of 13%.

Similar reports were generated by Vairagade et al[6] and Tapnikar et al[7]; as per these studies among school children of Aurangabad combined prevalence was 10% (overweight:7%; obesity:3%) which was closer to ours and slightly higher in a study in Nagpur i.e, a combined prevalence of 14% (overweight:12%; obesity:2%). Our results resonate with the study by Jcob et al in which WHO growth reference charts, 2007 was used like ours but the sample size was only 150. In Kerala, it was 10.7% (overweight: 7.56%; obesity: 3.10%) respectively though the school children belonged to the rural area of Kerala unlike ours[8]. Bhargava et al concluded that in the hill states of India prevalence of overall overweight and obesity was 15.6 % which is higher than our result[9].

In our study, the prevalence of 12 percent overweight and 8% obesity was found to be highest in 14-year-old schoolchildren, and similar findings were found by Kavitha et al in their study in Gulbarga, where the prevalence of overweight and obesity was highest in 15-year-old students, followed by 14-year-old students[10].

We also discovered that females are more likely than boys to be overweight or obese, with 9 percent and 6 percent, respectively, compared to 7 percent and 4 percent. This is in line with the findings of Jacob et al., who showed that among rural children in Kerala, more girls (9.09 percent) were overweight than boys (5.96 percent). In terms of obesity, however, boys were more obese (3.35 percent) than girls, contrary to our findings (2.85 percent)[8]. In contrast to the current study, Jagadesan et al. found that females were more likely to be overweight or obese, with 17.74 percent and 6.45 percent, respectively, than males (4.55 percent and 1.44 percent), and that gender was substantially related with overweight and obesity[11].

Unhealthy eating habits and a lack of physical activity are two major causes and behaviours that contribute to overweight and obesity. These risk behaviours were examined between overweight and obese children and non-obese children. In our research, we discovered a substantial (p0.05) link between fast food consumption and obesity. Obese children consumed a higher percentage of fast food than non-obese children[12] Another common finding among obese subjects was breakfast skipping; our findings are similar to those of Thompson et al, who found a high prevalence of both overweight (41 percent, including 15 percent who were obese) and breakfast skipping (68 percent) and found that more frequent breakfast skipping was associated with a higher risk of being overweight on multivariate analysis. 13With the widespread availability of current electronic media and gadgets, children spend more time interacting with them rather than engaging in physical exercise, which is now considered one of the most controllable risk factors for childhood obesity. We also discovered that roughly 55 percent of both obese and non-obese youngsters were acclimated to watching TV and playing video games and that there was no substantial link between TV consumption and obesity. In our study, we discovered that 15% of obese children had a family history of overweight/obesity, compared to 7.5 percent of non-obese children, which was shown to be significant. (p=0.0425, p.05), which is consistent with Kanciruk's meta-analysis, which found that children with a family history of obesity had a higher probability of being overweight or obese than children who did not have a family history of obesity[10].The present study's principal flaw was its cross-sectional nature, which means that its findings cannot be extended to a larger population. The second constraint was that we only used courses from one school; more school subjects would have yielded more realistic results.

Conclusion

Based on our observations, we discovered that 13 percent of school-aged children are overweight or obese. There is also a gender issue, with girls being more likely than males of the same age group to be obese. Other main factors that contribute to obesity include eating habits, physical activity time, and a family history of obesity.

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