

Childhood overweight and obesity in an urban population of Kashmir—a cross-sectional study

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Abstract

Background: Childhood overweight and obesity is a growing public health problem and reflects the future burden of noncommunicable diseases in a population.

Objective: To determine the prevalence of childhood obesity and overweight in the study sample.

Materials and Methods: A health center-based cross-sectional study was conducted between April 2015 and July 2015. School-age children and adolescents between 5 and 18 years of age were examined. Weight and height were measured by standard methods with light clothing and without shoes. Age was determined from date of birth. Obesity and overweight were defined according to new Indian Academy of Pediatrics 2015 growth references.

Result: Three hundred and three school-age children and adolescents were examined. Body mass index was significantly related to age but not to gender. The boy:girl ratio was 1.03. The overall prevalence of obesity and overweight was 5.0% and 6.6%, respectively. Obesity was highest in the >12–18 years age group. The prevalence of obesity and overweight among boys was not significantly different from girls.

Conclusion: Childhood obesity and overweight is prevalent in the study population.

KEY WORDS: Prevalence, overweight, obesity, childhood, adolescence

Introduction

Overweight and obesity among children is a growing problem worldwide^[1,2] and one of the leading future threats to public health.^[3] Over the last few decades, the prevalence of overweight has increased manifold in Western world.^[4,5] A trend of increasing absolute body fat and central fat deposition has been documented.^[6,7] Various studies from Delhi report an obesity and overweight prevalence of 5%–8% and 15%–25%, respectively.^[8–18] Studies conducted in the southern

part of India have reported prevalences of childhood obesity and overweight to be 1%–5% and 5%–20%, respectively.^[19–23] Between 1990 and 2007, the prevalence of childhood overweight has roughly tripled in Delhi.^[10,14] A study from Kerala reported an annual increase of 0.8% in the prevalence of overweight among school children.^[24]

We conducted this study to find out the prevalence overweight and obesity among school-age children adolescents in an urban area of Srinagar.

Materials and Methods

A health center-based cross-sectional study was conducted in an urban block of district Srinagar in the state of Jammu and Kashmir from April 2015 to July 2015. School-age children and adolescents between 5 and 18 years of age were recruited for this study after obtaining an informed consent/assent. Exclusion criteria included any current severe illness or an illness of >3 days duration. Weight and height were measured with light clothing and without shoes using standard methods.

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Weight was measured to the nearest 0.1 kg, and height was measured to the nearest 0.5 cm. Age was recorded from the date of birth of the child and rounded off to the nearest 6-month interval. The new Indian Academy of Pediatrics (IAP) growth reference was used to define overweight and obesity.^[25] The adult equivalent of 23 and 27 cutoffs presented in the new IAP 2015 BMI charts were used to define overweight and obesity, respectively.

Statistical Analysis

Age and BMI were summarized as mean and standard deviation. Age was conveniently categorized into three groups namely, 5–9 years, >9–12 years, and >12–18 years. Gender was summarized as frequency and percentage. Prevalence of obesity and overweight was reported for the whole sample and for each age and gender group. Unpaired *t*-test and analysis of variance (ANOVA) were used to test differences between two and more than two means, respectively. Group differences in the prevalence of obesity and overweight were tested using χ^2 -test. Analysis was done using SPSS software, version 20.0 (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, version 20.0. Armonk, NY: IBM Corp.). Two-sided *p* values were reported, and a *p* value of <0.05 was taken as statistically significant.

Result

A total of 303 school-age children and adolescents were examined. The mean age of the sample was 10.5 ± 3.01 years, and the mean body mass index (BMI) was 16.18 ± 3.403 kg/m². Boys comprised 50.8% of the sample. The distribution of sample according to age and gender is shown in Table 1.

The mean BMI of the sample increased with age ($p < 0.001$) but was not related to gender ($p = 0.160$) [Table 2]. The overall prevalence of obesity and overweight according to the new IAP 2015 growth reference was 5.0% and 6.6%, respectively. Table 3 shows the prevalence of obesity and overweight in the sample according to age and gender.

Table 1: Age and gender distribution

Age (years)	Boys, n (%)	Girls, n (%)	Total, n (%)
5–9	63 (50.8)	61 (49.2)	124 (100)
>9–12	56 (54.4)	47 (45.6)	103 (100)
>12–18	35 (46.1)	41 (53.9)	76 (100)
Total, n (%)	154 (50.8)	149 (49.2)	303 (100)

Table 2: Mean BMI of the sample according to age and gender

	n	BMI (kg/m ²), mean (SD)	p
Age (years)			
5–9	124	14.73 (1.923)	
>9–12	103	15.50 (2.405)	<0.001
>12–18	76	19.46 (4.205)	
Gender			
Boys	154	15.91 (3.337)	
Girls	149	16.46 (3.459)	0.160

Discussion

The prevalence of obesity and overweight in our study was 5.0% and 6.6%, respectively. The prevalence of obesity was higher among adolescents when compared with the lower age groups. The weight status of the study population was not related to gender.

The overall prevalence of obesity in our study (5.0%) was similar to some studies from Delhi^[8–18] but higher than studies from south India.^[19–23] However, the prevalence of overweight was much lower than other studies from India.^[8–23] Part of these differences may be attributed to differences in the growth references used for classification of growth status. None of the Indians have used new IAP 2015 growth references. A comparison with studies conducted in France,^[26] Romania,^[27] and Bahrain^[28] revealed that the prevalence of obesity and overweight in our study was lower. However, it was higher than the prevalence reported in a study from Iran.^[29]

Table 3: Prevalence of obesity and overweight

	Obesity			Overweight		
	Frequency	Prevalence (%)	p	Frequency	Prevalence (%)	p
Overall	15	5.0	–	20	6.6	–
Age (years)						
5–9	4	3.2		9	7.3	
>9–12	3	2.9	0.035	4	3.9	0.340
>12–18	8	10.5		7	9.2	
Gender						
Boys	8	5.2		11	7.1	
Girls	7	4.7	0.842	9	6.0	0.699

The prevalence of obesity was significantly related to age; the figures were highest among the adolescent age group. This might be owing to change in dietary patterns during this age group and a physiological need for more calorie intake. The prevalence of obesity and overweight was, however, not related to gender.

The ideal definition of overweight and obesity should be based on body fat percentage. Because of the difficulties in assessing body fat during routine surveys, indices of relative weight such as BMI are commonly used. BMI is defined as body weight in kilogram divided by height in meters squared. Even though BMI is less sensitive than skinfold thickness,^[30] there is a general agreement on the appropriateness of BMI to define overweight and obesity. Among adults, a cutoff point of 25 kg/m² and 30 kg/m² is recognized internationally as a definition of overweight and obesity, respectively. During childhood and adolescence, BMI changes substantially with age, an observation corroborated by the findings of our study [Table 2]. Hence, the adult cutoffs do not apply to this age group, and the cutoff points will be age- and gender-dependent. Different internationally applicable growth references have been developed to classify growth status of children and adolescents. The WHO^[31] and International Obesity Task Force^[32] growth references are widely used. Populations differ in their growth patterns because of different nutritional, environmental, and genetic factors. This is especially true for above 5 years of age. Country-specific growth charts are therefore necessary to monitor growth of children aged between 5 and 18 years. The IAP recently developed new growth references for children 5–18 years of age,^[25] and these growth references were used in this study to define obesity and overweight.

Conclusion

Our study has shown that obesity and overweight is prevalent in childhood and adolescence but not as high as seen in studies from Delhi. Because the study sample was taken from only one urban area from Srinagar, the results may not be applicable to rural areas or other areas in Kashmir. The findings of this study are only representative of the population which forms the catering area of the health center in which this study was conducted.

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