Research Article

Childhood Obesity among Children Studying in Classes IV and V (10–12 Years of Age) of Selected Schools in Urban and Rural Areas of Meghalaya

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Abstract

Introduction: Childhood obesity, being one of the most serious health issues of the 21st century, has affected both developed and developing countries. India, with 14.4 million obese children, holds the world's second highest position implying that one of three children is obese putting them at greater health risks in the future. In Meghalaya, the number of cases detected is very less as compared to other states (0.4%) – National Family Health Survey-3 (2012).

Aim: The aim of the study was as follows: (1) To determine the prevalence of childhood obesity and (2) To find an association between its prevalence and selected demographic variables.

Methodology: A cross-sectional interviewed-based study conducted among 313 schoolchildren (10–12 years) with 159 participants from rural and 154 from urban schools, randomly selected by multistage sampling. Height, weight measurements, and BMI were calculated to categorize them into obese and non-obese using the IAP (2016) BMI cutoff values (Chart 5–18 years).

Results: The overall prevalence of childhood obesity was 3.8%, prevailing more in urban schoolchildren (58.3%), with a higher incidence among 12 years old. Male children were mostly affected both in rural and urban schools. Age and history of obesity in the family were found to have statistically significant association at $P \leq 0.05$.

Conclusion: Childhood obesity is an epidemic whose trends keep on changing with the evolution of new challenges. Therefore, early intervention is the key to prevention. Schools can play a key role in the prevention of childhood obesity and promotion of health.

Keywords: Childhood obesity, prevalence, schoolchildren

Introduction

Childhood obesity is one of the most serious public health challenges of the 21st century. India holds the second highest number of obese children in the world with 14.4 million cases meaning one of three children is obese. The prevalence of overweight/obesity in children has increased tremendously for the past decades. In 2014, the World Health Organization has established a high-level commission to stop childhood obesity.[1]

Despite the enormous contributions of several researchers[1-4] on this problem, the trend keeps on changing with the evolvement of new challenges owing to the ill effects of obesity. Hence, there is a need for following up and tracking on the emerging epidemic of child obesity not only at national level but also at local level.

This study is conducted in view of the alarming epidemic to determine the prevalence of childhood obesity and to find an association between its prevalence and selected variables among school-going children of 10–12 years of age studying in selected schools of rural and urban areas of East Khasi Hills district, Meghalaya.

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Methodology

The study is a cross-sectional and interviewed-based study conducted among 313 schoolchildren of 10–12 years, with 159 participants from rural and 154 from urban schools, randomly selected by multistage sampling. Anthropometric measurements (height and weight) and BMI calculations were done to categorize the children according to the IAP (2016) BMI cutoff values (Chart 5–18 years) into obese and non-obese.

The demographic variables of the participants were computed to find any association with the prevalence of obesity by Fisher's exact test, using the R Project for Statistical computing, R Version 2.6.2 (2008-02-08) package.

Results

The overall prevalence of childhood obesity was 3.8%, of which 4.5% (7) in urban samples and 3.14% (5) in rural schools were obese cases, as shown in Table 1. Table 2 shows the prevalence of obesity in different age groups, of which the number of cases is more among the 12 years old children and mostly prevailing in urban schools.

Boys had a higher incidence rate in both the urban and rural settings, as shown in Figure 1. Among the demographic variables, age and familial history of obesity [Table 3] were found to be statistically significant at $P < 0.05$.

Discussion

Findings of demographic variables: Age of the participants

As the study aims at finding the prevalence of obesity among schoolchildren of 10–12 years, the findings are quite remarkable. The rural population showed higher incidence among the age groups of 11 years (1.25%) and 12 years (1.25%) whereas in urban, among the age group of 12 years (3.25%) showing similar findings as in the study conducted by Preetam B. Mahajan (2011) on childhood obesity among 6–12 years schoolchildren of Puducherry, the prevalence of overweight and obesity was highest in the age group of 11.[5]

Table 1: Distribution of children according to the BMI (*n*=313)

BMI	Rural (*n*=159)		Urban (*n*=154)	
	Frequency	%	Frequency	%
Underweight	19	12	20	13
Normal	114	71.7	113	73.4
Overweight	21	13.2	14	9.1
Obese	5	3.1	7	4.5

Table 2: Prevalence of obesity in different age groups (*n* = 12)

Age (in years)	Rural (in frequency)	Urban (in frequency)
10	1	1
11	2	1
12	2	5
Total	5	7

Findings of demographic variables: Gender of the participants

Among the genders, a greater proportion of the cases is seen in male children both in rural (5.7% overweight and 2.5% obese) and urban (5.2% overweight and 3.2% obese) schools. Khadilkar *et al*. had similar findings in his study on overweight and obesity prevalence conducted in urban schools from five zones of India (2010) where boys were found to have higher number of overweight and obesity cases.[6]

Findings of demographic variables: Type of family of the participants

In this study, all the obese children of rural and urban schools belong to nuclear family, that is, those living with parents only which is in concordance with a study by Lee *et al*. (2010) where they found that 41.3% of children living with overweight/obese parents were also overweight/obese, compared with 14.6% of children with normal weight parents.[7]

Findings of demographic variables: History of obesity in the family of the participants

Tania FitzGeorge-Balfour from the University of Messina, Italy (2018), in his article has reported that the history of obesity in the family is likely to influence obesity occurrence in children. According to his findings, not only family history of obesity leads to childhood obesity but other factors such as parental hypertension, hyperlipidemia, type 2 diabetes, and coronary heart disease in the

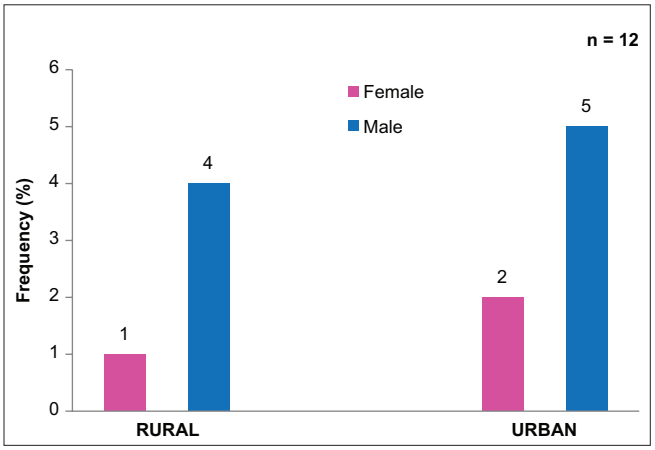

Figure 1: Prevalence of obesity in terms of genders

Table 3: Association between childhood obesity and selected demographic variables (*n*=313)

Variables	BMI		Fisher's exact test *P* value
	Non-obese	Obese	
Age (in years)			
10	117	2	0.04065*
11	111	3	
12	73	7	
History of obesity in the family			
No	212	2	0.0002569*
Yes	89	10	

family were high risk factors for a child to develop obesity[8] which is in concordance with this study where familial obesity was found to be significantly associated with obesity in children.

Conclusion

Obesity and overweight are more prevalent in children studying in urban schools mostly males and mainly those of 12 years are affected. Familial history of obesity is a crucial factor associated with overweight and obesity among children. Therefore, intervention should be done at an early stage.

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