

## Prevalence of obesity in affluent school children of Greater Noida, Uttar Pradesh

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### Abstract

**Background:** Childhood obesity is a state of over nutrition with long term complications such as hypertension, coronary artery disease and Type-2 diabetes. It also adversely affects psychological development causing poor body image and low self-esteem. **Objective:** The aim of this study was to know the prevalence of obesity in affluent school children of Greater Noida, Uttar Pradesh. **Methods:** This study was carried out in affluent school children of four private schools in Greater Noida, Uttar Pradesh. Height and weight of each child were measured, and body mass index was determined according to Quetelet's index. **Results:** Totally 816 school children of 6-11 years were examined with 528 boys and 288 girls. The overall prevalence of obesity was 7.4% without significant difference in boys (7.3%) and girls (7.6%). Prevalence of obesity was high at the age of 11 years both in boys (12.2%) and girls (11.5%). **Conclusion:** The present study revealed that obesity has a high prevalence reaching to epidemic proportions in the affluent school children of Greater Noida, Uttar Pradesh.

**Key words:** *Body mass index, Prevalence, Obesity*

World Health Organization has designated obesity as a global epidemic in the year 1998 [1]. Overweight children are twice as likely as normal to be an obese adult [2]. Childhood obesity is a global epidemic involving both developed and developing countries. It is a state of over nutrition with long-term complications such as hypertension, coronary artery diseases, Type-2 diabetes and the overall increase in morbidity and mortality during adult life [3]. Overweight and obesity adversely affects psychological development particularly low self-esteem, poor body image, peer interaction of young people in their formative years and these effects should not be under estimated.

There is evidence that children of affluent families are becoming overweight than in the past because of decreased physical activity and altered diet habit. Limited data are available from India, especially in the region on this nutritional disorder. Hence, the present study was conducted in school children of four schools of Greater Noida, U.P. between the age group of 6-11 year.

### SUBJECTS AND METHODS

The present study was a cross sectional study conducted in 2012. It included children of 6-11 years of age from four different schools of Greater Noida. The Schools included were, Delhi public school, Apeejay International School, Surajpur, RIS International School, and Ryan International School. These schools were selected because the children studying in these schools belong to the affluent class. All the schools were private and the school

tuition fee was between Rs 1000 and Rs 3000 per month. All children aged 6-11 years were included in the study. This was a part of "school health check-up" organized by the management of School of Medical Sciences and Research, Greater Noida in collaboration with the principals of different schools.

The exact age of the children were taken from school records. Two measurements of each child including height nearest to 0.1 cm and weight nearest to 100 g were taken. Body mass index of each child was calculated according to 'Quetelet's Index. The body mass index (BMI), or Quetelet index, is a measure of relative size based on the mass and height of an individual. The BMI for a person is defined as their body mass divided by the square of their height-with the value universally being given in units of kg/m<sup>2</sup>. The international cut-off points for BMI was used for classifying children as overweight and obese. According to this classification (i) if BMI analogue for age and sex is 25 kg/m<sup>2</sup> and more but less than 30 kg/m<sup>2</sup> then child is overweight and (ii) if BMI analogue for age and sex is 30 kg/m<sup>2</sup> and more than the child is obese [4].

### RESULTS

A total of 816 children between age group of 6-11 years were included in the study, out of which 528 were boys and 288 were girls. The overall prevalence of obesity as 7.4% according to international cut-off points for BMI. In our study, 7.3% of boys and 7.6% of girls were found to be obese. Prevalence of obesity in different ages has been shown in Table 1.

**Table 1: Prevalence of obesity by BMI**

Age in years	Boys				Girls			
	Number	Normal/Under-weight (%)	Over-weight (%)	Obesity (%)	Number	Normal/Under-weight (%)	Over-weight (%)	Obesity (%)
6	57	45 (78.9)	9 (15.8)	3 (5.3)	46	26 (56.5)	18 (39.2)	2 (4.3)
7	89	68 (76.4)	15 (16.8)	6 (5.7)	38	26 (68.5)	10 (26.3)	2 (5.3)
8	97	66 (68.0)	26 (26.8)	5 (5.2)	55	38 (69.1)	14 (25.5)	3 (5.4)
9	95	69 (72.6)	19 (20.0)	7 (7.4)	41	27 (65.9)	11 (26.8)	3 (7.3)
10	108	70 (64.8)	30 (27.8)	8 (7.4)	56	36 (64.2)	14 (25.0)	6 (10.7)
11	82	55 (67.1)	17 (20.7)	10 (12.2)	52	31 (59.6)	15 (28.8)	6 (11.5)
Total	528	379 (70.6)	116 (21.9)	39 (7.3)	288	184 (63.8)	82 (28.4)	22 (7.6)

**BMI: Body mass index**

## DISCUSSION

In our study, the prevalence of obesity in affluent school children was found to be 7.4%, which is in accordance to other studies conducted in India. Kapil et al. [5] in adolescent school children of Delhi and Subranmanyam et al. [6] in children of Chennai had found the prevalence of obesity as 7.4% and 6.23% respectively. Studies conducted in other developing countries showed variable prevalence of obesity in children e.g., in Egypt it was found to be 10.8% by Manir et al. [7] and in Malaysia, it was 11.3% [8] while in Pakistan, Ramzan et al found 5.17% prevalence [9]. The present study revealed that the prevalence of obesity was highest at the age of 10-11 years both in Boys (12%) and Girls (11.5%), which may be attributed to the growth spurt at this age as well as accumulation of fat.

Prevalence of obesity in developing countries is increasing because of rapid economic and industrial growth, improvement in living standards; overeating of energy dense foods, decrease physical activity, sedentary lifestyle, playing of computer games and television viewing for longer duration. Hence, appropriate steps like change in food habits and life styles, increasing physical activities by arranging outdoor games in schools, health education of parents and children, need to be taken to address this problem to build up a strong and healthy nation. The study was limited in terms of small number of cases included and that it was limited to the affluent school children only.

## CONCLUSION

It is concluded that the obesity is reaching an epidemic proportions especially in children of rising middle class income group.

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