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Original Research Article

Prevalence, risk factors and attitude of parents towards childhood obesity among school children in Bangalore city

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ABSTRACT

Background: Aim of the study was to determine the prevalence, risk factor attitude of parents towards obesity and overweight among the school children between the age group of 6-13 years.
Methods: A structured questionnaire was filled by the parents and weight and height was measured by school nurse in a private school in Bangalore city.
Results: Prevalence of overweight was 13.20% and obesity was 17.13%. Birth weight and sport was strongly associated with the prevalence. Sports protect the child from the overweight and obesity. Parent's perception about their child's BMI status was good. Parent's attitude of having meal with their child and their estimation of child's physical activity was protective and the attitude of controlling diet of the child was a risk factor for overweight and obesity. Though the parents were able to estimate their child as overweight and obese they were not willing for further advice.
Conclusions: Prevalence of overweight and obesity is increasing. Higher birth weights, parental attitude of controlling child's diet are the potential risk factors. Involvement in sports, parental attitude of having food with child and awareness about their physical activity are protective.

Keywords: Prevalence, Overweight, Obese, Risk factors, Attitude

INTRODUCTION

Childhood obesity has more than doubled in children and quadrupled in adolescents in the past 30 years.[1,2] Overweight and obesity are the result of "caloric imbalance"—too few calories expended for the amount of calories consumed—and are affected by various genetic, behavioral, and environmental factors.[3,4] Childhood obesity has both immediate and long-term effects on health and well-being. Children and adolescents who are obese are at greater risk for bone and joint problems, sleep apnea, and social and psychological problems such as stigmatization and poor self-esteem.[3,4]

Indian data regarding current trends in childhood obesity are emerging. In a recent systematic review article in which the prevalence data from 52 studies conducted in 16 of the 28 States in India was analyzed, the median value for the combined prevalence of childhood and adolescent obesity showed that it was higher in north, compared to south India. The pooled data after 2010 estimated a combined prevalence of 19.3 per cent of childhood overweight and obesity which was a

significant increase from the earlier prevalence of 16.3 per cent reported in 2001-2005.[5] This increase in the prevalence of the childhood obesity has been attributed to the changing lifestyle of families with increased purchasing power, increasing hours of inactivity due to television, video games, and computers, which are replacing outdoor games and other social activities.[6] From previous studies, parental influence is a key risk factor for childhood weight gain and obesity. It can control the obesogenic environment by affecting the child's dietary habits, physical activity, the accessibility and availability of foods and food-related processes. Since parents provide the contextual environment, addressing this issue is of clinical and public health relevance as obesity is persistently and rapidly increasing.[7]

Present study was conducted with objective of determining the prevalence, risk factor and attitude of the parents towards obesity and overweight among the school children between the age group of 6-13 years.

METHODS

This was a cross sectional study done in a private higher primary school located in the central part of Bangalore urban. School has a total strength of 1079 students from 1st to 7th standard. Out of 1079 students 484 students participated in the study by filling up the form (only 484 parents filled up the form) and weight and height was measured for 969 students (other students were absent). A written informed consent was taken from the parents and the school authority. The study was approved by the ethics committee of St Philomena's hospital.

The study was conducted using a structured questionnaire which included details about the demographic profile of the family, details about the care giver of the child, food habits and physical activities of child and few questions about attitude of the parents/caregiver towards obesity and the their risk factors. Questionnaire also included measurement of weight and height of the child. The questionnaire was given to all the 1079 students but only 484 parents respondent by filling up the form. Weight and height was measured by the school nurse. The body weight was measured without shoes using a measuring scale and height measured using standard technique. Body Mass Index (BMI) was calculated as weight (in kilograms) divided by height (in meter squared). BMI number was plotted on the IAP BMI-for-age growth charts (for either girls or boys) to obtain a percentile ranking.[8] Healthy children have a BMI percentile ranging between 5th percentiles to 85th percentile. The children whose weight were more than 85th to less than the 95th percentile were considered as overweight and obese who were equal to or greater than the 95th percentile.

Collected data was alpha-numerically coded and entered in a excel sheet. Analysis was done using SPSS 19.0 software and chi-square test was used for analyzing the association of risk factors. Socio-demographic variables, morbidity profile and risk factor data were analyzed using descriptive statistics like frequencies, mean and standard deviation. Chi-squared test of association or Fishers exact probability test were used as applicable to assess the association between obesity / overweight and associated variables. Variables which exhibited a p value <0.25 on univariate analysis were entered into a multiple logistic regression model with the presence of obesity / overweight as the dependent variable and the associated variables as the independent variables. A p value of <0.05 was considered to be significant for chi-square test.

RESULTS

Out of 969 students 69(7.12%) students were under weight, 128(13.20%) were overweight and 166 (17.13%) were obese. Among 128 overweight students 31.25% were between 6-9 years of age and 68.75% were between 9-13 years of age. And 95.31% were boys and 4.68% were girls. Among 116 obese students 27.58% were between 6-9 years of age and 72.41% were between 9-13 years of age. And 93.10% were boys and 6.89% were girls.

Among 969 students that we studied, 258 (26.62%) belonged to 6-9 years of age. Among them 219 (84.88%) were boys and 39 (15.11%) were girls. And 711 (73.37%) students belonged to 9-13 years of age. Among them 711 (100%) were boys and there were no girls. The age and gender distribution of study population is depicted in Table 1. We did not find an association between obesity and overweight and demographic variables like age, gender, parents' education and family income.

Table 1: Age and gender distribution of study population.

Age	Male (%)	Female (%)	Total (%)
6-9	219 (84.88)	39 (15.11)	258 (26.62)
10-13	711 (100)	0 (0.0)	711 (73.37)
Total	930 (91.00)	39 (8.99)	969

Our results show that birth weight was significantly associated with obesity and overweight. Obesity and overweight was more among the children whose birth weight was more than 2.5 Kg. Involvement of child in the sports activity either at school or outside school had statically significant associated with prevalence of obesity and overweight. Food habits like non vegetarian diet, carbonated drinks, junk food, sweets, vegetable and fruit intake were assessed and non of the food habits were not associated with obesity and overweight.. Duration of sleep and duration of TV watching/ computer games were not associated with obesity and overweight. The association of various risk factors with obesity and overweight has been depicted in Table 2.

Table 3 depicts the attitude of the parents towards obesity and overweight. In this study estimation of parents'

attitude about their child's BMI status was good. The association between the presence of overweight / obesity in the child and the perception of the parents was statistically significant. 87.78% of the parents monitor the diet of their child, 94.36% have at least one meal a day with their child and 62.74% spend more than 6 hours a day with their child. 81.68% of the parents felt that their child has adequate activity. This knowledge of the parents was significantly associated with prevalence of overweight and obesity. Parents attributed both excessive academic activity and TV watching for lack of physical activity. 64.80% of the parents were not willing for the treatment and further advice if their child is found to be overweight or obese. This attitude of the parents was significantly associated with the prevalence of overweight/obesity and underweight.

Table 2: Association of various risk factors with overweight and obesity.

Variable	Total N=475	Normal weight	Overweight and obesity	P value
Non-vegetarian food -Every day	24	20 (83.33)	4 (16.66)	0.341
Carbonated drinks -Every day	16	13 (81.25)	3 (18.75)	0.566
Junk food -Every day	81	59 (72.83)	22 (27.16)	0.596
Sweets- Every day	76	60 (78.94)	16 (21.05)	0.404
Vegetable –Every day	194	147 (75.77)	47 (24.22)	0.797
Fruits –Every day	200	151 (75.5)	49 (24.5)	0.883
Involved in sports	83	51 (61.44)	32 (38.55)	0.001*
Daily physical activity	236	185 (78.38)	51 (21.61)	0.105
Sleep >9 hr/day	108	82 (75.92)	26 (24.07)	0.834
Watching TV >3hr/day	213	155 (72.76)	58 (27.23)	0.277

Table 3: Attitude and awareness of parents towards obesity.

Question	Total N=475	Normal weight	Overweight/ obese	P value
I control my child's diet to make it healthy and balanced	417	308 (73.86)	109 (26.13)	0.165
I feel my child has adequate physical activity	388	300 (77.31)	88 (22.68)	0.040*
I spend at least 6 hr with my child(Mother)	290	224 (77.24)	66 (22.75)	0.576

*p<0.05.

Table 4: Unadjusted and adjusted odds for risk factors in obesity and overweight children.

Variable	Unadjusted odds	Adjusted odds
Birth weight>2.5	1.848 (1.063-3.211)	1.353 (0.245-0.630)
Non involved in Sports	0.448 (0.271-0.740)	9.845 (0.002-0.280)
Physical inactivity	1.413 (0.929-2.149)	2.570 (0.109-1.851)
I felt my child is obese/overweight	0.083 (0.034-0.198)	17.216 (0.000-14.578)
I control my child's diet	1.881 (0.893-3.962)	1.447 (0.229-0.513)
Child has at least one meal a day with the family	0.607 (0.263-1.402)	0.005 (0.946-0.953)
I feel my child has adequate activity	1.794 (1.086-2.964)	0.884 (0.347-0.654)
If my child is overweight or obese I am willing for further advice	0.561 (0.327-0.964)	1.109 (0.292-1.467)

We did a multivariate analysis to compute the adjusted odd ratios for the different risk factors. Noninvolvement in sports [OR 9.845(0.002-0.280)], birth weight [OR 1.353(0.245-0.630)] Parent's attitude of controlling child's diet [OR1.447 (0.229-0.513)] were the major risk factors for the prevalence of obesity and overweight. Family having at least one meal a day with child [OR 0.005(0.946-0.953)] and parents perception of child's physical activity [OR 0.884(0.347-0.654)] was protective. The results of multivariate analysis are presented in Table 4.

DISCUSSION

Prevalence of obesity

Prevalence in our study was comparable with global prevalence.[9,10] There are only few studies done in India on the prevalence of obesity and overweight among school children. Compared to Indian studies prevalence was high which may indicate raising trend in the prevalence.[11-13] And also in most of these studies CDC charts was used for assessing BMI Status where as we

used Indian Academy of Pediatricians (IAP) charts. Prevalence of obesity and overweight was more among the younger children, overweight was more prevalent among males and obesity among females.

Risk factors

We studied many potential risk factors for obesity like Birth weight, carbonated drinks, low fiber intake, sweets, physical inactivity, duration of sleep, TV watching. We found only Birth weight as a potent risk factor and involvement in sports as protective factor.[14,15] Many other studies have shown Sleep, TV watching and Sugary drinks as potential risk factors. None of the socio-economic factors were associated with obesity in our studies. In previous studies education of mother and father were risk factor for childhood obesity.[16]

Parental attitude towards obesity

In our study we assessed parental attitude towards child's BMI status, control over child's diet, child having meals with family, physical activity of child, amount of time spent with the child and willingness to know child's BMI status and seek advice. We found that parental attitude of controlling child's food habit was a potential risk factor, parental attitude of having food with the child and awareness about physical activity of the child was protective. Parental attitude towards BMI status of the child and attitude of seeking advice was inconclusive. Parental attitude of controlling child's food habit is a well established risk factor.[14,15] Parental attitude of having food with the child and awareness about physical activity of the child is not studied in the past. Parental attitude towards BMI status of the child and willingness to know and seek advice is established as risk factor in few studies.[16,18]

Limitation of study

Cross sectional studies are limited to identifying association and not causality. We could not study many other potential risk factors for obesity.

Implications

Indian standards should be used for screening and diagnosis of obesity among children. Children with higher birth weight should be followed up for obesity and preventive measures should be advised. Parental attitude plays a great role in prevalence of obesity and which should be considered while planning preventive strategy.

A primary care physician can pay a vital role in the prevention of childhood obesity by screening children using Indian standards, following up the high risk group, promotion of physical activity and involvement in sports and educating the parents to intervene at an early stage to prevent the consequences.

CONCLUSION

Prevalence of overweight and obesity is increasing. Higher birth weights, parental attitude of controlling child's diet are the potential risk factors. Involvement in sports, parental attitude of having food with child and awareness about their physical activity are protective.

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