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Prevalence of Obesity and Its Influencing Factor among Affluent School Children of Davangere City

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Abstract

Background: Childhood obesity is a fast emerging problem for which national representative data is scarce. Effective preventive of adult obesity will require prevention and management of childhood obesity.
Objectives: To know the prevalence of obesity in two affluent school children of Davangere city studying between 5th and 10th standard and to identify the factors influencing childhood obesity.
Methods: A cross sectional study followed by a case control study was conducted in two affluent schools of Davangere city – Sri. Siddaganga and Sri. Taralabalu residential school. A total of 1496, school children studying between 5th & 10th standard aged between 10 and 15 years were enrolled and data on family history of obesity, diet, snacking habits and physical activity was collected.
Results: Out of 1496 children 86 were obese. Prevalence of obesity was 5.74 %. Prevalence of obesity was more in girls (8.82%) than boys (4.42%). Prevalence of obesity increased, with increase in age in both boys and Girls. Family history of obesity, snacking of high energy foods and lack of physical activity were the important influencing factors of obesity.
Conclusion : Consumption of high fat and high energy (Junk foods) and snacking in between the meals should be avoided by children. Health education should be given to parents, teachers and children regarding dietary habit and sedentary life style.

Keywords: Childhood Obesity, Influencing Factors, Body Mass Index

Childhood obesity was considered a problem of affluent countries. Today the problem is started appearing even in developing countries. Globally the prevalence of childhood obesity varies from over 30% in USA to less than 2% in sub-Saharan Africa. Currently the prevalence of obese school children is 20% in U K and Australia, 15.8% in Saudi Arabia, 15.6% in Thailand, 10% in Japan and 7.8% in Iran[1,2].

National representative data for childhood obesity in India is unavailable, however available studies of Chennai and Delhi has shown that prevalence of 6.2% and 7.4% respectively[3,4].

50-80% of obese children will continue as obese adults [5] and falls into risk group of Diabetes, Hypertension, Coronary Heart Diseases and many more obesity related diseases. Complications of adult obesity are made worse if the obesity begins in childhood. Obesity is harder to treat in adults than in children[6].

Effective prevention of adult obesity will require the prevention and management of child hood obesity [7]. WHO has also emphasized on urgent need of understanding the prevalence trend, factors contributing and developing strategies for effective intervention.

With these background in mind, the present study is undertaken in the central part of Karnataka (Davangere), where no such studies have been done. The study was conducted with the objective to know the prevalence of obesity in two affluent school children of Davangere city Studying between Vth and Xth standard and to identify the factors influencing childhood obesity.

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Material and Methods

1496 students studying between Fifth and Tenth standard of two affluent schools (where the annual fees is more than Rs.15000) of Davangere city were selected for the study. After obtaining the consent from the school authorities, height and weight of students were measured by adopting standard procedures and BMI was calculated using K.N. Agarwal[8] percentiles, childrens with 95th Percentile of BMI were taken as cut-off point. Childrens with BMI more than this cut-off point with respect to age and sex were considered as obese. Cut-off point of boys and girls is tabulated in table-1.[8]

Table 1 : 95th Percentile of BMI for Boys and Girls

Age in years	Boys	Girls
10	22.1	23.2
11	23.4	24.5
12	23.8	25.7
13	25.3	27.1
14	25.3	27.4
15	27.3	27.7

For each obese child identified (case) 2 age & sex matched controls were selected both immediate preceding and succeeding to his / her roll number. Cases and controls were interviewed in detail regarding - Family history of obesity, eating habits, physical activity and recorded in a pretested proforma designed especially for the purpose.

We have done study in 2 phases ; Cross Sectional Study; where we have found the prevalence rate of obesity. It was followed by case control study : where we studied the influencing factors of obesity both in case and controls with

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appropriate matching.

Inclusion Criteria was School children of Vth to Xth standard aged between 10-15 years studying in two schools of Davangere city. Exclusion criteria Children having Chronic illness, Severe malnutrition, Endocrinal problems, Physical & Mental defects and Children aged below 10 years and above 15 years were excluded. Statistical Analysis was done by Chi-square test & Odds ratio.

Results

A total of 1496 children studied (975 boys, 521 girls). Among them 86 were obese (Boys 40, Girls 46). Prevalence of obesity was 5.74%. Prevalence of obesity was more in girls (8.82%) than boys (4.10%).

Table 2 : Class wise distribution of the Study Group

Class	Boys	Girls	Total
Fifth	201	111	312
Sixth	215	107	322
Seventh	134	82	216
Eighth	170	79	249
Ninth	125	80	205
Tenth	130	62	192
Total	**975**	**521**	**1496**

Table 3 : Prevalence of Obesity by Sex

Sex	Obese	Non-Obese	Total
Boys	40 (4.10%)	935 (95.90%)	975 (100%)
Girls	46 (8.82%)	475 (91.18%)	521 (100%)
Total	**86 (5.74 %)**	**1410 (94.26%)**	**1496 (100%)**

x^2= 14.0 p < 0.001

The difference observed in prevalence of obesity between boy's and girls was highly significant. Surprisingly the prevalence of obesity increased with increase in age of both the sex. **(Graph)**

Graph : Prevalence of Obesity by Age and Sex

Table 4: Influencing Factors of Obesity

Variables		Obese (86)	Controls (175)	Odds ratio	Chi-square	P value
Family history	Present	80	37	49.7	120.5	P<0.001
	Absent	06	138			
Diet	Mixed	47	75	1.6	3.22	0.07
	Veg	39	100			
High energy foods	Once/ week	06	69		38.3	p<0.001
	2-3 times/ week	42	77			
	Daily	38	29			
Physical activity	Absent	55	57	2.0	23.1	p<0.001
	Present	31	118			

An attempt was made to know the influencing factors. Among them family history, habit of snacking of high-energy foods and lack of physical activity were the important influencing factors of childhood obesity. (Table-4)

Discussion

The prevalence of obesity (5.74%) among School children observed here has supported by the contemporary studies conducted at Chennai & Delhi giving prevalence of 6.2% & 7.4% respectively [3,4]. The prevalence of obesity more in Girls (8.82%) than Boys (4.10%) observed by us is similar to the observation of Agarwal K.N. et al [8]. Among the factors influencing obesity studied family history of obesity, snacking of high energy foods & lack of physical activity were the important influencing factors, which is similar to the observation of Sheetal Monga study [9]. The present study highlights childhood obesity is a emerging health problem which need to be confined by large scale studies & effective preventive strategies should be developed to halt this epidemic at its beginning.

50-80% of obese children will become obese adults and complication of adults obesity are made worse if the obesity begins in childhood [5]. Prevention of obesity in children is easier than the adults. Based on the findings of this study it is recommended that consumption of high fat and high energy (Junk foods) and snacking in between the meals should be avoided by children. Sedentary life style should be discouraged. Increase physical activity like playing outdoor games, walking, cycling should be encouraged in children. Health education should be given to parents, teachers and children regarding dietary habit and sedentary life style (school based intervention).

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