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Corellation of Overweight and Obesity with Life Style Habits Among School Going Children in Agra Region

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ABSTRACT

CORELLATION OF OVERWEIGHT AND OBESITY WITH LIFE STYLE HABITS AMONG SCHOOL GOING CHILDREN IN AGRA REGION Tandan D, Kumar R, Prajapati NC, Kaushal SK Department of pediatrics, S. N. Medical College, Agra Obesity in children is becoming a major public health problem in developing countries (range from 3% to 29%).Present study is an attempt to assess the prevalence of obesity among school children of Agra region and its correlation with their life style.

Study design- A Cross-sectional study

Setting- Two schools of Agra (one private and one government) and department of pediatrics.

Method- Two schools were selected for the study and permission was taken from the school authorities. All children consented for the study were examined in detail and based on BMI diagnosed as obese. The obese children were finally enrolled and detailed examination and life style habits were recorded as a predesigned pretested semi structured proforma. The results and final assessment was done using SPSS-16 software.

Results- 400(68% male, 32% were female) children in the age group of 10 to 16 years were enrolled from two schools. Prevalence of overweight was 2% and obesity was 4% respectively. Overweight was observed in 2.94 % of boys and none of the girls. Obesity was observed in 2.94% of boys and 6.25% of girls. Obesity was found more in children who consumed Pizza/Burger/French-fries i.e.11.35 % as compared to children who consumed Fried local food, Chips/Namkeen etc (7%). Obesity was more prevalent among children who had sedentary life style like daily watching television & using computer i.e. 8.09% as compared to children who had some physical activity like outdoor activity & physical exercise (4.16%).

Conclusion- Prevalence of overweight and obesity is more in junk food consumer and those who do not involve in outdoor activities

KEYWORDS : Prevalence, obesity, cross-sectional, body mass index.

INTRODUCTION

Obesity is often defined simply as a condition of abnormal or excessive fat accumulation in adipose tissue to the extent that health may be impaired[1]. Once considered a problem related to affluence, obesity is now fast growing in many developing countries and in poor neighborhoods of the developed countries. The Centers for Disease Control and Prevention (CDC) estimates that childhood obesity has tripled since 1970. Prevalence has increased across lines of gender, ethnicity, socioeconomic factors and region[2]. Internationally, childhood obesity has increased in countries like as Brazil, Germany, China and Australia[3]. According to WHO (2002)[4] obesity has reached epidemic proportions globally, with more than 1 billion adults as overweight - at least 300 million of them clinically obese - and is a major contributor to the global burden of chronic disease and disability. It is observed that 30% of obesity begins in childhood and out of that 50% to 80% become obese adults[14].

METHODS

Systemic random sampling was used. Total number of children to be included in the study was decided by Probability Proportionate to Size technique. Children's in the age group defined for the study are usually students of 5th to 10th class. Total number of children in each school was divided by 6 (as there are 6 classes from standard 5th to 10th) to get the number of children to be taken from each class. List of all students in each class was obtained roll number wise and required number of children was sampled by systematic random sampling. In case a student of that particular roll number was absent on the date of interview or was found ineligible, student falling on the next roll number was taken. Their detail history and family background obtained was recorded. Anthropometric measurements like Height, weight, of the subjects were taken using standard procedures for calculating BMI. Life style parameters was recorded by interviewing and if needed was also confirmed from their parents/ guardian.

RESULTS

Body Mass Index (BMI) was calculated using the formula BMI = weight in kg / (height in m^2). Based on WHO (2000)[5], standards BMI for age and sex children were classified as underweight, normal, overweight and obese.

Table No.1: BMI & SEX WISE DISTRIBUTION OF THE STUDY POPULATION

Sex	BMI OF CHILDREN							
	Below 18.5		18.5-22.9		23-24.9		25 & above	
	No.	%	No.	%	No.	%	No.	%
Male N=272 (100%)	40	14.71	216	79.41	8	2.94	8	2.94
Female N=128 (100%)	64	50.00	56	43.75	-	-	8	6.25
Total	104		272		8		16	

Table No.1 shows the BMI and sex wise distribution. In boys, 216(79.41%) had normal BMI, likewise in girls, 56 (43.75%) had normal BMI.

Prevalence of obesity was more in girls 6.25% as compared to boys which were 2.94%.

Overall prevalence of overweight and obesity was 2% and 4% respectively.

Table No.2: AGE WISE DISTRIBUTION OF BMI IN STUDY POPULATION

Age (years)	BMI OF CHILDREN								Total	
	Below 18.5		18.5-22.9		23-24.9		25 & above			
	No.	%	No.	%	No.	%	No.	%	No.	%
9-10	24	33.33	48	66.67	-	-	-	-	72	100.00
10-11	32	50.00	32	50.00	-	-	-	-	64	100.00
11-12	24	33.33	48	66.67	-	-	-	-	72	100.00
12-13	8	12.50	56	87.50	-	-	-	-	64	100.00
13-14	8	11.11	56	77.78	-	-	8	11.11	72	100.00
14 and above	8	14.29	32	57.14	8	14.29	8	14.29	56	100.00
Total	104	26.00	272	68.00	8	2.00	16	4.00	400	100.00

Table No.2 shows age wise distribution of BMI. Overweight and obesity was observed in adolescent above 13 years of age, while undernutrition was prevalent from 9-12 years of age (33%-50%) and then declined thereafter (11%-14%).

Table no.3: DISTRIBUTION ON THE BASIS OF JUNK FOOD HABITS

FOOD HABITS	BMI OF CHILDREN								Total	
	Below 18.5		18.5-22.9		23-24.9		25 & above			
	No.	%	No.	%	No.	%	No.	%	No.	%
FRIED LOCAL FOODS (1)	60	18.86	236	74.21	7	2.20	15	4.71	318	100.00
PIZZA/ BURGER/ FRENCH FRIES Etc. (2)	41	23.29	115	65.34	6	3.40	14	7.95	176	100.00
CHIPS/ NAMKEEN/ POPCORN (3)	88	24.78	243	68.45	8	2.25	16	4.50	355	100.00
CHOWMEIN/ MAGGI (4)	49	19.52	183	72.90	6	2.39	13	5.17	251	100.00
NONE	8	29.63	19	70.37	NIL		NIL		27	100.00

Table no.3 shows that the prevalence of obesity was more in children who consumed Pizza/Burger/French-fries i.e.11.35 % as compared to children who consumed Fried local food, Chips/Namkeen and Chowmein/Maggi i.e. approximately 7% each.

Table no.4: DISTRIBUTION ON THE BASIS OF HABITS

HABITS	BMI OF CHILDREN								Total	
	Below 18.5 104 (26%)		18.5-22.9 272 (68%)		23-24.9 8 (2%)		25 & above 16 (4%)			
	No.	%	No.	%	No.	%	No.	%	No.	%
RUNNING / JOGGING 1	66	23.07	212	74.12	3	1.04	5	1.74	286	100.00
CYCLING 2	88	25.07	248	70.65	6	1.70	9	2.56	351	100.00
OUTDOOR ACTIVITIES 3	90	27.43	227	69.20	4	1.21	7	2.13	328	100.00
NONE (1+2+3)	5	11.09	14	33.33	8	19.04	15	35.71	42	100.00
TELEVISION 4	75	24.91	202	67.10	8	2.65	16	5.13	301	100.00
COMPUTER 5	58	21.64	189	70.54	7	2.61	14	5.22	268	100.00
VEDIOGAMES 6	42	24.85	114	67.45	5	2.95	8	4.73	169	100.00
NONE (4+5+6)	13	19.11	52	76.40	1	1.47	2	2.94	68	100.00

Table no.4 shows that the prevalence of obesity was more in children who were involved in daily television watching (5.13%), computer viewing (5.22%) and videogame playing (4.73%) as compared to children who were involved in some physical activity like running/ jogging (1.77%), cycling (2.56%) and outdoor activities (2.13%). 42 children's are among those who were not involved in running, cycling or any outdoor activities. Out of 42, 15 (35.71%) were obese and 8 (19.04%) were overweight. Similarly 68 children's were not involved in watching television, using computer and playing videogames. Out of 68, 2 (2.94%) were obese and 1 (1.47%) were overweight.

DISCUSSION

The gender profile as observed is present in Table No. I. Majority of children i.e. 272/400 (68%) in the present study were male and 128/400 (32%) were female. The male: female ratio in this study population was 2.1:1 study conducted in Pakistan by *Dr. Ramzan M et al 2008* [6] included total 1338 school going children were examined with 865 (67.75%) boys and 471 (35.25%) as girls (male: female ratio of 1.6:1)

In this study Overall prevalence of overweight and obesity was 2% and 4% respectively. Similar study by *Ramchandran et al (2002)*[7] from six schools, two each from high, middle and lower income groups in Chennai reported the prevalence of overweight (including obese) adolescents ranged from 22% in better off schools to 4.5% in lower income group schools.). Another study from Delhi school by *Kapil U et al(2002)*[8] reported frankly obese children were 7.5%.

In our study Prevalence of obesity was more in girls 6.25% as compared to boys which were 2.94% similar to study conducted by *Peltzer K et al (2011)*[9]. This study results indicates a prevalence of overweight or obesity of 10.4% among girls and 3.2% among boys.

The age profile of study population is present in Table No. II. Out of 400 children 72 (18%) each were in the age group of 9-10 years, 11-12 years and 13-14 years followed by 64 (16%) each in age groups 10-11 years , 12-13 years and 56 (14%) were in age group of 14 and above. Age group is taken similar to study *Banik SD et al (May 2010)*[10], Nutritional status of school going children and adolescents aged 9-13 years at Haldia in West Bengal, India and study by *K Boss et al 2007*[11] in Bankura District, India total of 454 Bengalee Hindu children aged 6-14 years.

Comparison of food habits as listed in Table III shows that prevalence of obesity was more in children who consumed fast food as compared to fried local foods. Similar results also reported by recent longitudinal trial by *Ludwig DS et al (2001)*[12] demonstrated increased fast food consumption with weight gain and obesity in children. Another study by *Jennifer M Poti et al* [13] found the independent increased associations of overweight/obesity with fast food consumption.

CONCLUSION

Present study reveals the prevalence of overweight and obesity as 6% in Agra. Overweight and obesity is more in adolescent girls as compared to adolescent boys and is closely related with regular and frequent intake of fried fatty food and junk food. Lack of physical activities and outdoor games added to sedentary habits has been found to enhance the incidence of overweight and obesity.

Parents, guardians and teacher of school going adolescents along with the adolescents need to be educated for the life style activity associated with overweight and obesity. A regular monitoring of adolescent in the school for their BMI could also be of help.

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