

Prevalence of obesity and its lifestyle risk factors in school-age children in Jaipur

Bansal A K, Manohar R, Yadav R, Sharma D, Yadav N, Lohani H

ABSTRACT

Background: Changing lifestyle factors is leading to an increased incidence of overweight and obesity in children and adolescents which leads to continued risk during the adulthood predisposing to an array of diseases and disorders.

Aim: To determine the prevalence of obesity and its association with various life style factors in its causation.

Methods: Cross-sectional study involving randomly selected 580 students in five affluent schools of Jaipur. The data collection was done through a predesigned and pretested questionnaire.

Results: Prevalence of obesity was high in girls. Overall prevalence among girls and boys was 6.57% and 5.11% respectively. Life style factors (dietary habits) increases the risk of obesity.

Conclusion: Obesity is an emerging health problem in school-age children belonging to affluent families in Jaipur. The lifestyle factors have shown to be one of the important determinants of obesity.

Keywords: obesity, overweight, prevalence, lifestyle

INTRODUCTION

The lifestyle factors are changing in the country attributable to the recent economic growth, the population growth, the change in the societal milieu and increased urbanization. Consequentially, the dietary habits of individuals have changed substantially coupled with dip in physical activity. This has affected our children too; the incidence of obesity and overweight are on rise among them.¹ Various studies have shown that the overweight and obesity increase morbidity and mortality as they are positive risk factors for life threatening disease and stands the fifth leading risk for global deaths.^{1,2}

Adult obesity is difficult to treat and more than 50% of obese children become obese adults with worse complications³. It is therefore important that the prevention of obesity begins in childhood itself.

Globally, the new International Association for the Study of Obesity/Indian Obesity Task Force (IASO/IOTF) analysis (2010) estimates that up to 200 million schools aged children are either overweight or obese, of those 40-50 million are classified as obese.⁴ NFHS-3, Rajasthan reported the prevalence of overweight and obesity in male was 8.4 and 10.4 in females.⁵ However there is no

national representative data on prevalence of obesity and overweight among children and adolescence.⁶ Studies across the country have reported the prevalence of obesity in the range of 3% to 29%. It is found to be more prevalent among urban and educated population.^{3,6-10} With this background, this study was undertaken to explore the scenario among the school-age children and its association with the determinants.

MATERIALS AND METHODS

Overweight and obesity were assessed by Body Mass Index (BMI) for age. The BMI was calculated and also the height and weight of the children were measured by standard techniques. Students who had BMI for the age >85th and <95th percentile of reference population were classified as overweight and BMI for age >95th percentile of reference population were classified as obese. (IAP Growth Monitoring Guidelines for Children from birth to 18 year).

Sample population and size: Three schools charging Rs.18000/annum as fee and having strength of more than 300 students in the fifth class and above were randomly selected. Sample size was calculated assuming 20% obesity in study population as obtained in a study done at Surat, Gujarat.¹ At 80% study power, 95% Confidence

level and relative allowable Error of 20% minimum sample size required was 400 school children. Questionnaire and consent form was handed over to 620 students; 580 (352 boys and 228 girls) (93.54%) were found eligible for the study.

Children found absent on the first visit due to chronic systemic disease or any physical deformities; belonging to Socio-economic status class 3rd and below; and advised bed rest for more than fifteen days in past 6 months were excluded from the study.

In case of a class having more than one section, only one of those was selected by chit box method. After obtaining due permission from school authorities, two visits were paid for each selected class; first visit intends to share information, encourage and orient the class about the study and were provided consent form and the Performa to be filled by them/their parents with signature of parents, for participation and information. In second visit, the students who provided consent and the required information were subjected for anthropometric examination. All information was recorded in a pre-designed and pre-tested semi-structured performa; height and weight were measured by standard techniques. BMI was used for assessing obesity.

Operational definitions of the determinants being studied are as follows:

- Outside Home Serving – serving comprising of full meal at restaurants, parties, friends/relative house, and social/community gatherings etc. thus replacing a regular meal of home.
- Junk Food at home per day – food that contains high calories and low nutritive value like chips, packed wafers, jellies, ice cream, chocolate, candies and is consumed in between the regular meals.
- Snacks outside home – any food taken outside home including non-aerated drinks, not as a replacement of regular meals (breakfast/lunch/dinner)

- Carbonated Drinks – all aerated drinks available in the market.

Statistical analysis: Results were expressed as percentage and proportions, mean and standard deviations. Odds ratios were calculated to find out the risk of various life style and dietary factors. Chi square test was used to find out association of obesity with various factors. 'p' value <0.05 was taken as significant. Epi-info software was used for statistical calculations. Obesity and overweight conditions have been merged for calculation of odds ratio.

RESULTS

Overall prevalence of obesity and overweight were 5.69% and 14.83% respectively. In girls, the prevalence of obesity and overweight was 6.58% and 16.23% respectively while in boys, it was 5.11% and 13.92% respectively. Table 1.

Table 1: Prevalence of Obesity and Overweight among the Boys and Girls

	Boys		Girls		Total	
	No.	%	No.	%	No.	%
Obese	18	5.11	15	6.58	33	5.69
Overweight	49	13.92	37	16.23	86	14.83
Non-obese	285	80.97	176	77.19	461	79.48
Total	352	100.00	228	100.00	580	100.00

The study reflected that those taking outside home servings more than twice/week were found 11.97 times and at risk of developing overweight and obesity and eating junk food more than once at home was 2.18 times. Similarly the risk was found 4.14 and 2.24 times in children having snacks outside home daily and equal to more than 3 times in a week respectively. Children consuming Carbonated Drinks daily and more than three times per week were having 31.31 times and 7.26 times more risk of developing overweight and obesity. Watching TV/Computer increases risk significantly when it is for 1-3 hours (1.79 times) in a day or more than 3 hours (10.75 times). Risk for overweight/ obesity was 4.88 times in children not playing outdoor game at all and 3.6 times in those who were playing weekly

than those playing daily. This study could not establish statistically significant association with factors like not doing daily exercises, habit of

watching TV while eating and using Auto/Bus as a mode of transport to school in bi-variate analysis.

Table 2: Significance of different lifestyle factors for developing obesity

Variables		Obesity And Overweight				Odds Ratio	95%CI	'P' Value
		Yes	%	No	%			
Outside Home Serving Per Week	2	82	68.91	72	15.62	1.00		
	>2	37	31.09	389	84.38	11.97	7.540-19.015	0.000
Frequency Of Junk Food At Home Per Day	Once	70	58.82	349	75.70	1.00		
	>Once	49	41.18	112	24.30	2.18	1.429 -3.328	0.000
Frequency Of Snacks Outside Home Per Week	2	37	31.09	255	55.31	1.00		
	3	49	41.18	151	32.75	2.24	1.395 -3.585	0.001
	Daily	33	27.73	55	11.93	4.14	2.380 -7.184	0.000
Carbonated Drinks Per Week	2	29	24.37	367	79.61	1.00		
	3	43	36.13	75	16.27	7.26	4.260 -12.357	0.000
	Daily	47	39.50	19	4.12	31.31	16.288-60.167	0.000
TV/Comp Watching Per Day	1 Hr	41	34.45	277	60.09	1.00		
	1-3 Hr	43	36.13	162	35.14	1.79	1.121 -2.868	0.020
	3 Hr	35	29.41	22	4.77	10.75	5.747 -20.102	0.000
Outdoor Games	Daily	22	18.49	220	47.72	1.00		
	Weekly	58	48.74	161	34.92	3.60	2.118 -6.128	0.000
	None	39	32.77	80	17.35	4.88	2.724 -8.723	0.000
Mode Of Transport To School	Walking/ Cycling	9	7.56	69	14.97	1.00		
	Auto/Bus	110	92.44	392	85.03	2.15	1.041 -4.447	0.050
Daily Exercise	Yes	18	15.13	108	23.43	1.00		
	No	101	84.87	353	76.57	1.72	0.995 -2.963	0.067
TV Watching While Eating	Yes	50	42.02	160	34.71	1.36	0.903 -2.057	0.170
	No	69	57.98	301	65.29	1.00		

DISCUSSION

Our study found a higher prevalence of obesity in girls in the affluent schools in Jaipur unlike the study of Goyal, et al., wherein the prevalence of obesity was found to be more in boys.⁶ The girls have restricted mobility outside the homes as per the prevailing culture in Jaipur. Reduced opportunities for physical work and playtime could explain higher risks of getting obese among girls.

The two significant factors were having regular meals outside home and watching of TV/being on computer for more than 3 hours daily. Foods normally available in restaurants are spicy and oil rich and contribute in overweight and obesity.

Watching TV and working on the computer leads sedentary habits. However, present study fails to associate with any risk with eating while watching TV. In the study by Goyal et al. it was demonstrated that this factor was a significant risk factor for obesity.

As expected, the risk for development of overweight and obesity among children eating junk food more than once at home per day was clearly demonstrated. It is a possibility that major meals consumed at home may be junk food, which was not clearly demonstrated in our study.

Consuming snacks outside home daily or even

more than 3 times in a week which are over and above the regular meals increase intake of calorie without providing satiety, since these foods are low in fiber content, and therefore could be causing the risk of obesity observed in our study. Similarly consuming carbonated drinks provide calories without satisfying hunger, thus increasing the overall intake of calories.

Children usually are not very keen for doing exercises daily. Children playing outdoor games even at least weekly had lower risks of developing obesity. This risk lowered significantly when the outdoor games were played daily and regularly.

Two factors (not doing daily exercises and using Auto/Bus as a mode of transport to school) did not show any association of increased risk of developing overweight/ obesity. The time spent in traversing to school was not measured neither the time spent in doing exercises nor hence the observation becomes difficult to clearly comment upon.

CONCLUSION

Lifestyle of an individual has a direct impact on causation of overweight and obesity. They are pointers to institute measures to tackle the growing menace of obesity on a public health basis. Urgent measures are required for its control.

AUTHOR NOTE

Avi Kumar Bansal, Central TB Division, Email- bansalavi@hotmail.com (**Corresponding Author**)
 DGHS, MOHFW, N. Delhi
 Ravinder Manohar, Professor,
 Rajeev Yadav, Asstt. Professor,
 Dharmesh Sharma, Assistant. Professor,
 Neelam Yadav, Post-graduate Student,
 Himakshi Lohani, Post-graduate Student,
 Department of Preventive & Social Medicine,
 SMS Medical College, Jaipur

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