

EFFECTS OF LIFESTYLE HABITS ON THE PREVALENCE OF OBESITY AMONG SCHOOL GOING ADOLESCENTS RESIDING IN URBAN LUCKNOW

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ABSTRACT

Background: Sedentary behaviour is related to the prevalence of obesity among school going adolescents. Lifestyle habit among adolescents is one of the factors related to the occurrence of obesity which is an important public health issue.

Aims & Objectives: To assess the factors associated with the prevalence of obesity among school going adolescents.

Materials and Methods: This was a cross sectional descriptive study of 680 school going adolescents, aged 10-19 years. Participants were enrolled by using multi stage random sampling technique. Predesigned and pretested schedule was used to elicit information on lifestyle habits that included eating food with family, consumption of breakfast, frequency of eating fast food, aerated drinks in a week, modes of transport used, participation and duration of hours spent in active sports, time spent in watching television and anthropometric variables. Age and gender specific percentile growth charts of 2007 (WHO) was used as reference to classify subjects as obese.

Results: About 71.5 percent of adolescents used to eat food with family which was significantly ($p=0.0001$) associated with the low prevalence of overweight. The percentage of overweight was higher among those who ate fast food daily. The primary predictors for overweight in our study were eating food with family, mode of transport used and duration of watching television. Multivariate logistic regression revealed that the prevalence of overweight was 3.06 times higher among those who used public/private transport respectively than who walked [OR: 3.06 (95% CI: 1.87-5.02)].

Conclusion: The lifestyle habits of adolescents that included eating food with family, frequency of eating fast food & aerated drinks, modes of transport used, duration & participation in active sports and time spent in watching television showed the association with prevalence of overweight. Therefore there is an urgent need to educate parents and teachers regarding healthy lifestyle and healthy eating behaviour of the adolescents.

Key Words: Body Mass Index; Lifestyle Habits; Sedentary Behaviour; School Going Adolescents

Introduction

Childhood obesity in developing countries is emerging as a potential public health issue. The prevalence of obesity varies between 10.0-30.0 percent among urban adolescents.^[1-11] Prevalence of obesity within countries differs due to differences in the lifestyle, dietary pattern and involvement in physical activity. In addition to this, industrialization and urbanization are mainly responsible for the rise in the prevalence of childhood obesity.^[12] Sedentary behaviours among children and adolescents eats into the time available for involvement in physical activity, which results in overall less expenditure of energy^[13] and thus, sedentary behaviour is interrelated to chronic health problems.^[14-16]

The association between the prevention of obesity in children and their lifestyle habits like exercise, eating pattern and spending leisure time^[17-20] have been mentioned in the earlier studies. The prevention of

obesity should start from childhood and must be combined with health education strategies and other measures for the encouragement of health promoting habits. It is necessary for the healthy growth of body and mind of adolescents.^[21]

No published literature has been found in this part of the country assessing the prevalence and determinants of obesity among adolescents. The present could be a useful tool in planning and developing appropriate intervention methods. Thus the aim of this study is to assess the factors associated with the prevalence of obesity among school going adolescents.

Materials and Methods

This was a cross sectional study which was carried out amongst school going adolescents of urban Lucknow. Multi stage random sampling technique was used to select the requisite number of school going adolescents.

At first stage, Lucknow was divided into two zones – Cis Gomti and Trans Gomti, at the second stage, each zone was further divided into two parts and from each part one senior secondary school was randomly selected. Thus a total of four schools were randomly selected. At the third stage, from the selected schools, students of classes VI to XII aged 10-19 years were selected through systemic random sampling and if the selected student was not cooperative during the interview, then the subject was considered as non-respondent and the next student was enrolled as replacement in the study.

The weight of the respondents was recorded without heavy clothing, using an electronic weighing scale with an error of ± 100 g. Height was measured to the nearest of 0.5 cm with subject standing barefooted using portable stadiometer. Calibration of the instrument was done weekly with the known standards. BMI was calculated using standard equation. The cut off value for non-obese was 15th to <85th percentile and for overweight it was >85th percentile of 2007 WHO reference standards. A total of 720 school going adolescents of urban Lucknow were interviewed using predesigned and pretested schedule. Out of these, 40 subjects had BMI <15th percentile (underweight) - so they were not included. Information was collected on frequency of eating fast foods, consumption of aerated drinks, eating food with family, eating breakfast daily, duration and frequency of participation in sports, mode of transport to school and time spent in watching television, playing computer & video games. The statistical analysis was carried out using multiple logistic regression analyses and $p < 0.05$ was taken as the significant level for all the statistical tests.

Results

Majority (71.5 %) of the adolescents used to eat food with family and this was significantly ($p = 0.0001$) associated with the low prevalence of overweight. About 44.6 % adolescents were found eating fast food once in a month, while 28.4 percent, 21.8 percent, 4.7 percent, 0.6 percent ate fast food once a week, occasionally, never and daily respectively. The percentage of overweight was higher among those who ate fast food daily in comparison to other fast food habits and this was statistically significant ($p = 0.0001$). More than one third (41.2%) adolescents took aerated drinks at least once in a week followed by at least once in a month (28.4%), occasionally (18.8%) and daily (9.7%) and the association of habit of consumption of aerated drink with

BMI was found to be statistically significant ($p = 0.0001$). Majority of adolescents (75.3%) took breakfast daily. There was no significant ($p > 0.05$) association between habit of eating breakfast and overweight. (Table-1)

Table-1: Association of dietary habits with BMI

Dietary Habits		Overweight & Above		Non-obese		Total		p-value
		N	%	N	%	N	%	
Eat food with Family	Yes	83	17.1	403	82.9	486	71.5	0.0001*
	No	72	37.1	122	62.9	194	28.5	
Fast food	Daily	2	50.0	2	50.0	4	0.6	0.0001*
	Once in a week	79	40.9	114	59.1	193	28.4	
	Once in a month	54	17.8	249	82.2	303	44.6	
	Occasionally or rare	18	12.2	130	87.8	148	21.8	
	Never	2	6.3	30	93.8	32	4.7	
Aerated drinks	Daily	18	27.3	48	72.7	66	9.7	0.0001*
	Once in a week	87	31.1	193	68.9	280	41.2	
	Once in a month	26	13.5	167	86.5	193	28.4	
	Occasionally and rare	23	18.0	105	82.0	128	18.8	
	Never	1	7.7	12	92.3	13	1.9	
Breakfast	Everyday	118	23.0	394	77.0	512	75.3	0.76
	2-3 days/week	22	20.4	86	79.6	108	15.9	
	Not at all	15	25.0	45	75.0	60	8.8	

Table-2: Association of physical activity with BMI

Physical Activity		Overweight & Above		Non-obese		Total		p-value
		N	%	N	%	N	%	
Mode of transport	By Walk	49	15.1	276	84.9	325	47.8	0.0001*
	Cycling	58	34.7	109	65.3	167	24.6	
	Public/Private Transport	48	25.5	140	74.4	188	27.6	
	Daily	44	22.1	155	77.9	199	29.3	
Active sports	Alternate day	25	27.8	65	72.2	90	13.2	0.0001*
	Twice a week	18	23.4	59	76.6	77	11.3	
	Once a week	37	26.4	103	73.6	140	20.6	
	None	31	17.8	143	82.2	174	25.6	
Duration of sports per week	<7 hours	100	25.9	286	74.1	386	76.3	0.2
	≥ 7 hours	24	20.2	95	79.8	120	23.7	
Duration of watching television per day	1 hour	33	11.7	250	88.3	283	41.6	0.0001*
	2-3 hours	108	29.1	263	70.9	371	54.6	
	4 hours	14	53.8	12	46.2	26	3.8	
Sleeping	7-8 hours	59	19.7	240	80.3	299	44	0.09
	>8 hours	96	25.2	285	74.8	381	56	

Table-3: Multivariate logistic regression analysis of determinants of obesity

Factors	β -coefficient	Adjusted OR	95%CI	p-value	
Eat food	Yes	-1.16	0.31	0.20-0.47	0.0001*
	No		1.00 (Ref)		
Mode of transport	By Walk		1.00 (Ref)		
	Cycling	0.62	1.86	1.14-3.03	0.01*
	Public/Private Transport	1.12	3.06	1.87-5.02	0.0001*
Duration of watching Television	1 hour		1.00 (Ref)		
	2-3 hours	1.11	3.04	1.93-4.79	0.0001*
4 hours	2.01	7.49	2.96-18.94	0.0001*	

A maximum of (47.8%) of school going adolescents walked to school and 27.6 percent used public/private transports. The prevalence of overweight was lower

(15.1%) among those who walked to school than in those using other modes of transport and it was statistically significant ($p=0.0001$). Daily Participation in active sport was present among 29.3 % of the subjects and the prevalence of overweight was significantly ($p=0.0001$) lower among this group of adolescents. Among those who participated in sports, the duration of sports was one hour among majority of the subjects (76.4%) and there was no significant ($p>0.05$) association between duration of sports and prevalence of overweight. Duration of Sleep was also not correlated with the prevalence of overweight (Table-2).

The multivariate logistic regression analysis revealed that the prevalence of overweight was significantly lower [OR=0.31(95%CI=0.20-0.47)] among those who were eating food with family, than those who did not. The prevalence of overweight was 1.86 and 3.06 times higher among those who used cycling and public/private transport respectively than who walked and this was statistically significant ($p<0.05$). The prevalence of overweight was 3.04 and 7.49 times higher who watched TV 2-3 hours and 4 hours respectively than who watched one hour (Table-3).

Discussion

The findings of the present study showed that 71.5 percent adolescents ate food with family and this factor was significantly ($p=0.0001$) associated with less prevalence of overweight among school going adolescents. The finding is in accordance with the study done in Japan on school going children, wherein, 80.6 percent school going children ate food with their family, and was associated with the low occurrence of obesity.^[21] Eating food with family is a parent related factor which depends on working condition such as part time or full time.^[19,22] Eating in a lively environment may reduce the risk of obesity and contributes to the development of good lifestyle habits.

The present study showed that there is no significant difference ($p>0.05$) in the association of consumption of breakfast and overweight - similar result was found in the study done in Baltimore city among elementary school going children, wherein, the role of consumption of breakfast was examined and no significant correlation ($p>0.05$) was found.^[23] Consumption of breakfast is one of the potential factor that can be considered as a risk factor for obesity. But interestingly, it was not significantly correlated with overweight and it may be

because of very little research being available on this factor in relation to obesity.

Another finding which was found statistically significant ($p<0.0001$) was the daily participation in active sport - it was associated with the lower prevalence of overweight. Similarly, the prevalence of overweight was significantly ($p<0.001$) lower in children who participated in outdoor games in a study done on adolescents of Hyderabad.^[4] Prevalence of overweight was 3.04 and 7.49 times higher in those who watched TV 2-3 hours and 4 hours respectively, than who watched one hour. The findings of the present study resembles the findings of the study done among adolescent of Hyderabad where the prevalence of overweight was 1.92 times higher in those watching television >3 hours per day.^[4] Similarly, the risk of overweight was 7.3 times higher among those adolescents who watched television for >4 hours per day.^[12]

Conclusion

The points of interest drawn from this study are the lifestyle habits of adolescents that included eating food with family, frequency of eating fast food and aerated drink showed the association with increased prevalence of overweight. The prevalence of overweight was found lower among those adolescents who walked to school than using other modes of transport. In the same way, prevalence of obesity was lower in adolescent, who regularly took active participation in sports. The sedentary behaviour, like spending >3 hours per day on watching television, showed association with the increased prevalence of obesity. Thus there is clear relationship of participation in sports, consumption of fast food and viewing television with overweight/obesity. Therefore, there is urgent need to educate parents and teachers regarding healthy lifestyle and healthy eating behaviour.

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References

1. Subramanyam V, Jayashree R, Rafi M. Prevalence of overweight and obesity in affluent adolescent girls in Chennai in 1981 and 1998. *Indian Pediatr* 2003;40;332-6.

2. Aggarwal T, Bhatia RC, Singh D, Sobti PC. Prevalence of obesity and overweight in affluent adolescents from Ludhiana, Punjab. *Indian Pediatr* 2008;45:500-1.
3. National Nutrition Monitoring Bureau. Diet and nutritional status of rural population national institute of nutrition. Indian Council of Medical Research Hyderabad, India. 2002.
4. Laxmaiah A, Nagalla B, Vijayaraghavan K, Nair M. Factors Affecting Prevalence of Overweight Among 12- to 17-year-old Urban Adolescents in Hyderabad, India. *Obesity* 2007;15:1384-90.
5. Ramachandran A, Snehalatha C, Vinitha R, Thayyil M, Kumar CK, Sheeba L, et al. Prevalence of overweight in urban Indian adolescent school children. *Diabetes Res Clin Pract* 2002;57:185-90
6. Chatterjee P. India sees parallel rise in malnutrition and obesity. *Lancet* 2002;360:1948.
7. Kaur S, Kapil U, Singh P. Pattern of chronic diseases amongst obese children in developing countries. *Curr Sci* 2005;88:1052-6.
8. Khadilkar VV, Khadilkar AV. Prevalence of obesity in affluent school boys in Pune. *Indian Pediatr* 2004;41:857-8.
9. Kapil U, Singh P, Pathak P, Dwivedi SN, Bhasin S. Prevalence of obesity among affluent school children in Delhi. *Indian Pediatr* 2002;41:449-52.
10. Mehta M, Bhasin SK, Agarwal K, Dwivedi SN, Bhasin S. Prevalence of obesity amongst affluent adolescent girls. *Indian J Pediatr* 2007;74:619-22.
11. Kaneria Y, Singh P, Sharma DC. Prevalence of overweight and obesity in relation to socio economic conditions in two different groups of school age children of Udaipur city (Rajasthan). *J Indian Assoc Community Med* 2006;7:133-5.
12. Koitan MS, Kumar SG, Kotian SS. Prevalence and determinants of overweight and obesity among adolescent school children of South Karnataka, India. *Indian J Community Med* 2010;35:176-8.
13. British Heart foundation. Couch Kids: The continuing epidemic London: British Heart Foundation; 2004.
14. Ekelund U, Brage S, Froberg K, Harro M, Anderssen SA, Sardinha LB, et al. TV viewing and physical activity are independently associated with metabolic risk in children: The European Youth Heart Study. *PLoS Med* 2006;3:e488.
15. Hardy LL, Dobbins TA, Denny-Wilson EA, Okely AD, Booth ML. Sedentariness, small-screen recreation, and fitness in youth. *Am J Prev Med* 2009;36:120-5.
16. Hardy LL, Denney-Wilson E, Thrift AP, Okely AD, Baur LA. Screen Time and metabolic risk factors among adolescents. *Arch Pediatr Adolesc Med* 2010;164:643-9.
17. Sekine M, Yamagami T, Hamanishi S, Handa K, Saito T, Nanri S, et al. Parental Obesity, life-style factors and obesity in preschool children: results of the Toyama Birth Cohort study. *J Epidemiol* 2002;12:33-9.
18. Kagamimori S, Yamagami T, Sokejima S, Numata N, Handa K, Nanri S, et al. The relationship between lifestyle, social characteristics and obesity in 3-year old Japanese children. *Child Care Health Dev* 1999;25:235-47.
19. Takahashi E, Yoshida K, Sugimori H, Miyakawa M, Izuno T, Yamagami T, et al. Influence factors on the development of obesity in 3 year-old children based on the Toyama study. *Prev Med* 1999;28:293-6.
20. Saelens BE, Sallis JF, Nader PR, Broyles SL, Berry CC, Taras HL. Home environmental influences on children's television watching from early to middle childhood. *J Dev Behav Pediatr* 2002;23:127-32.
21. Chen X, Sekine M, Hamanishi S, Wang H, Gaina A, Yamagami T, et al. Life-styles and health-related: quality of life in Japanese schoolchildren : a cross-sectional study. *Prev Med* 2005;40:668-678.
22. Gibson LY, Byrne SM, Davis EA, Blair E, Jacoby P, Zubrick SR. The role of family and maternal factors in childhood obesity. *Med J Aust* 2007;186:591-5.
23. Jehn ML, Gittelsohn J, Treuth MS, Caballero B. Prevalence of overweight among Baltimore City schoolchildren and its associations with nutrition and physical activity. *Obesity* 2006;14:989-93.

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