Original Research Article

Study on Obesity and Overweight among School Going Adolescents of Nalanda District

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Abstract

Obesity is associated with many health problems. Obesity rates are gradually increasing. The present descriptive study was conducted to find the prevalence and factors of overweight and obesity among school children of Nalanda. It was seen that 5.3% children were overweight and 1.7% were obese. Living in urban area, being female, less outdoor activities, lesser indoor activities and habit of fast food eating are associated with higher chances of obesity. Health education is needed to control the situation.

Key words

Overweight, Obesity, School children, Adolescents, Bihar.

Introduction

Overweight and obesity have been found to be related to many health problems. It has been seen that the rates of obesity have been increasing gradually, mainly due to changing life style [1]. It has been commented that India is facing dual burden of diseases including the increasing trend of NCDs. Changing life style and obesity are the major contributors [2]. Life style has basic roots in the early building stages of life mainly school period. Studies have found that the obesity rate is high among school children in India [3]. Studies

have not been conducted in this area regarding prevalence of obesity among school children. Hence, this study was conducted to assess the situation.

Aims and objectives

The present study was conducted to assess the prevalence of obesity and overweight among school going adolescents of Nalanda District.

Materials and methods

The present study was cross-sectional descriptive in nature conducted in four randomly selected schools of Nalanda District- two urban and two rural between February 2016 to March 2016. Study subjects included children studying between 8th to 12th standard in the selected schools. Children not present on the day of health check-up were excluded from the study and revisit was not scheduled in the schools.

In the study conducted by Tiwari, et al. (2014) [4], it was observed that 7.7% children were overweight/ obese. Using 3% absolute precision, the sample size was calculated as below-
Sample size = $(Z^2 \times p \times q / d^2) \times 1.1 = 317$. A total of 317 children fulfilling eligibility criteria participated in this study.

Headmasters of the selected schools were approached and informed about the purpose and importance of this study. A convenient date was fixed for data collection. Data collection was done by personal interview using semi-structured pre-tested questions containing open and closed ended questions as well as clinical examination of the children. Detailed information was collected regarding anthropometry as well as socio-demographic profile of participants, physical activity and dietary habits. This was followed by health education session regarding importance of healthy lifestyle and ill effects of obesity. Informed consent was obtained from all the respondents.

The data was coded and entered in Microsoft Excel 2007, cleaned and analyzed by using SPSS version 16.0. Categorical variables were summarized as percentage while continuous variables were presented as Mean ± SD.

Results and Discussion

The present cross-sectional study was conducted among 317 school going children of Nalanda District. This study included almost equal no. of children from urban (49.8%) and rural (50.2%) areas. 49.2% children were males. Most of the children belonged to socio-economic class III and below. The details are shown in **Table - 1**.

It was observed that overall 5.3% children were overweight and 1.7% were obese. Overweight was more prevalent in late adolescence (7.9%), females (6.3%), urban areas (7.3%) and socioeconomic class I (12.3%). Obesity was also more prevalent in late adolescence (2.7%), females (1.7%), urban areas (2.3%) and socioeconomic class I (3.2%).

Table - 2 and **Figure – 1** show physical activity and dietary habits of participants. It is seen that almost half of participants participated in outdoor activities. The association between outdoor activity and overweight/ obesity is significant (p=0.004). 61.1% participants engaged for one hour or more in indoor activities. Engagement in indoor activity and overweight/ obesity are significantly related (p=0.003). 70.3% participants did not participate in walking which was significantly associated with overweight/ obesity (p=0.03). 42.6% respondents consumed fast food for ≥ 3 times a week. Consumption of fast food and overweight/ obesity are significantly associated (p=0.04).

The prevalence of overweight and obesity found in this study is similar to the findings of Tiwari, et al. [4] and Gupta, et al. [5]. Chaitali, et al. [6] found obesity rate to be very high (13.7%) among urban school children of Bangalore. They also observed higher prevalence of obesity among females as also evident in this study. This may be related to lesser outdoor activities and involvement in sports among females. Bhargava,

et al. [7] found obesity rate to be 5.4% in school children of Dehradun. They found higher rates of obesity among urban children and those who had habit of hoteling/ eating out as is also seen in this study. Bharati, et al. [8] and Tiwari, et al. [4] found that obesity was more common in urban children. This may be associated with higher socioeconomic status and consumption of fast foods in these children. Higher socioeconomic class, consumption of junk food and lesser physical activity have been found to be associated with obesity by Tiwari, et al. [4] and Bharati, et al. [8].

Table - 1 showing socio-demographic profile and obesity pattern of respondents								
Variable		**Number of students**		**Overweight**		**Obesity**		
		No.	%	No.	%	No.	%	
Over all		317	100	17	5.3	5	1.7	
Age	Early adolescence	30	9.4	1	3.1	0	0	
	Middle adolescence	183	57.8	8	4.3	2	1.2	
	Late adolescence	104	32.8	8	7.9	3	2.7	
Sex	Male	156	49.2	7	4.7	2	1.2	
	Female	161	50.8	10	6.3	3	1.7	
Back ground	Urban	158	49.8	12	7.3	4	2.3	
	Rural	159	50.2	5	3.2	1	0.5	
SES	Class-I	48	15.2	6	12.3	2	3.2	
	Class-II	69	21.7	6	8.2	2	2.7	
	Class-III, IV& V	200	63.1	5	2.3	1	0.6	

| Table-2 showing association between overweight/ obesity and physical activity/ dietary habits							
Activity		**Overweight/Obesity**					**Significance**
		Yes		No		Total	
		No.	%	No.	%	No.	
Outdoor activity	Not done	13	12.7	86	87.3	99	X^2=10.84, p=0.004
	< 6 hour/week	6	7.7	73	92.3	79	
	> 6 hour/week	3	2.1	136	97.9	139	
Indoor activity	No/<1hour/day	16	12.9	107	87.1	123	X^2=11.51, p=0.003
	1-3 hour/day	5	3.6	147	96.4	152	
	>3hour/day	1	2.6	41	97.4	42	
Walking	Not done	21	9.5	202	90.5	223	X^2=7.24, p=0.03
	<1 hour/day	1	2.4	58	97.6	59	
	>1hour/day	0	0	35	100	35	
Eating Fast food	≥ 3 times/week	14	10.4	121	89.6	135	X^2=4.28, p=0.04
	< 3 times/week	8	4.6	174	95.4	182	

Conclusion

It is apparent from the above discussion that important correlates of overweight/ obesity were living in urban area, being female, less outdoor activities, lesser indoor activities and habit of fast food eating. Strong health education messages and community participation is essential to curb the menace of obesity and related health complications.

Acknowledgements

Figure 1 showing physical activity and diet in relation to overweight/obesity
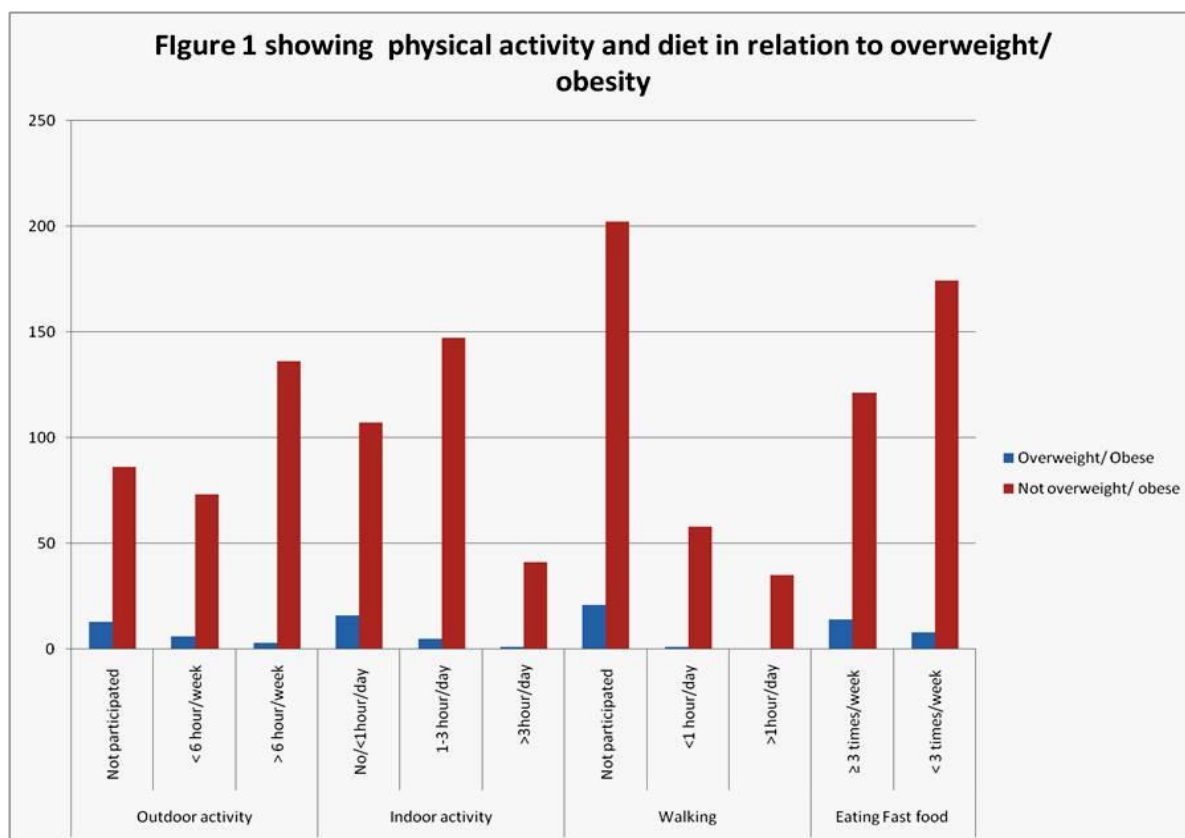
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