PREVALENCE OF OVERWEIGHT AND OBESITY AMONG ADOLESCENTS STUDYING IN GOVERNMENT AND PRIVATE SCHOOLS OF DISTRICT KATHUA

Community Medicine

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ABSTRACT

The study was done with the objective to determine the Prevalence of Overweight and Obesity among school going Adolescent of District Kathua and to study the various risk factors associated with Adolescent Obesity.A Cross sectional study was conducted for a period of two months from October to November 2019.The study area include Urban Health Training Centre, Krishna colony (UHTC) which is the field practice area of government medical college, Kathua. Line listing of all the government and private schools of Krishna colony was done accordingly. Out of the enlisted school, 4 Government and 4 private schools was selected randomly by lottery method. A predesigned, semi structured closed ended questionnaire was self administered to each pupil. Anthropometry was done by measuring height and weight by standardized equipments and BMI was calculated accordingly. WHO 2007 Growth reference for 5- 19 years was used for classifying overweight and obesity using age and gender specific cut off points. Data was entered in Microsoft Excel. Descriptive statistics was expressed in the form of number and Percentages. Inferential statistics was calculated using Epi info. Chi square test was done and p Value less than .05 was taken as significant. Prevalence was found to be more in private schools. Less physical activity, intake of non veg diet, frequent intake of non vegetarian diet, visit to restaurant more than a week and positive family history of Diabetes mellitus were found to be significant risk factor for overweight and obesity.Interventions at school level like health education to inculcate healthy lifestyle, healthy diet and health impact of overweight and obesity is emphasized. Counselling to overweight and obese children and their parents can be given at repeated intervals.Advocacy through IEC material and involvement of health sector may help in preventing obesity and obesity related diseases in the long run.

KEYWORDS

Prevalence, Obesity, Overweight, Risk factor

INTRODUCTION

Childhood obesity is one of the most serious public health challenges of both developed as well as that of developing countries including India.[1]WHO defines overweight and obesity as "abnormal or excessive fat accumulation that presents a risk to health".[2]Obesity and overweight are the most prevalent nutritional disorder among children and adolescents in the world.WHO in 1998 designated obesity as global epidemic.[3]Different studies conducted during last decade in India reported prevalence of obesity in range of 2.9%–14.3%.[4][5]Urbanization,Industrialization and improved socioeconomic conditions has led to an increase in overweight and obesity among children and adolescents. These children are likely to stay obese into their adulthood and are at numerous health risks concerning non-communicable diseases such as type-2 Diabetes Mellitus, Hypertension, Cardiovascular diseases,Hyperlipidemia and Arthritis, comparatively sooner in their lifetime.[6]Thus, effective prevention of adult obesity will require prevention and management of childhoodand adolescent obesity at the earliest.The important causes of obesity in children includes Genetic factors, dietary habits, physical inactivity and use of gadgets by children[7] The problem of overweight and obesity is not restricted only to the urban areas but also spanning its wings among children and adolescents in rural areas.[8] Adolescent overweight and obesity is of major concern because overweight during adolescence is associated with increased morbidity and mortality in adulthood and overall increase in morbidity and mortality in later life.[9]

Thus, present study was undertaken to study the magnitude of overweight and obesity among school going adolescents and to find its correlates among them in Kathua district of Jammu and Kashmir.

OBJECTIVE:

1) To determine the Prevalence of Overweight andObesity among schoolgoing Adolescentin the age group of 13- 18 years of District Kathua.
2) To study thevarious risk factors associated with Adolescent Obesity

MATERIALAND METHODS:

A Cross sectional study was conducted for a period of two months from October to November 2019.The study area include Urban Health Training Centre, Krishna colony (UHTC). It is the field practice area of Department of Community Medicine, Government Medical College Kathua. Prior permission was taken from Institutional Ethical Committee and school authorities for conducting the study. Line listing of all the government and private schoolsof Krishna colony was done accordingly. Out of the enlisted school,4 Government and 4 private schools was selected randomly by lottery method.

Inclusion criteria: - Adolescent in the age group of 13-18years
Exclusion criteria: - Adolescent with disability and non cooperative student.

Data collection:-

A predesigned, semi structured closed ended questionnaire was self administered to each pupil. The Proforma included information regarding socio-demographic profile, physical activity regarding duration of exercise per day, duration of watching TV, smart phone usage per day, sleeping habits during daytime and mode of transportation to the school. Dietary history regarding dietary habits by one week's method, family history regarding diabetes and obesity was also recorded.

Anthropometry was done by measuring height and weight by standardized equipments and BMI was calculated accordingly. Weight was measured by digital scale which will be calibrated against standard weight. The weight was recorded to the nearest 0.1 kg. Height was measured by standardized stadiometer to the nearest 0.1 cm. BMI was calculated by the formula. $BMI = Weight / Height (m)^2$.

Data Analysis:

Data was entered in Microsoft Excel. Descriptive statistics was expressed in the form of number and Percentages .Inferential statistics was calculated using Epi info. Chi square test was done and p Value less than .05 was taken as significant. WHO 2007 Growth reference for 5- 19 years was used for classifying overweight and obesity using age and gender specific cut off points.[10]

RESULTS AND DISCUSSION:

Childhood obesity is an growing epidemic. The present study was an attempt to find out the prevalence of overweight and obesity among school going children in government and private schools of district Kathua.

764 students were included in the study out of which 54.71 % belong to government school and 45.29% from private schools. Majority of them were in the age group of 15-16 years (48.82%). Males and females were in equal proportion. Most of them (86.65 %) were Hindu by religion. Majority (55.10%) belong to nuclear family.

Table 2 shows that overall prevalence of overweight and obesity was 11.39% and 3.66% respectively in our study. Similar findings were observed in a study conducted by Goyal RK et al where prevalence of overweight and obesity was 11.80% and 2.20%. [5]. Our results are also consistent with the observations made by Aggarwal et al and Khadilkar et al who reported the prevalence of 3.4% and 5.7%, respectively. [11][12]. In the present study overall prevalence of overweight and obesity was found more in girls 18.13% as compared to boys 12.08%. Similar findings were observed by Kumar et al and Thippeswamy HM et al. [13][14]. The reason could be due to the fact that BMI of female children increased significantly during puberty due to physiological changes which results in accumulation of more fat in body.

According to the type of school, the prevalence was observed higher among private school with16.76% in overweight category and 5.49% in obesity category. The association was found to be statistically significant. Our findings are in line with the results of Singh P et al where in prevalence among private schools students were found to be higher than those studying at government schools.[15]Likewise, it was more in private schools as per the study findings of Meharda B etal.[16]. These findings may be due to the fact that adolescents studying in private schools belong to high socioeconomic status and affluent families.

Association of overweight and obesity with various risk factors like level of physical activity, watching TV, Smart phone use, Sleeping habits in afternoon and dietary habit was also assessed. Physical activity less than one hour is associated with overweight and obesity in 78.26% and was found to be statistically significant. The prevalence of overweight and obesity was significantly lower (3.1%) among the adolescent who participated in outdoor games(p< 0.004) than among the non participants(9.7%) as per the study findings of Laxmaiah A, Nagalla B et al .[1]

In our study, watching TV for less than one hour was associated with overweight and obesity in 53.91%, 1-2 hour in 20.86% and more than 2hr in 25.22% children. It was statistically significant in less than 1 hr. Contradictory results have been reported from a study done by Laxmaiah A, Nagalla Bet al which shows significant values for those adolescent who were sedentary and watching TV for more than 3hours. [1] Prolong TV Watching shows significant values as per the study findings of Jain S, Pant B et al.[4] Regarding smart phone use, it was more 61.74% in those using smart phone for less than 1hr and it was not statistically significant.

Sleeping in afternoon was found to have no association with overweight and obesity. Contrary to our findings, majority of overweight and obese subjects had the habit of sleeping less than 8hrs in a day in a study conducted by Meharda B et al [16]

Non vegetarian has higher association (66.09%) than vegetarian and it was statistically significant (0.01).Visit to restaurant more than once a week was not significantly associated with overweight and obesity.Our study findings are similar to   the results of Jain S, Pant B et al where obesity was found to be associated with high intake of junk foods (p< 0.05) and high calorie intake(p<0.05).[4]

For family history of Diabetes and obesity it was highly significant in our study. The results are comparable with findings of Ahmed M et al where family history was significantly associated with childhood obesity.[17] Our study correlate with study conducted by Sharma ML et al where Positive family history of obesity in either parents was found to be significant risk factor for overweight and obesity.[18] These findings may be due to genetic factors, lifestyle and dietary practices prevalent in the family.

Table 1: Socio-demographic profile of the study subjects (n=764)

Socio-demographic variable		Frequency	%
Type of school	Government	418	54.71
	Private	346	45.29
Class	9th	176	23.04
	10th	210	27.48
	11th	183	23.95
	12th	195	25.52
Age group (years)	13-14	106	13.87
	15-16	373	48.82
	17-18	285	37.30
Sex	Male	389	50.92
	Female	375	49.08
Religion	Hindu	662	86.65
	Muslim	53	6.94
	Sikh	41	5.36
	Others	8	1.05
Type of family	Joint	343	44.89
	Nuclear	421	55.10

Table 2: Prevalence of overweight and obesity according to age and sex (n=764)

Age groups	Sex	Non overweight and non obese	Overweight	Obesity	Total
13-14	Male	54(85.71)	6(9.52)	3(4.76)	63(100)
	Female	29(67.44)	10(23.26)	4(9.30)	43(100)
15-16	Male	175(87.50)	21(10.50)	4(2.00)	200(100)
	Female	137(79.19)	26(15.03)	10(5.78)	173 (100)
17-18	Male	113(89.68)	10(7.94)	3(2.38)	126 (100)
	Female	141(88.68)	14(8.81)	4(2.51)	159(100)
Total	Male	342(87.92)	37(9.51)	10(2.57)	389 (100)
	Female	307(81.87)	50(13.33)	18(4.80)	375(100)
	Total	649 (84.95)	87 (11.39)	28(3.66)	764(100)

Table 3: Prevalence of overweight and obesity according to type of school (n=764)

Type of school	Non overweight and non obese	Overweight	Obesity	Total	p value
Government	380 (90.91)	29(6.94)	9(2.15)	418(100)	0.000
Private	269(77.74)	58(16.76)	19(5.49)	346(100)	
Total	649(84.95)	87(11.39)	28(3.66)	764(100)	

Table 4: Association of overweight and obesity with various risk factors (n=764)

Variables	Response	Non overweight and non-obese (n =649)	Overweight / obese (n=115)	p value
Physical activity	<1hour	429(66.10)	90(78.26)	0.03
	1-2 hour	137(21.11)	16(13.91)	
	>2 hour	83(12.79)	9(7.82)	
Watch tv	<1 hour	376(57.94)	62(53.91)	0.02
	1-2 hour	175(26.96)	24(20.86)	
	>2hour	98(15.10)	29(25.22)	
Smart phone use	<1 hour	398(61.33)	71(61.74)	0.99
	1-2 hour	142(21.88)	24(20.86)	
	>2hour	77(11.86)	14(12.17)	
	Don't use	32(4.93)	6(5.22)	
Sleeping habits in afternoon	Yes	237(36.52)	39(33.91)	0.59
	No	412(63.48)	76(66.09)	
Diet	Vegetarian	301(46.38)	39(33.91)	0.01
	Non vegetarian	348(53.62)	76(66.09)	
Restaurant visits a week	Visits more than once	159(24.49)	24(20.86)	0.40
	Visit once or no	490(75.51)	91(79.13)	
Family history of diabetes	Yes	93(14.33)	35(30.43)	0.000
	No	556(85.67)	80(69.57)	
Family history of obesity	Yes	135(20.80)	58(50.43)	0.000
	No	514(79.19)	57(49.57)	

CONCLUSION:
Prevalence was found to be more in private schools. Less physical activity, intake of non vegetarian diet, and positive family history of Diabetes mellitus & obesity were found to be significant risk factor for overweight and obesity.

Limitation:
The study was conducted only in the urban area of the district, so it does not reflect the overall prevalence of the area. Secondly, diet intake was not quantified. Furthermore, Socioeconomic factors and clinical evaluation was not taken into account. Further studies with sample representation from every zone of the district may achieve better outcome in terms of attributable factors and external validity of the study.

Recommendation:
Interventions at school level like health education to inculcate healthy lifestyle, healthy diet and health impact of overweight and obesity is emphasized. Counselling to overweight and obese children and their parents can be given at repeated intervals.Advocacy through IEC material and involvement of health sector may help in preventing obesity and obesity related diseases in the long run.

Research Scope:
Further community based research need to be done to document the burden of obesity and associated risk factors.

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