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A Cross Sectional Study of the Prevalence of Obesity or Overweight and its Correlates among School Children in a Central India District

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ABSTRACT

Introduction: The present century had noticed a rapid transition of society from undernourished and malnourished to overweight and overt obesity. This transition was initially reported in developed countries but now this phenomenon has been noticed in developing countries. The study was conducted to assess the knowledge about the obesity among school children and to find out the correlation between the knowledge and the actual BMI of the school children

Material & Method: A List of all the students of class 6th -10th was gathered from the Principal's office of selected school. The necessary information was collected using a pretested structured questionnaire. The information regarding weight, height and BMI was calculated using a standardized protocol.

Result: A total of 921 student participated in the study. Most common age of participants was 14 to15 years. Overweight and obese were more prevalent among male students and students from private school. Majority of the participants were aware about the obesity. Watching television, playing video games, fast food intake, number of time breakfast slip and mean soda intake were significantly associated with obesity.

Conclusion: Watching television, playing video games, fast food intake, number of time breakfast slip and mean soda intake were significantly associated with obesity

Key words: Childhood Obesity, Knowledge of Obesity, Activity associated with Obesity.

INTRODUCTION

The present century had noticed a rapid transition of society from undernourished and malnourished to overweight and overt obesity. This transition was initially reported in developed countries but now this phenomenon has been noticed in developing countries like India, Brazil, China etc.[1]

In India, paediatric obesity is an emerging public health problem, especially among the higher socio-economic groups. In India, prevalence of pediatric obesity and overweight in the age group of 9-15 years range from 9.9% to 18.5%.[2] Higher values of BMI has been noticed in the urban population of different cities across the country through the researches carried out by the different researchers.[3-10]

Studies have shown that there had been significant gender difference in the prevalence of obesity with more prevalence of obesity and overweight among

boys of affluent society (12.4% and 15.7%) compared to girls (9.9% and 12.9%).[2]

An in-depth knowledge of obesity & overweight is imperative among school children as a primordial and primary level prevention as suggested by the different researchers. Although various studies have been carried out in India about the assessment of obesity among school children, very few studies have been carried out to assess the knowledge of obesity and its preventive aspect.

So, the present study is designed with the objectives to assess the knowledge about the obesity among school children and to find out the correlation between the knowledge and the actual BMI of the school children.

METHODOLOGY

The present study was a Cross Sectional Study carried out for a period of two months from February 2015 to March 2015. A list of all the schools of Etawah District having class VI th to Xth std was obtained from the office of District Education Society. The list was sorted and divided into two sectors, namely- government sector and private sector. From each sector one school was selected randomly.

The head of the institution was consulted prior to the initiation of the study and necessary approval was obtained. List of all the students from all the section from class VIth to Xth was obtained. A day for the examination and interviewed was fixed for each class. The day was communicated to all the students and they were asked to be present on that day.

A pretested structured questionnaire was used for the data collection. The questionnaire was divided into three parts namely socio demographic profile, anthropometric measurement and assessment of knowledge and practices in relation to obesity.

Socio demographic Profile section includes information about the name, age, sex, father and mother qualification and father and mother occupation.

In anthropometric measurement height and weight of the students were measured and subsequently Body Mass Index (BMI) was calculated using the formula BMI= Weight(Kg)/height (m^2)

Weight was collected with minimum accepted cloths using a bathroom scale weighing machine with an accuracy upto 100gms. The machine was standardized using a known weight and it was check for the accuracy after every 20 reading.

The participants were categorized into underweight, normal, overweight and obese using WHO growth standards 2007. The participants having the BMI 5th percentile and below of WHO Growth standards was considered as underweight, BMI value between 6th to 85th percentile was considered as normal. The values between 85th percentile and 97th percentile was classified as overweight and values above 97th percentile was used as obese[11]

Height was recorded with a standiometer of maximum length of 5m. The participants were asked to stand bare foot on a standiometer with the back facing the measuring scale. With a head straight a marked was made on the scale and the student was asked to move away from the standiometer.

Assessment of Knowledge and Practice section was subdivided into two sub parts - Assessment of knowledge and Assessment of practice. For assessment of knowledge participants were presented with an open ended question on the foods related to obesity, activities preventing obesity, hazards of obesity and prevention of obesity. The assessment of practice was done by asking structured questions about their practices in relation to physical exercise, eating habits, television watching, indoor games etc.

All the data gathered were transferred into suitable statistical software and all the entries were double checked to avoid any typographical errors. The data was presented using descriptive statistics. The association was established using chi square test and ANOVA test. Correlation between the knowledge of obesity and actual obesity was calculated using Odds ratio.

RESULT

A total of 964 students were listed from all the section of both the schools. Of this 392 were from government school and 572 were from private schools. Of 964 students, only 921 students actually reported for the study (368 from government school and 553 from private school) . Thus the final sample was limited to 921 only. In the present study majority of the participants were of the age group of 14 and 15 years and majority of the parents were graduates (Table1)

Most of the participants studied were having weight in the range of 30-40 kg and height in the range of 100-145cms (Table 2)

Of the 921 student who participated in the study were classified into underweight, normal, overweight and obese using WHO growth standard 2007[11]. In the present study 89 students were overweight and 13 students were obese using the above criteria.

Table 1: Distribution of the participants according to Socio demographic Profile

Profile	Government (n=368)		Private (n=553)		Total (n=921)	
	Male(n=174)	Female(n=194)	Male(n=294)	Female(n=259)	Male(n=468)	Female(n=453)
Age						
<=11 year	17 (9.7)	15 (7.7)	26 (8.8)	21 (8.1)	43 (9.2)	36 (7.9)
12 Year	22 (12.6)	31 (17.8)	48 (27.5)	51 (29.3)	70 (40.2)	82 (47.1)
13 year	31 (17.8)	38 (21.8)	57 (32.7)	54 (31.1)	88 (50.5)	92 (52.8)
14 year	36 (20.6)	35 (20.1)	71 (40.8)	65 (37.3)	107 (61.5)	100 (57.4)
15 year	47 (27.1)	59 (33.9)	52 (29.9)	44 (25.3)	99 (56.9)	103 (59.2)
>=16 year	21 (12.1)	16 (9.2)	40 (22.9)	24 (13.8)	61 (35.1)	40 (22.9)
Fathers Education						
Illiterate	12 (6.9)	11 (5.7)	31 (10.5)	24 (9.3)	43 (9.2)	35 (7.7)
Upto 5th	14 (8)	17 (8.8)	34 (11.6)	39 (15.1)	48 (10.3)	56 (12.4)
Upto 10th	22 (12.6)	23 (11.9)	29 (9.9)	33 (12.7)	51 (10.9)	56 (12.4)
Upto 12th	26 (14.9)	39 (20.1)	54 (18.4)	48 (18.5)	80 (17.1)	87 (19.2)
Graduate	61 (35.1)	59 (30.4)	89 (30.3)	73 (28.2)	150 (32.1)	132 (29.1)
Post graduate / professional	39 (22.4)	45 (23.2)	57 (19.4)	42 (16.2)	96 (20.5)	87 (19.2)
Mothers Education						
Illiterate	24 (13.8)	34 (17.5)	36 (12.2)	41 (15.8)	60 (12.8)	75 (16.6)
Upto 5th	42 (24.1)	37 (19.1)	48 (16.3)	36 (13.9)	90 (19.2)	73 (16.1)
Upto 10th	32 (18.4)	39 (20.1)	59 (20.1)	37 (14.3)	91 (19.4)	76 (16.8)
Upto 12th	28 (16.1)	37 (19.1)	77 (26.2)	56 (21.6)	105 (22.4)	93 (20.5)
Graduate	36 (20.7)	41 (21.1)	56 (19)	31 (12)	92 (19.7)	72 (15.9)
Post graduate/professional	12 (6.9)	6 (3.1)	18 (6.1)	58 (22.4)	30 (6.4)	64 (14.1)
Fathers Occupation						
Unemployed	13 (7.5)	11 (5.7)	21 (7.1)	28 (10.8)	34 (7.3)	39 (8.6)
Skilled worker/ Shopkeeper	61 (35.1)	82 (42.3)	134 (45.6)	108 (41.7)	195 (41.7)	190 (41.9)
Service(Govt/ Pvt.)	72 (41.4)	69 (35.6)	98 (33.3)	90 (34.7)	170 (36.3)	159 (35.1)
Professional s	28 (16.1)	32 (16.5)	41 (13.9)	33 (12.7)	69 (14.7)	65 (14.3)
Mothers Occupation						
Unemployed/ house wife	128 (73.6)	144 (74.2)	261 (88.8)	199 (76.8)	389 (83.1)	343 (75.7)
Skilled worker/ Shopkeeper	0 (0)	2 (1)	0 (0)	6 (2.3)	0 (0)	8 (1.8)
Service(Govt/ Pvt.)	42 (24.1)	48 (24.7)	33 (11.2)	46 (17.8)	75 (16)	94 (20.8)
Professional s	4 (2.3)	0 (0)	0 (0)	8 (3.1)	4 (0.9)	8 (1.8)

Figure in parenthesis indicate percentage

Table 2: Distribution of the participants on the basis of weight, Height and BMI

Determinant	Government (n=368)		Private (n=553)		Total (n=921)	
	Male(n=174)	Female(n=194)	Male(n=294)	Female(n=259)	Male(n=468)	Female(n=453)
Weight(in Kg)						
>30	10 (5.7)	19 (9.8)	12 (4.1)	18 (6.9)	22 (4.7)	37 (8.2)
30-32.9	21 (12.1)	56 (28.9)	47 (16)	78 (30.1)	68 (14.5)	134 (29.6)
33-34.9	49 (28.2)	43 (22.2)	83 (28.2)	69 (26.6)	132 (28.2)	112 (24.7)
35-36.9	32 (18.4)	33 (17)	91 (31)	51 (19.7)	123 (26.3)	84 (18.5)
37-38.9	31 (17.8)	24 (12.4)	34 (11.6)	24 (9.3)	65 (13.9)	48 (10.6)
39-41.9	21 (12.1)	11 (5.7)	18 (6.1)	16 (6.2)	39 (8.3)	27 (6)
≥42	10 (5.7)	8 (4.1)	9 (3.1)	3 (1.2)	19 (4.1)	11 (2.4)
Total	174 (100)	194 (100)	294 (100)	259 (100)	468 (100)	453 (100)
Height (In cms)						
>100	8 (4.6)	17 (8.8)	11 (3.7)	18 (6.9)	19 (4.1)	35 (7.7)
100-115	31 (17.8)	48 (24.7)	54 (18.4)	78 (30.1)	85 (18.2)	126 (27.8)
116-130	45 (25.9)	56 (28.9)	85 (28.9)	71 (27.4)	130 (27.8)	127 (28)
131-145	38 (21.8)	36 (18.6)	71 (24.1)	59 (22.8)	109 (23.3)	95 (21)
146-160	24 (13.8)	21 (10.8)	34 (11.6)	21 (8.1)	58 (12.4)	42 (9.3)
161-175	17 (9.8)	11 (5.7)	25 (8.5)	7 (2.7)	42 (9)	18 (4)
≥176	11 (6.3)	5 (2.6)	14 (4.8)	5 (1.9)	25 (5.3)	10 (2.2)
Total	174 (100)	194 (100)	294 (100)	259 (100)	468 (100)	453 (100)
Body Mass Index(BMI)						
>15	5 (2.9)	11 (5.7)	15 (5.1)	32 (12.4)	20 (4.3)	43 (9.5)
15-15.9	31 (17.8)	43 (22.2)	41 (13.9)	53 (20.5)	72 (15.4)	96 (21.2)
16-16.9	29 (16.7)	59 (30.4)	48 (16.3)	63 (24.3)	77 (16.5)	122 (26.9)
17-17.9	61 (35.1)	46 (23.7)	69 (23.5)	58 (22.4)	130 (27.8)	104 (23)
18-18.9	34 (19.5)	26 (13.4)	59 (20.1)	31 (12)	93 (19.9)	57 (12.6)
19-19.9	9 (5.2)	6 (3.1)	38 (12.9)	11 (4.2)	47 (10)	17 (3.8)
20-20.9	4 (2.3)	3 (1.5)	15 (5.1)	8 (3.1)	19 (4.1)	11 (2.4)
≥21	1 (0.6)	0 (0)	9 (3.1)	3 (1.2)	10 (2.1)	3 (0.7)

Figure in parenthesis indicate percentage

Table 3: The distribution of the participants on the basis of Overweight & obesity

Determinants	Overweight (n=89)	Obese (n=13)	p value
Sex Wise			
Male	57 (64.04)	7 (53.85)	0.477
Female	32 (35.96)	6 (46.15)	
School wise			
Private	68 (76.4)	9 (69.23)	0.574
Government	21 (23.6)	4 (30.77)	

Figure in parenthesis indicate percentage

On sex wise comparison it was found that overweight and obese were more prevalent among male students (57 and 7resp.) compared to female students (32 and 5 respectively) based on a WHO growth standard 2007[11]. Similarly on school wise comparison, it was found that both overweight and obese were more common among private sector school as compared to government schools (68 and 9 vs 21 and 4 respectively (Table 3)

On using the 5th percentile as the cut off of WHO growth standards 2007[11] and value below it were considered as underweight, it was found that in the present study 242 students were underweight. Again, on sex wise and school wise comparison it was found that underweight was more common among female students (146) as compared to male students (96). On school wise comparision it was found more in private sector school (161) as compared to government sector school (81)

On question related to the assessment of knowledge regarding obesity and its prevention it was found that majority of the participants were aware of the food that causes obesity but knowledge about the activity associated with obesity, hazards of obesity, prevention of obesity was low among the participants of both the group. (Table 4)

On the analysis of the data related to the activities that causes obesity it was found that watching television, playing video games, fast food intake, number of time breakfast slip and mean soda intake were significantly associated with obesity (Table 5)

To determine the correlation between the knowledge about the obesity and actual obesity status, Odds ratio was calculated. For males, obese and overweight were grouped into one group (7+57=64) and normal and underweight into another group (404). Similarly for females, obese and overweight were grouped into one group (6+32=38) and normal and underweight into another group (415). (Table 6)

Table 4: The distribution of the participants on the basis of Knowledge of obesity

Determinant	Government (n=368)		Private (n=553)		Total (n=921)		p value	
	Male (%)	Female(%)	Male (%)	Female(%)	Male (%)	Female(%)	Male	Female
n	**174**	**194**	**294**	**259**	**468**	**453**		
Food that causes obesity								
Correct Response	138 (79.3)	164 (84.5)	238 (80.9)	211 (81.4)	376 (80.3)	375 (82.7)	0.66	0.39
Incorrect and no Response	36 (20.6)	30 (15.4)	56 (19.1)	48 (18.5)	92 (19.7)	78 (17.3)		
Hazards of obesity								
Correct Response	89 (51.1)	104 (53.6)	198 (67.3)	164 (63.3)	287 (61.3)	268 (59.1)	0.0005	0.001
Incorrect and no Response	85 (48.9)	90 (46.4)	96 (32.7)	95 (36.7)	181 (38.7)	185 (40.9)		
Prevention of obesity								
Correct Response	56 (32.1)	91 (46.9)	156 (53.1)	157 (60.1)	212 (45.3)	248 (54.7)	<0.001	0.003
Incorrect and no Response	118 (67.9)	103 (53.1)	138 (46.9)	102 (39.9)	256 (54.7)	205 (45.3)		
Activities that causes obesity								
Correct Response	56 (32.8)	77 (39.7)	156 (53.1)	167 (64.5)	212 (45.3)	244 (53.9)	<0.001	<0.001
Incorrect and no Response	118 (67.8)	117 (60.3)	138 (46.9)	92 (35.5)	256 (54.7)	209 (46.1)		

Table 5: Distribution of male and female participants on the basis of activities and obesity status

Determinant	Underweight	Normal	Overweight	Obese	P value*
Male	**n=96**	**n=308**	**n=57**	**n=7**	
Watching TV or playing video games per week(in Hrs)	13.2(± 1.7)	13.4(±1.4)	14.4(±1.9)	15.3(±2.1)	0.000
Number of times fast food intake per week	2.3(±1.6)	2.8(±1.3)	3.1(±1.6)	4.1(±1.9)	0.000
Out door activities per day (in Hrs)	1.9(±1.3)	2.1(±1.4)	2.2(±1.1)	1.6(±0.91)	0.381
Number of times Breakfast skip per week	2.2(±1.6)	2.3(±1.4)	1.6(±1.2)	1.7(±1.6)	0.006
Mean Fruit intake per week (in gms)	220(±40)	235(±65)	227(±78)	232(±68)	0.218
Mean soda or soft drink consumption per week	2.6(±1.2)	2.4(±1.8)	3.4(±1.9)	4.2(±(2.1)	0.000
Female	**n=146**	**n=269**	**n=32**	**n=6**	
Watching TV or playing video games per week(in Hrs)	13.8(±1.6)	13.6(±1.7)	14.1(±1.8)	14.4(±1.5)	0.228
Number of times fast food intake per week	2.6(±1.3)	2.3(±1.6)	2.9(1.9)	3.3(±1.9)	0.037
Out door activities per day (in Hrs)	1.4(±1.3)	1.4(±1.2)	2.2(±1.4)	1.9(±1.2)	0.005
Number of times Breakfast skip per week	2.8(±1.3)	2.6(±1.2)	1.4(±1.2)	2.1(±1.6)	<0.001
Mean Fruit intake per week (in gms)	242(±48)	235(±70)	222(±92)	247(±75)	0.412
Mean soda or soft drink consumption per week	2.3(±1.6)	2.8(±1.7)	3.2(±2.1)	4.4(±1.9)	0.001

*P value for the Analysis of Variance (ANOVA); Figure in parenthesis indicate standard deviation

Table 6: Correlation between the knowledge of obesity and obesity status

Knowledge	Correct (%)	Incorrect & No response (%)	OR (at 95% CI)	P value
Food that causes obesity				
Male				
Obese & Overweight(64)	56 (87.5)	8 (12.5)	1.837 (0.843 to 1.003)	0.1257
Normal & Underweight (404)	320 (79.21)	84 (20.79)		
Female				
Obese & Overweight(32)	32 (100)	6 (18.75)	1.1195 (0.4514 to 2.7763	0.8075
Normal & Underweight (415)	343 (82.65)	72 (17.35)		
Hazards of obesity				
Male				
Obese & Overweight(64)	26 (40.63)	38 (59.38)	0.3749 (0.2187 to 0.6426)	0.0004
Normal & Underweight (404)	261 (64.6)	143 (35.4)		
Female				
Obese & Overweight (32)	31 (96.88)	7 (21.88)	3.326 (1.4317 to 7.7270)	0.0052
Normal & Underweight (415)	237 (57.11)	178 (42.89)		
Prevention of obesity				
Male				
Obese & Overweight (64)	29 (45.31)	35 (54.69)	1.0006 (0.5891 to 1.6995)	0.9982
Normal & Underweight (404)	183 (45.3)	221 (54.7)		
Female				
Obese & Overweight (38)	18 (56.25)	20 (62.5)	07239 (0.3721 to 1.4084)	0.3414
Normal & Underweight (415)	230 (55.42)	185 (44.58)		
Activities that causes obesity				
Male				
Obese & Overweight (64)	28 (43.75)	36 (56.25)	0.93 (0.5467 to 1.5819)	0.7888
Normal & Underweight (404)	184 (45.54)	220 (54.46)		
Female				
Obese & Overweight (38)	23 (71.88)	15 (46.88)	1.3460 (0.6830 to 2.6520)	0.3907
Normal & Underweight (415)	221 (53.25)	194 (46.75)		

DISCUSSION

Sociodemographic Profile and Prevalence of Obesity:

In the present study of the 921 study participants studied, 102 (11.07%) reported overweight or obesity. This is somewhat similar to the result obtained by other researchers like, Jagadesan S et al[5] ,Kar S et al[7] and Kotian MS et al.[12] However, it is different from the rates reported by Kaur S et al [13] and Jacob SK et al[6]. This difference in the rate could be attributed to the difference in the criteria adopted for the classification of the obesity and urban and rural variation in the obesity.

On school wise evaluation of the data, it was found that there is higher prevalence of obesity among the children of private school as compared to the children of government school. This difference indicates the combined effect of lifestyle, eating habits and socio economic status of the private school. However in the present study this difference is not significant and this could be due to the small sample size of the study. Other researchers with larger sample size have reported such differences in their study[. 5,7,13-15].

On sex wise distribution, it was noted that overweight and obesity was more prevalent in the male children as compared to female children. This is again in line with the findings of other researchers like kar S et al.[7] In the present study majority of the children are in the age group of 14-15 years. The prevalence of obesity in the girls mostly take place in late puberty when the hormonal effect take place thus resulting in the redistribution of fats and secondary sexual character take place.

It was noted in the present study that 242(26.3%) of the study participants were under weight. Majority of the underweight participants were females, 146(32.2%) as compared to 96(20.5%) males. This difference in the prevalence of obesity between male and female children could be attributed to the difference in the eating habits as well as hormonal effect. On school wise distribution, it was noted that most of the participants were from private school. These finding are similar to the findings of other researchers like Kotian MS[12]et al in south Karnataka.

On evaluation of the sociodemographic profile of the participants it was noted that majority of the participants were in the age group of 14-15 years. Most of the parents in both the group were literate. On evaluation of employment status it was noted that father of nearly all the children were employed and mother were house wife.

Assessment of knowledge on Obesity:

On evaluation of question related to assessment of knowledge related to obesity, it was found that majority of the participants were aware about the food that cause obesity. Both male and female children from schools of both the sectors were aware about the food that causes the obesity. This is against the findings of Cherian AT et al[17] in Chen-

nai. However its is similar to the findings of Njelekela MA et al[18].

On question related to the hazards of obesity, it was found that 38.6% of Male and 40.8% of Female were unaware or gave incorrect response on question related to hazards of obesity. This is important as unawareness about the hazards of obesity can make children careless about their eating and exercising habits.

It was found in the present study that 54.7% of male and 45.2% of female were unaware about how to prevent obesity. This is in line with the above finding that large numbers of students were unaware about the hazards of obesity and therefore unaware about how to prevent obesity.

Regarding the question related to the activities that causes obesity, it was found that only 45.2% of the male and 53.8% of female student were aware about the activities that promote obesity. These finding are important as programme directed toward creating awareness among school children regarding obesity, its hazards and how to prevent can play a pivotal role in control of certain future diseases. This is similar to the findings of other researcher like Njelekela MA et al[18] and Triches RM et al[19].

Determinants of Obesity:

On analysis of data related to the determinants of obesity, it was found that watching TV or playing video games, number of times fast food intake per week, number of times breakfast skip per week and mean soda intake consumption per week were found to be statistically significantly associated with childhood obesity or overweight.

Studies carried out around the globe by various researchers have identified watching TV or playing video games as a strong determinant of overweight or obesity.[7,20,21] In the present study children watching TV or playing video games more than 13.4 (± 1.4) hours per week were found to be significantly associated with childhood obesity or overweight.

The present study has found frequent eating of fast food as a one of the determinant for childhood obesity. In the present study children having fast food intake of more than three times per week to be significantly associated with childhood obesity or overweight. Studies carried out by Kar S etal [7] and Trichus RM et al[19] had also reported similar findings in their study.

It was noted in the present study that children who skip breakfast in morning were less prone to develop childhood obesity or overweight. Although this is not a good habit to skip breakfast in the morning, therefore the authors of the study recommend a bigger study with a larger sample size to make a more conclusive remark on it. However Trichus MR et al [19] as also reported similar findings in their study.

The present study has also noted a significantly strong association between mean soda intake and obesity status. In the present study children having mean soda intake of 3.4(±1.9) for males and 3.2(±2.1) for female or more were found to be significantly associated with childhood obesity or overweight. Studies carried out by Ayyidiz et al [22]in Turkey and Kar S et al [7]in India have also highlighted these findings.

Association between knowledge of obesity and obesity status:

In the present study on doing univariate analysis between the knowledge and obesity status, it was found that children who were unaware about the hazards of obesity were more obese than those who were aware (OR =0.37(CI 0.21 to 0.64) for male and OR=3.32 (CI1.43 to 7.72) for Female) Triches RM et al [19] and Kelishadi R et al [23]has also noted similar strong association in their study.

In the present study it was found that knowledge of food that causes obesity, knowledge about the prevention of obesity and knowledge about the activities that causes obesity were not significantly associated with obesity status. This difference could be attributed to the fact that the present study is carried out with the small sample size. A bigger study with a larger sample size is required to make a more conclusive remark on it.

CONCLUSION

It was noted in the present study that overweight and obesity are quite prevalent in the small town and cities especially among children studying in private school. The study also concludes that overweight and obesity are more common among male child as compared to female child.

It was concluded from the present study that the students were aware about the food that causes the obesity. However the awareness about the hazards of obesity is low. The study hereby recommends that programs centred at increasing knowledge about obesity will just help in increasing aware of obesity but a program which aims at motivating children to take up physical exercises at regular interval will help lot in solving this problem.

It was also concluded from the present study that the sedentary activities and fast food intake are strongly associated with the development of overweight and obesity whereas skipping breakfast is negatively associated with overweight and obesity

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