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A STUDY OF OBESITY AMONG HIGH SCHOOL CHILDREN OF NELLORE CITY, A.P

Community Medicine

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ABSTRACT

BACKGROUND: Obesity, which is once considered as a symbol of status and wealth in some cultures is now seen as a public health crisis. The World Health Organization (WHO) refers to it as a 'Global Epidemic'[1]. Overweight and obesity now rank as the fifth leading global risk for mortality.

AIMS AND OBJECTIVES: To estimate the prevalence of obesity in the high school children and some of its associated risk factors in the high school children in Nellore city.

MATERIALS AND METHODS: This is a community based cross-sectional study. The study was conducted in high schools of Nellore in 2000 children from 6th to 10th class. Schools were selected by probability proportional to size technique.

RESULTS: The prevalence of obesity was 6.4%, overweight was 15%. The mean BMI for girls ranges from 18.01±3.43 kg/m^2 to 20.59±3.93 kg/m^2. Obesity is significantly associated with working mother, consumption of beverages, junk foods, frequency of going to school canteen etc.($p<0.05$)

CONCLUSION: Obesity is creating an enormous socio-economic and public health burden in poorer countries, like ours. From our study we can conclude that, increasing prevalence rates of obesity are seen to be significantly associated with factors like, persons with sedentary habits, persons from three generation families, persons with family history of obesity, consuming energy rich foods, beverages, motorized school transport, sedentary activity like T.V viewing, playing of video games, habit of eating while watching TV, skipping breakfast, and having and eating in the school canteen.

KEYWORDS

global epidemic, obesity, school children, junk foods

INTRODUCTION

The World Health Organization (WHO) refers to it as a 'Global Epidemic'[1]. Overweight and obesity now rank as the fifth leading global risk for mortality. The rapid rise in the prevalence of obesity is also attributed to the changes in the macro environment factors such as increased use of motorized transport, increased use of energy sparing devices, increasing sedentary employments in addition to excess use of television and videogames, globalization, urbanization which has become increasingly obesogenic. These infiltrate the traditional lifestyles of even the poorest in developing countries.[2,3]

Obesity has negative health impacts in childhood, as well as in the long term. In addition to a higher risk of obesity and NCDs later in life, affected children experience adverse outcomes such as breathing difficulties, increased risk of fractures, hypertension, and early markers of cardiovascular disease, insulin resistance and psychological effects [4-7].

METHODOLOGY:

A community based cross sectional study was conducted in schools of Nellore. Sample size is estimated at 5% level of significance with using the formula ($n = (Z\alpha)^2 pq/L^2$) taken 6% prevalence (N.I.N. Annual report (2007-2008)[9] with 20% allowable error, gives sample size of 1566, 10% of no response rate was added,then sample size rounded of to 2000. Out of 100 high schools in Nellore city, basing on probability proportion to size, 5 government schools, 1 aided school and 9 private schools were selected. Institutional ethical committee, Narayana Medical College, Nellore, accorded ethical clearance for this study. Informed verbal consent was taken from school authorities.

Inclusion criteria: All boys and girls of 6th to 10th classes.

Exclusion criteria: children who are absent on the day of examination, children with anatomical abnormalities, and non-cooperating children and children who are unwell are excluded from the study.

RESULTS:

A total of 2000 school children are examined. Of these 954 (47.7%) are males and 1046 (52.3%) are females. About 50% school students were from private schools, 35.6% were from government schools, and 14.4% were from aided schools. 20.4% are in 6th class, 20.6% are in 7th class, 19.5% are in 8th class, 19.8% are in 9th class, 19.6% are in 10th class. The prevalence of obesity is 6.4%; prevalence of overweight is 15% . Prevalence of obesity in boys is 6.7%, in girls is 6.2%. **Figure 1** shows prevalence of obesity according to age.

Figure 1: prevalence of obesity according to age

96% of the parents are literates. 36.9% mothers of school children are working, 63.1% of mothers are house wives. The mean height of boys ranges from 143.5±7.1cm to 160.0±8.6 cm. The mean height of girls ranges from 141.6±7.0 cm to 157.5±8.11cm. The mean weight of boys ranges from 35.42±6.05 kg to 51.84±9.68 kg. The mean weight of girls ranges from 37.43±7.61kg to 51.04±10.17kg. The mean BMI for boys ranges from16.98±2.81 kg/m^2 to 20.39±4.4 kg/m^2.

The mean BMI for girls ranges from 18.01±3.43 kg/m^2 to 20.59±3.93 kg/m^2. **Table 1 and Table 2** show some of risk factors for obesity.

Table 1 : Risk factors associated with obesity

Variable	frequency	percent	Chi square	P value
Type of school			8.118	0.017
Government	32	4.5		
Private	79	7.9		
Aided	18	6.3		
Type of family			24.024	0.0001
Nuclear family	71	5.3		
Joint family	25	5.9		
Three generation family	33	13.7		
Family h/o obesity				
Yes	51	8.6	6.604	0.010
No	78	5.5		

Among 850 school children who have school canteen, 6.8% have obesity; of those who do not have school canteen, 6.2% have obesity.

Table 2: dietary practices associated with obesity

DIET	Frequency	Percent	Chi square	P value
Breakfast consumption			30.224	0.000
Regular	68	4.6		
Irregular	61	11.5		
Frequency of consumption of beverages			120.24	0.000
Daily	65	19.1		
Alternate days	10	6.3		
Twice a week	29	6.8		
Once in a while	25	2.3		
Eating snacks in between meals			14.823	0.000
Yes	111	7.8		
No	18	3.1		
Habit of eating while watching T.V			78.554	0.000
Yes	99	12.4		
No	30	2.5		
Frequency of eating junk foods			240.68	0.000
Daily	87	23.8		
Alternate days	30	7.0		
Once in a while	12	9.3		

A total of 1398 students receive pocket money. Obesity is higher in children who are spending pocket money on snacks ($p < 0.05$) (13.5% vs. 1.2%).

Some of the dietary habits are shown in Table 3.

Table 3: personal habits of children

Variable	Frequency	Percent	Chi square	P value
Mode of school transport			39.918	0.000
Walking	28	3.9		
Bicycle	20	3.6		
Motor vehicle	81	11.0		
Watching of television			11.01	0.001
< 2 hours/day	29	4		
> 2hours/ day	100	7.8		
Playing of video/computer games (hrs/week)			40.4	0.000
< 2 hrs/ week	65	4.4		
> 2 hrs/ week	64	12.4		
frequency of going to school canteen (n=850)				
Daily	20	13.5	12.750,	p=0.002
Alternate days	18	5.8		
Once in a while	20	5.1		

DISCUSSION

Our study shows the prevalence of obesity is 6.4%. According to N.I.N in 2007-2008 annual report[8] (n=7680) the prevalence of obesity in urban adolescents of Andhra Pradesh is 6%. This is similar to our study. Jagadesh P Goyal [10] et.al, Sharma A, et.al,[9] also show similar prevalence In our study Prevalence of obesity in boys is 6.7% in girls is 6.2% .Jagdish P Goyal et.al, [10] in their cross sectional study in adolescents, 12 to 15 years of age, in Surat city (n = 1000), reported that prevalence of obesity in boys is 6.7% and in girls 6.4%. annual Report of NIN (2007-08)[8] , Laxmaiah et.al,[11] show similar results In the study by Ramachandran et al [12], Chennai school children (n=4700) in 2002 showed increase in prevalence of obesity by age is noticed.

Rising in the prevalence of childhood obesity from Government (4.9%), to aided (5.5%) or unaided (7.2%) schools has been reported by Yamani Ramachandran[13] (n=1030 in 2004) in Kerala, which is similar to our study. Mahajan et al [20] in their study showed the same result. Avula Laxmaiah et.al[11], in their study, (n=1208) in Hyderabad (2003) stated that prevalence of obesity/overweight was higher if parents occupation were either service (9.9%) or business (7.4%) than other occupations(3.1%).this is also similar to our study.

S Kumar et al[14], in their study (2007 in two affluent schools of Davangere city, Karnataka (n=1496), showed family history of obesity (χ^2=120.5, p<0.001). this is similar to our study. Skipping breakfast leads to obesity. Tarek Tawifik Amin et al[15] conducted a study in Al Hassa, Kingdom of Saudi Arabia showed the same result. Consumption of fruits and vegetables decreases the prevalence of obesity. Consumption of junk foods and beverages frequently increase the risk of obesity. Bishwalata R[16] et.al, Tarek Tawifik Amin et al[15], M.Shashidhar kotain[18] et al, Jagdish P Goyal[10], et al showed the same result.

The presence of school canteen, frequency of going to school canteen, spending pocket money more on snacks, eating in between major meals, eating food while watching T.V increases the risk of obesity. Bishwalata R et al[16], Jagdish P Goyal[10], et al, S Kumaret al[53] Seema Jain et.al [17], Going to school by motor vehicles, watching T.V >2 hours/day, playing video games incrases the risk of obesity. Jagdish P Goyal et.al[10], Andegiorgish AK et.al[19], M.Shashidhar kotain et.al[18], Avula Laxmaiah, et al[11], showed the similar results. Playing outdoor games decreases the prevalence of obesity.

CONCLUSION

Prevalence of obesity is 6.4%. Obesity was more in boys. Prevalence of obesity increases as the age increases Obesity was more in private schools. Skipping of breakfast, not consuming fruits and vegetables, eating while watching T.V, motor vehicular transport, not playing outdoor games, spending money on snacks, consumption of beverages and junk foods are significant factors leads to obesity.

Recommendations:

At least 30 minutes of cumulative moderate physical activity every day, for children of all ages is recommended. Restrict TV viewing, video games and use of computers to a total of ≤ 2 hours/day. At the school, student level physical education must be compulsorily integrated into school curriculum. At community level increase play ground facilities and safe play area for children. Knowledge regarding healthy life style and healthy food habit should be inculcated to the school children through curriculum and teachers should be trained.

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