ORIGINAL RESEARCH PAPER

Volume-8 | Issue-6 | June-2019 | PRINT ISSN No. 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A COMPARATIVE STUDY ON PREVALENCE OF OVERWEIGHT AND OBESITY IN SCHOOL GOING CHILDREN OF AGE 10-15 YEARS OF GOVERNMENT AND PRIVATE SCHOOLS PRESENT IN ELURU, WEST GODAVARI DISTRICT

Paediatrics

Dr. K. Vishnuvardhan Rao Assistant Professor, Department of Pediatrics, Alluri Sitarama Raju Academy of Medical Sciences, Eluru, Andhra Pradesh 534005, India

Dr. N L Narasimha Rao* Associate Professor, Department of Pediatrics, Alluri Sitarama Raju Academy of Medical Sciences, Eluru, Andhra Pradesh 534005, India *Corresponding Author

Dr M. Manoj Kumar Postgraduate, Department of Pediatrics, Alluri Sitarama Raju Academy of Medical Sciences, Eluru, Andhra Pradesh 534005, India

ABSTRACT

BACKGROUND: Childhood obesity is a modern day epidemic. In the last 30 years number of obese children in the society has doubled, compared to the figures in the 80s. Obesity is evolving as a major nutritional problem in the developing countries, affecting a substantial number of children and resulting in an increased burden of chronic diseases in adulthood.

AIMS AND OBJECTIVES:

1. To find out the prevalence of Overweight and Obesity among school children of age group 10-15 years.
2. To compare the prevalence of Overweight and Obesity among Private and Government school children present in Eluru, West Godavari district.
3. To determine the factors contributing to Overweight and Obesity among the study group.

MATERIALS AND METHODS :

Study design: School based Cross-sectional comparative study conducted in Eluru town. four Private and two Govt schools were randomly selected to obtain a comfortable sample size of 949 students who are equally distributed between Govt and Private schools.

RESULTS: According to BMI normograms for age and sex, among Govt school students, 331 (70.6%) had normal BMI as compared to 245 (51%) in Private school students. Overweight and obesity were more in Private school as compared to Government school (19% vs 6.6% and 9.4% vs 3.2%). This difference was found to be statistically significant (P value <0.05)

CONCLUSION: The prevalence of Overweight / Obesity is a problem of affluent children going to various Private schools in Eluru town. But compared to other Indian studies, the burden of Overweight / Obesity seems to be less in Eluru.

KEYWORDS

Introduction:

Childhood obesity is a modern day epidemic. In the last 30 years number of obese children in the society has doubled, compared to the figures in the 80s. Obesity is evolving as a major nutritional problem in the developing countries, affecting a substantial number of children and resulting in an increased burden of chronic diseases in adulthood. Obesity in children is commonly associated with hypertension, and generally missed by the physicians. These are serious public health challenges of the 21st century as they appear to increase the risk of subsequent morbidity and mortality.[1]

In addition, obesity prevalence varies across socio-economic strata. In developed countries, children of low socio-economic status are most affected than their affluent counterparts. The opposite is observed in developing countries: children of upper socio-economic strata are more likely than poor children to be obese.[3] Data from National Health And Nutrition Examination Survey (NHANES) USA showed that 17% of children in the age group of 12 to19 years are obese and 16.2% are overweight.[2] Various cross sectional studies conducted in different parts of India have shown combined prevalence of overweight and obesity in the range of 6 to 25%.

The present study was designed to compare the prevalence of overweight and obesity in school children of Government and Private schools present in Eluru, West Godavari district in state of Andhra Pradesh in South India and the factors leading to overweight and obesity among the study population.

MATERIAL AND METHODS

Source of Data:

Students of age group 10 to 15 years from four Private schools viz., Narayana Techno School, Saint Mary Christopher English Medium School, Little Buds English Medium School and Saint Antony Public School, Eluru and two Govt schools viz., Sri Edara Subbamma Devi Municipal Corporation High School and Municipal Corporation Upper Primary School, Powerpeta, Eluru.

Study design: School based Cross-sectional comparative study conducted in Eluru town.

Study period:- Study was conducted over a period of two years from October 2016 - October 2018.

Inclusion Criteria:

- Students of age group 10 to 15years in randomly selected Government and Private schools of Eluru town who were apparently normal.

Exclusion Criteria

- Children with chronic diseases like Rheumatic heart disease, congenital heart disease, epilepsy, chronic kidney disease, Bronchial asthma on medication.
- Children who were on long term steroids.
- School children of age group below 10 years and above15years in selected schools.

predesigned questionnaire was used to elicit the information containing variables including - age, sex, school, class, parent's occupation, education, dietary habits, physical activity, mode of transport to school, type of family and birth order of the child were collected.

Anthropometric data including weight was measured in the upright *position to the nearest 0.1 kg using calibrated electronic weighing machine* and height was measured without shoes to the nearest 0.1 cm using calibrated stadiometer. BMI was calculated from height and weight (using formula Weight in Kg/height in metre^2). According to revised IAP Growth charts 2015, for children aged 5-18 years, BMI charts have 3rd, 5th, 10th, 50th, 23 adult equivalent (71st and 75th percentiles for boys and girls respectively) and 27 adult equivalent (90th and 95th percentiles for boys and girls respectively) lines. On the BMI charts, OW was considered as above 23rd adult equivalent and Obesity as above 27 adult equivalent lines[21]. Age and sex specific IAP charts were used for this purpose. BMI of less than 15 was considered as underweight irrespective of age and sex in this study.

A Govt school is that which is run by Panchayat Raj and local body institution such as Zillaparishad, Municipal Corporation, Municipal Committee, Notified area Committee and Cantonment Boards. Schools those run by private organisations and collecting annual fee of more than 18000 rupees shall be considered as Private schools in this study. Randomly I have selected four Private schools and two Govt schools present in Eluru. Sample was equally distributed among Private and Govt schools.

For socio-economic status of the students, the Private schools represented the higher socio-economic status and Govt schools represented the lower socio-economic status. Similar representation was done in previous studies.

RESULTS:

Four Private and two Govt schools were randomly selected to obtain a comfortable sample size of 949 students who are equally distributed between Govt and Private schools.

Table 1: The Baseline Characteristics of the Study Population

Group	Parameter	Frequency	Percent
School	Govt	469	49.4
	Private	480	50.6
Gender	Male	487	51.3
	Female	462	48.7
Weight Status	UW	191	20.1
	Normal	576	60.7
	OW	122	12.9
	Obese	60	6.3
Dietary Habits	Vegetarians	44	4.6
	Ovo-vegetarians	14	1.5
	Mixed diet	891	93.9
Parent's Education Status	>12th class	253	26.7
	<12th class	696	73.3
MOT to school	Walk	297	31.3
	Bicycle	327	34.5
	Motor vehicle	325	34.2
Type of Family	Nuclear	702	74
	Joint	67	7.1
	3 Generation	180	19

The study included children of age group 10 to 15 years from Govt and Private schools. Among Government school students, 157 (33.5%) belonged to 14 years, 117 (24.9%) belonged to 15 years and 115 (24.5%) belonged to 13 years. Whereas in Private schools, 139 (29%) belonged to 13 years, 11 (23.1%) belonged to 14 years and 100 (20.8%) belonged 15 years age group

The parents of 66 (14.1%) and 403 (85.9%) were educated and uneducated respectively among Govt school students. Whereas, parents of 187 (39%) and 293 (61%) were educated and uneducated respectively among Private school students. Therefore, educated parents were more in students belonged to Private schools than to Govt schools. This difference was found to be statistically significant (P value<0.05).

Among Govt school children, 445 (94.9%) were taking mixed diet and 12 (2.6%) each were taking vegetarian and ovo-vegetarian diet. Whereas, among Private school children, 446 (92.9%) were taking mixed diet, 32 (6.7%) vegetarian and 2 (0.4%) were taking ovo-vegetarian diet. Therefore, most of the students in study population were taking mixed diet in both Govt and Private schools.

Among Govt school students, 210 (44.8%) were spending 1 hour, 53 (11.3%) were spending 2 hours and 14 (3%) were spending >2 hours for outdoor games in a day. Whereas, among Private school children, 294 (61.3%) were spending 1 hour, 24 (5%) were spending 2 hours and 2 (0.4%) were spending >2 hours. 192 (40.9%) students from Govt schools and 160 (33.3%) students from Private schools were not spending anytime for outdoor games. More number of students from Private school were spending time for outdoor games. This difference was found to be statistically significant (P value <0.05).

Majority of the Government school students were walking 195 (41.6%) and using bicycle 267 (56.9%) for going to school. Whereas, majority of Private school students were using auto / bus / motor cycle 318 (66.3%) for going to school. This difference was found to be statistically significant (P value <0.05).

Among Private school students, 47.3% watch TV / play video games for 1 hr, 21% for 2 hours and 9.8% for >2 hours in a day. Whereas, among Govt school students, 38.2% watch TV / play video games for 1 hr, 28.6% for 2 hours and 13% for >2 hours. This difference was found to be statistically significant (P value <0.05).

According to BMI normograms for age and sex, among Govt school students, 331 (70.6%) had normal BMI as compared to 245 (51%) in Private school students. Overweight and obesity were more in Private school as compared to Government school (19% vs 6.6% and 9.4% vs 3.2%). This difference was found to be statistically significant (P value <0.05)

In Government school students, majority of Overweight and Obese cases were recorded in ages between 13-15 years as compared to 10-12 years. This difference was found to be statistically significant (P value <0.05). In Private school students, majority of Overweight and Obese cases were recorded in ages between 13-15 years as compared to 10-12 years. This difference was also found to be statistically significant (P value <0.05).

In Government school students, Prevalence of Overweight was more in girls 15 (7.3%) compared to boys 16 (6%) whereas prevalence of Obesity was more in boys 9 (3.3%) compared to girls 6 (2.9%). This difference was not found to be statistically significant (P value >0.05). In Private school students, prevalence of Overweight and Obesity was more in female students 55, 29 (21.2%, 11.1%) as compared to male students 36, 16 (16.2%, 7.2%). This difference In Government school students, risk based on WHR was found to be in 8 (25.8%) among Overweight group and 5 (33.3%) among Obese group. This difference was found to be statistically significant (P value <0.05). In Private school students, risk based on WHR was found to be in 39 (42.9%) among Overweight group and 25 (55.6%) among Obese group. This difference was found to be statistically significant (P value <0.05)was found to be statistically significant (P value <0.05).

DISCUSSION:

Childhood OW and Obesity are common health problems in rapidly growing economies throughout the world and India is not an exception.

The present study comprised of a total of 949 students of age group 10 to 15 years from two Govt schools and four Private schools who met the inclusion criteria.

Out of 949 students, 469 (49.4%) were from Govt school and 480 (50.6%) were from Private schools. Therefore, the present study included equal proportion of students from Govt and Private schools. Amongst 949 children, 487 (51.3%) and 462 (48.6%) were male and female children respectively. Therefore, this study included almost equal proportion of male and female children.

There was a significant increase in BMI of the children with respect to age group in this study. This might be due to significant increase in weight and height of children with respect to age group. Similar findings were reported by Parekh alok et al,V Subrahmanyam et al, Ramachandran et al, V Kumarvel et al.The mean BMI value between male and female gender was almost equal and no significant difference was found between boys and girls in the study population

Comparison of results of present study with previous studies:

S.No	Study Conducted By	Type Of Study	Prevalence Of Overweight/Obesity	Remarks
1	PRESENT STUDY	Cross Sectional Study	19.1	Private > Govt
2	Nazeem I. Siddiqui	Cross sectional study	14.97	F>M
3	Harish ranjani et al	systematic review	19.3	HSES > LSES
4	Sonya jagadeeshan et al	Cross Sectional Study	-----	F > M

5	Goyal RK et al	Cross Sectional Study	19.7	M > F
6	M al Shashidharkotian et	Cross Sectional Study	14.9	F > M
7	S Kumar et al	Cross Sectional Study	5.7	F > M
8	Shardhasidhu et al	Cross Sectional Study	19.3	F > M
9	Bose k et al	Cross Sectional Study	21	------
10	Kumar HNH et al	Cross Sectional Study	6	-------
11	Wang Y et al	Systematic review	13.5	F > M
12	Khadilkar VV et al	Cross Sectional Study	20.8	M > F
13	Chhatwal J et al	Cross Sectional Study	25.2	M > F
14	Sidhu S et al	Cross Sectional Study	17.2	F > M

The prevalence of Overweight / Obesity is a problem of affluent children going to various Private schools in Eluru town. But compared to other Indian studies, the burden of Overweight / Obesity seems to be less in Eluru. The data available on childhood Overweight / Obesity is patchy and sometimes difficult to compare as the food habits and other life style vary greatly across the country.

CONCLUSION:

The present study found the magnitude of Overweight / Obesity was higher in Private school children. This study also suggests that undernutrition rates drastically reduced compared to 30 years back. The factors contributing to Overweight / Obesity were more prevalent in children going to Private schools. Significant association was observed between Neck circumference and BMI, but not between WHR and BMI. This study concludes that Neck circumference can be used as a simple and easy marker of Obesity and further studies should be done to derive age and sex specific reference ranges.

REFERENCES

1. Obesity and overweight: Fact sheet, World Health Organisation, Geneva. Updated June 2016 http://www.who.int/mediacentre/factsheets/fs311/en/
2. Cheryl D. Fryar, M.S.P.H., Margaret D. Carroll, M.S.P.H., and Cynthia L. Ogden, Prevalence of Overweight and Obesity Among Children and Adolescents Aged 2–19 Years: United States, 1963–1965 Through 2013– 2014 : National Center for Health Statistics, Centers for Disease Control and Prevention) http://www.cdc.gov/nchs/data/hestat/ obesity_child_13_14/obesity_child_13_14.htm
3. Kumar HNH, Mohanan P, Kotian S, Sajjan BS, Kumar SG. Prevalence of overweight and obesity among preschool children in semi urban South India.IndianPediatr2008; 45: 497-9.
4. Wang Y, Chen HJ, Shaikh S, Mathur P. Is obesity becoming a public health problem in India? Examine the shift from under- to overnutrition problems over time. Obes Rev 2009; 10 : 456-74.
5. Khadilkar VV, Khadilkar AV, Cole TJ, Chiplonkar SA, Pandit D. Overweight and obesity prevalence and body mass index trends in Indian children. Int J PediatrObes2011; 6 : e216-24
6. Chhatwal J, Verma M, Riar SK. Obesity among pre-adolescent and adolescents of developing country (India). Asia Pac J ClinNutr2004; 13 : 231-5.
7. Satyajit Bagudai1, Pranati Nanda 2, Satyanath Reddy Kodidala3.PREVALENCE OF OBESITY & HYPERTENSION IN ADOLESCENT SCHOOL GOING CHILDREN OF BERHAMPUR, ODISHA, I