

Prevalence of Childhood Obesity and Role of Physical Activity: A Cross Sectional Study from Telangana

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Abstract:

Introduction: Because childhood overweight often persists into adulthood, a rising number of adults will be at increased risk of these conditions as well as of cardiovascular disease, osteoarthritis and certain types of cancer. As a whole, the obesity epidemic constitutes a substantial decrease in quality of life and life expectancy and accounts for billions of dollars in health care spending. Insufficient physical activity and poor nutrition are widely acknowledged as the primary mechanisms underlying the rise in excess body weight. Recent studies have described geographic and socioeconomic gradients and identified aspects of children's lifestyle, including physical and sedentary activities, as risk factors for overweight and obesity.

Objective: To study the role of physical activity as influencing over weight and obesity

Materials and Methods: The present school based cross section observational study was carried out in Govt & Private schools of Mulugu Mandal, Siddipet, Telangana during the study period from January 2023 to March 2023 involving 500 high school children of age 12-16 years. Information on individual characteristics like age, gender, time spent for watching TV and outdoor games, etc. is collected. For measuring height, drop down tape measure is used whereas for measuring weight, the modern-day weight scale is used. Data was collected by using a structure proforma. Data thus was entered in MS excel sheet and analysed by using SPSS 23.0 version IBM USA.

Results: Out of 250 boys, majority were from 15-15.9 years age i.e. 29.6%. Prevalence of overweight in our study was 9.8%. Prevalence of obesity was 5%. 42.8% cases sleep duration was 6-7 hours. Prevalence of snoring was 7.8%. 64% responded that they are interested in outdoor games. 13.6% children are not playing any kind of games whereas daily outdoor games were practiced by 86.4% children. Almost half of the children responded about use of electronic gadgets 43% which correlates the prevalence of overweight and obesity in our study.

Conclusion: Prevalence of overweight in our study was 9.8%. Prevalence of obesity was 5%. Use of electronic gadgets, increased screen time was factors observed in our study associated with overweight and obesity.

Keywords: Overweight, obesity, prevalence, physical activity.

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Introduction

The world is undergoing a rapid epidemiological and nutritional transition characterized by persistent nutritional deficiencies, as evidenced by the prevalence of stunting, anemia, and iron and zinc deficiencies. Concomitantly, there is a progressive rise in the prevalence of obesity, diabetes and other nutrition related chronic diseases (NRCs) like obesity, diabetes, cardiovascular

disease, and some forms of cancer. Obesity has reached epidemic levels in developed countries. The highest prevalence rates of childhood obesity have been observed in developed countries; however, its prevalence is increasing in developing countries as well. [1] Females are more likely to be obese as compared to males, owing to inherent hormonal differences. [2] Increases in childhood

overweight and obesity have become a major public health problem in industrialized nations. [3,4] The numerous psychosocial, physical and economic consequences of overweight and obesity are well-known. Childhood overweight affects self-esteem and has negative consequences on cognitive and social development. [5,6] Conditions such as type 2 diabetes mellitus, hypertension and hypercholesterolemia, which were previously seen primarily in adults, are becoming more common among children as the prevalence of obesity increases. [7] Because childhood overweight often persists into adulthood, a rising number of adults will be at increased risk of these conditions as well as of cardiovascular disease, osteoarthritis and certain types of cancer. [8,9] As a whole, the obesity epidemic constitutes a substantial decrease in quality of life and life expectancy and accounts for billions of dollars in health care spending. [10,11]

Insufficient physical activity and poor nutrition are widely acknowledged as the primary mechanisms underlying the rise in excess body weight. [12] Recent studies have described geographic and socioeconomic gradients and identified aspects of children's lifestyle, including physical and sedentary activities, as risk factors for overweight and obesity. [12,13,14]

Most recently, Swinburn and colleagues identified risk factors related to parents, family and school as potentially significant and as requiring more evidence so that evidence-based policy and program decision-making for the prevention of excess weight can be developed. 15

Objective: To study the role of physical activity as influencing over weight and obesity

Materials and Methods

Study design: School based cross section observational study. The study was carried out in Govt & Private schools of Mulugu Mandal, Siddipet, Telangana.

Study period: January 2023 to March 2023

Study population: High school children of age 12-16 years

Inclusion criteria

- Parents of students who agreed to be a part of the study.
- Students without any significant past history or those who are not suffering from any chronic illness from past 3 months will be included in the study.
- Both the sexes of between 12-16 years of age.

Exclusion criteria

- Children who are suffering from chronic illness.
- Children having endocrine problems, physical and mental defects.
- Children who do not agree to be part of the study.
- Children who are malnourished.

Sample size: 500

Methodology for Collection of Data

This study was conducted in school children in Latur district. After obtaining consent from the school authorities and parents of the participants and explaining to them the objectives as well as the method of this proposed study, a predesigned, pretested questionnaire is used to interview the participants to elicit information on their family characteristics like economic status, education and occupation of their parents. Information on individual characteristics like age, gender, time spent for watching TV and outdoor games, etc. is collected. For measuring height, drop down tape measure is used whereas for measuring weight, the modern-day weight scale is used.

Statistical analysis and methods:

Data was collected by using a structure proforma. Data thus was entered in MS excel sheet and analysed by using SPSS 23.0 version IBM USA. Qualitative data was expressed in terms of percentages and proportions. Quantitative data was expressed in terms of Mean and Standard deviation. Association between two qualitative variables was seen by using Chi square/ Fischer's exact test. A p value of <0.05 was considered as statistically significant whereas a p value <0.001 was considered as highly significant.

Results

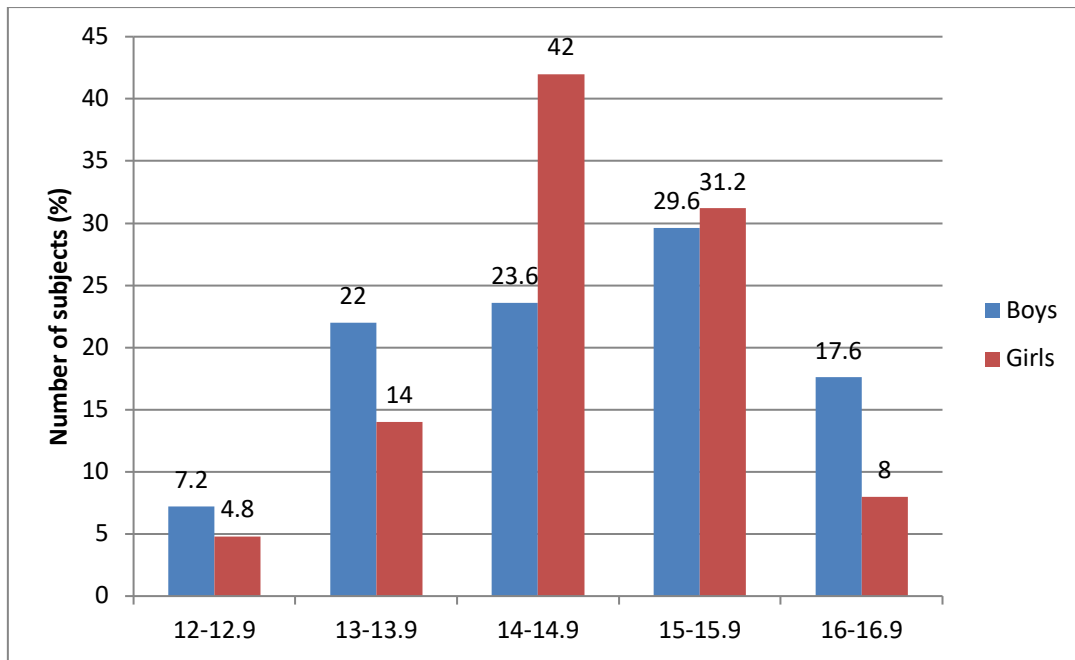


Figure 1: Bar diagram showing distribution according to age and gender

Out of 250 boys, majority were from 15-15.9 years age i.e. 29.6% followed by 23.6% from 14-14.9 years, 22% from 13-13.9, 17.6% from 16-16.9 and 7.2% from 12-12.9 years age group. Out of 250 girls, majority were from 14-14.9 years age i.e. 42% followed by 31.2% from 15-15.9 years, 14% from 13-13.9, 14% from 13-1.9, 8% from 16-16.9 and 4.8% from 12-12.9 years age group.

Table 1: Prevalence of overweight and obesity

		Frequency	Percent
BMI grades	Underweight	25	5.0
	Normal	401	80.2
	Overweight	49	9.8
	Obese	25	5.0
	Total	500	100.0

Majority of the children had normal BMI i.e. 401(80.2%). Prevalence of overweight in our study was 9.8%. Prevalence of obesity was 5%.

Table 2: Physical activity as influencing factors for overweight and obesity

		Frequency	Percent
Sleeping hours	7 to 8	185	40
	8 to 9	101	20.2
	6 to 7	214	42.8
	Total	500	100
Snoring	Yes	39	7.8
	No	461	92.2
	Total	500	100
Hours of watching TV/ video games	1 to 2	149	29.8
	2to 3	253	50.6
	3 to 4	98	19.6
	Total	500	100
Duration of exercise	15 minutes	193	38.6
	30 minutes	207	41.4
	1 hour	100	20
	Total	500	100
Interested in outdoor games	Yes	320	64
	No	180	36

	Total	500	100
Frequency of outdoor playing	Everyday	246	49.2
	Twice a week	186	37.2
	Not play	68	13.6
	Total	500	100
Sports participation	Yes	354	70.8
	No	146	29.2
	Total	500	100
Use of smart phones (hours)	1 to 2	246	49.2
	2 to 3	202	40.4
	3 to 4	52	10.4
	Total	500	100

In 42.8% cases sleep duration was 6-7 hours and in 40% cases it was 7-8 hours. Sleeping for less number of hours is associated with overweight and obesity. 39 students responded that they were snoring at night during sleep. So the prevalence of snoring was 7.8%. Majority of children responded that they were watching TV/ video games for 2-3 hours (50.6%) followed by 29.8% for 1-2 hours and 19.6% for almost 3-4 hours which is correlated with overweight and obesity in our study. Majority of children reported that they are regularly exercising for 30 minutes (41.4%) but very few are doing it upto 1 hour i.e. 20% 320 children i.e. 64% responded that they are interested in outdoor games. 13.6% children are not playing any kind of games whereas daily outdoor games were practiced by 86.4% children. 70.8% responded that they are participating in sports activity and almost one third of students i.e. 29.2% were not taking part in sports that is correlated with prevalence of overweight and obesity in our study. 89 (17.8%) children reported that they were teased by other colleagues due to their obesity 20% of parents were obese as responded by the children. Almost half of the children responded about use of electronic gadgets 43% which correlates the prevalence of overweight and obesity in our study. All children are using smart phones. Almost half of them i.e. 49.2% are using it for almost 1-2 hours and 40.4% upto 2-3 hours which correlates with prevalence of overweight and obesity.

Discussion

In our study, we included total 500 school going children of both Government and private school. The study participants were age group of 12 to 17 years age. Out of 500 school children involved in our study, majority 166 (33.2%) were from 14-14.9 years age group followed by 152 (30.4%) from 15-15.9 years age group. This is followed by 17.6% from 13-13.9, 12.8% from 16-16.9 year's age group. Least was from 12-12.9 year's age group i.e. 6%. Mean age was found to be 14.07± 1.02 years.

Prevalence of obesity:

Prevalence of overweight in our study was 9.8% whereas prevalence of obesity was 5%.

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Most of the earlier studies done in children and adolescents in India have reported prevalence based on international cut-off points [16-22] with a meta-analysis estimating the prevalence of overweight as 12.6% and obesity as 3.4%. [23] Another multicentric study reported an overall prevalence of overweight/obesity as 18.2%. [24]

Physical activity and obesity:

In our study, majority of children reported that they are regularly exercising for 30 minutes (41.4%) but very few are doing it upto 1 hour i.e. 20%. In our study, 320 children i.e. 64% responded that they are interested in outdoor games. 13.6% children are not playing any kind of games whereas daily outdoor games were practiced by 86.4% children. In our study, 70.8% responded that they are participating in sports activity and almost one third of students i.e. 29.2% were not taking part in sports that is correlated with prevalence of overweight and obesity in our study. Ramesh K Goyal et al [25] reported in his study that only 43.8% overweight and 32% obese boys taking part in sports whereas 44.3% and 28.6% of overweight and obese girls respectively participating in sports. So almost half of the overweight and one third of obese were not participating in sports activity. This finding is consistent with our finding.

Ramesh K Goyal et al [25] reported in his study that only 38.5% overweight and 27.1% obese were involved in active physical exercise. So only one third were taking active part in physical exercise which matches with our study. Sedentary behavior and physical activity in children may be predictive of body mass in late adolescence. Sleeping habit in afternoon, decreased sports and exercise have also been implicated in childhood obesity because they reduce resting metabolism results in reduction of physical activity.

A change in the volume of daily physical activity may account for imbalance between energy intake and energy expenditure. [26] Physical activity among children has been related to obesity through different mechanisms. [27] Reduced levels of physical activity may also lead to lower energy expenditure, thus affecting resting metabolic rate

and total energy expenditure. In our study we found that obesity and overweight have inverse relationship with physical activity.

These data are consistent with previous studies in different countries. [28-31]

These data suggest that decrease in physical activity are due to expending less energy in activities of daily living, and at work. Thus, an active lifestyle during childhood can play an important role in optimizing growth and development. Comprehensive school and community programs to be developed to promote physical activity among children.

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