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PREVALENCE OF OVERWEIGHT, OBESITY AND UNDERWEIGHT AMONG RURAL GOVERNMENT GIRLS SCHOOL IN ANANTHAPURAMU DISTRICT, ANDHRA PRADESH

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ABSTRACT

Background: Obesity and overweight once thought to be the problem of developed affluent societies has become a worldwide epidemic. In India there were very few studies for determination of the prevalence of childhood obesity and more so in rural areas which is an emerging challenge. This study aims to determine the prevalence of obesity and also prevalence of underweight in rural school children, mainly girls.

Objectives: To study the prevalence of overweight, obesity and underweight among children aged between 10 - 15years studying in rural government girls school in Ananthapuramu District, Andhra Pradesh.

Material and Methods: A total of 564 children between age group 10 - 15 years were screened from three rural schools running under Government. The overweight, obesity and underweight were computed using WHO Charts of BMI for girls aged 5 - 19 years 2007.

Results: In the present study the overall prevalence of obesity and overweight was found to be 0.53% and 1.59% respectively. Prevalence of underweight was 22.51%. 75.35% of students had normal nutritional status.

Conclusion: Obesity and Overweight are the conditions if not controlled in the childhood may lead to chronic disease. Early interventions may help in preventing childhood obesity and then stemming the rising tide of non-communicable diseases.

KEYWORDS : Underweight, Overweight, Obesity.

INTRODUCTION

Obesity is often simply defined as a condition of abnormal or excess accumulation of adipose tissue to the extent that it may impair health[1,2]. Historically a fat child means a healthy child, one who is likely to survive the rigor of under nourishment and infection. But today obesity or overweight in childhood is considered as a major health risk condition developed mainly due to malnutrition and improper life style and can lead to a number of health problems[3].

Obesity has now emerged as one of the global health problems with 200 million school aged children worldwide categorized as being overweight or obese, of which 40 - 50 million were obese[4,5]. The global incidence of Overweight (including obesity) in children aged 5-12 years is estimated by the WHO, International Obesity Task Force (IOTF) to be approximately 10%[6]. Globally the prevalence of childhood obesity varies from 30% in USA to less than 2% in Sub-Saharan Africa. Currently the prevalence of obese school children was 20% in UK and Australia, 15.8% in Saudi Arabia, 15.6% in Thailand, 10% in Japan and 7.8% in Iran[7,8,9].

Various studies done in India had shown increasing trend in the prevalence of overweight and obesity in children and adolescent[10,11,12,13]. A study done in Pune, Maharashtra showed prevalence of 5.7% and in Chennai showed obesity prevalence of 3%[14]. The increasing prevalence of obesity may have major implications towards the increasing prevalence of non-communicable disease like diabetes, hypertension and cardiovascular disease in early childhood[15,16].

Present study is done to know the prevalence of overweight, obesity and also underweight in rural areas that too in girls aged 10 - 15 years. Ananthapuramu is a drought prone area and by this study we want to know the prevalence of obesity among these children and also to know the prevalence of underweight which used to be the major problem.

MATERIALS AND METHODS

This study was conducted in three Government maintained girls high school which were selected randomly and all children from age group of 10 - 15 years studying there were screened after obtaining necessary permission from relevant authority.

Height: The height of children was measured by using a standard Stadiometer. Height recorded to the nearest 0.5 Cms.

Weight: For recording weight, Digital Platform-weighing Balance was used, as it is portable and convenient to use in the field. The weight was recorded to the nearest 0.25 Kgs.

For both height and weight each reading was taken thrice and the average was taken as the final measurement.

Body Mass Index (BMI) was computed using the formulae

$$BMI = Weight\,(Kgs)\,/\,Height^2\,(cm^2).$$

Overweight, Obesity and Underweight were identified by using WHO charts of BMI for age 5 - 19 years for Girls 2007. Children's whose BMI falls under less than 3rd percentile were categorized as Underweight, BMI between 3rd percentile and 85th percentile were categorized as Normal, BMI between 85th percentile and 97th percentile were categorized as Overweight and BMI above 97th percentile as Obese.

RESULTS

It is evident from **Table 1** that out of the total 564 children, majority of children were of normal nutritional status (425 students i.e. 75.35%). 127 students (22.51%) were Underweight, 9 students (1.59%) were Overweight and 3 students (0.53%) were Obese.

As it is observed from **Table 2,** in age group of 10 years the overall incidence of Underweight is 10.25%, Overweight is 5.13% and no child is Obese in this group.

In the age group of 11 years 15.68% of children were Underweight, 1.96% were Overweight and Obesity incidence is 0.98%.

In the same way in the age group of 12 years 28.85% of children were Underweight, 0.84% was Overweight and 1.69% was Obese.

In age group of 13 years incidence of Underweight is 30.07%, incidence of Overweight is 0.69% and Obesity incidence is Zero.

Again in age group of 14 years no child was Obese and Overweight was seen in 0.77% of children. 19.23% children were Underweight.

In the age group of 15 years, again no child was Obese but Overweight is seen in 6.25% of children. The incidence of Underweight is 15.62%.

DISCUSSION

Obesity is one of the Non Infectious epidemic burdens which are

overtaking the burden of infectious diseases. The WHO designated obesity as a global epidemic. The most important long term consequence of childhood obesity is its persistence into the adulthood, with all the associated health risks.

In the present study the overall incidence of Underweight is 22.35%. The prevalence of Overweight is 1.59% and Obesity is seen in 0.53% of students. The overall incidence of normal nutritional status is 75.35%.

Similar studies by Dr. Nwrutti Jwane et al[6] have reported Underweight as 32.49%, Overweight as 5.08% and Obese as 3.43%. 59.01% were of normal nutritional status. According to the study by A. Unnithan et al[3] prevalence of Underweight was 18.60%, Normal seen in 58.67%, Overweight as 17.73% and prevalence of Obesity as 4.99%.

Similarly Sony Jagadesan e al[4] has reported the prevalence of Overweight as 12.60% and Obesity as 3.4%. Keertan Kumar M et al[17] also reported the prevalence of Obesity and Overweight as 2.6% & 3.0% respectively.

When our results were compared to the above mentioned studies it is noted that, though the incidence of Underweight is seen, the incidence of normal nutritional status among Rural Girls have improved as shown by prevalence of normal nutritional status in the study (which is 75.35%). This is probably due to Government implemented programmes like mid-day meal programme, albendazole administration etc.

In our study the overall incidence of Overweight and Obesity is very less when compared to the above studies. This may be probably due to drought prone conditions.

When age wise comparison was done similar results were seen i.e the incidence of obesity and overweight is low compared to other studies.

In our study the incidence of Overweight is highest in the age group of 15 years which is 6.25%. Similar results were seen in the study by A. Unnithan et al[3] where also the incidence was higher in 15 years age group. Even the study by Keethan Kumar et al[17] also showed similar results.

In our study the incidence of Obesity is highest in the age group of 12 years. Even study by A. Unnithan et al[3] also showed the incidence of Obesity is higher in age group of 12 years.

The prevalence of Underweight is highest in the age group of 13 years closely followed by age group of 12 years. In the study of A. Unnithan et al[3] incidence is higher in the age group of 12 years.

CONCLUSION

As the prevalence of the Obesity increases there will be a parallel increase in obesity associated chronic diseases and the clinical onset at very younger age. Different studies showed that obesity has reached an epidemic proportion in urban Indian population. There is an urgent need to increase awareness via education and motivation of all stake holders.

The results of this study exposed the fact that though the percentage of Underweight is lowered in the rural girl children, the obesity and overweight prevalence is slowly rising.

The Government of India's National Programmes on prevention and control of diabetes, cardiovascular and stroke has a school component which needs to be strengthened. This will help in controlling and preventing childhood obesity and thus ultimately stemming the rising tide of non-communicable diseases.

TABLE 1: Nutritional status of children as the BMI

Nutritional Status	School Children	
	Number	Percentage
Underweight	127	22.51%
Normal	425	75.35%
Overweight	09	1.59%
Obese	03	0.53%
Total	564	

TABLE 2: Age based prevalence of Underweight, Overweight and Obesity in Children

AGE	No. of cases	Underweight		Normal		Overweight		Obese	
		No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
10	39	04	10.25%	33	84.61%	2	5.13%	0	0
11	102	16	15.68%	83	81.37%	2	1.96%	1	0.98%
12	118	34	28.81%	81	68.64%	1	0.84%	2	1.69%
13	143	43	30.07%	99	69.23%	1	0.69%	0	0
14	130	25	19.23%	104	80%	1	0.77%	0	0
15	32	05	15.62%	25	78.12%	2	6.25%	0	0

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