

## Assessment of Obesity and Associated Risk Factor among 4 To 12 Years Children

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### Abstract

*Background:* In modern era obesity has become a serious issue. Worldwide increase in obesity has been noticed among children. Child obesity is associated with various risk factors and the key to prevention is identification of the risk factors. *Aim:* The aim of this study is assess obesity in 4 to 12 years old children and associated risk factors. *Materials and Methods:* 400 school going children aged between 4 to 12 years were selected for the current study. Samples were selected from both public and private school. Self-administered questionnaire was provided to the children. Childs height, weight, age were recorded. *Results:* Of the 400 children 200 were males and 200 females. Only 30% fathers and 23% mothers were post graduated. 38% children they never consume vegetables. Children who sleep less than 8 hours were more prone to obesity. Obese parents were more likely to have obese children (50%). *Conclusion:* Obesity is an alarming situation and should not be ignored. Proper attention, care and motivation can help to prevent obesity. Risk factors like excess sleep duration, lifestyle, parents BMI should not be ignored.

**Keywords:** Obesity; Overweight; School Children; Risk Factors.

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### Introduction

Obesity among children is as serious public health issue. Recently prevalence of obesity has increased worldwide [1]. Keding et al reported that, obesity and its consequence have become a challenge similar to hunger and under nutrition for many developing countries [2]. The increase in prevalence of obesity globally is probably due to changing economic status, dietary habits and lifestyle. Various authors suggested that overweight in children is increasing in developing countries, and is high in developed countries [3,4].

Obesity is associated with various outcomes like psychological and physical effects during childhood and also increased risk of adult obesity. Increased risk of obesity in adulthood is a major risk factor for cardiovascular diseases, diabetes, hypertension and cancers [5]. Obesity in childhood can lead to various serious issues like premature death, type 2 diabetes, hypertension and - lipidemia, cardiovascular disease,

asthma and sleep apnea, lower self-esteem [6-10]. None of the risk factors occur in isolation, a combination of risk factors are evident. So, we aimed to assess the obesity and associated risk factor among 4 to 12 years children.

### Materials and Methods

A school based cross-sectional study design was employed using quantitative method to assess the level of childhood obesity. 400 children aged between 4 to 12 years were selected for the study. Samples selected were from both public and private school. A written informed consent was obtained from parents before initiating the procedure. Parents were explained in detail regarding the purpose, procedure and importance of the study. A self administered questionnaire was prepared and distributed among children. Bilingual language was preferred for the questionnaire for ease of understanding. The questionnaire comprised of socio-demographic

characteristics, physical activity, and sedentary life style factors, and dietary habits related questions. For children who could not answer about demographic data's, school record was used. Importance of filling the questionnaire was explained to children/parents/teachers.

#### *Inclusion Criteria*

1. Patients between the age group of four to twelve years.

#### *Exclusion Criteria*

1. Children with chronic illness
2. Patients with any mental disorder
3. Any systemic disease

Weight was measured with the help of UNICEF seca digital balance scale. Height was measured by asking children to stand erect. Heels, buttocks, scapula and occiput should touch the measuring board. Weight measurement was recorded to measurement 0.5 kg and height 0.1cm. Height and weight was measured barefooted. Things like books, box, exercise books, and bags were kept aside during the measurement.

#### *Data Analysis*

Data were collected, tabulated and subjected to analysis using Statistical Package for Social Sciences (SPSS) Version 15.0. Non parametric data has been represented as frequencies and percentages. Body Mass index (BMI) was calculated using Microsoft Excel 2013.

## **Results**

Of the 400 participants selected for the study 200 were males i.e. 50% and 200 were females i.e. 50%. Out of 400 children 200 belonged to private school

and 200 studied in public school (Table 1). In present study majority of the children i.e. 45% (180/400) fathers have received primary education, 120/400 have completed their post graduation i.e. 30% and 100/400 i.e. 25% were only educated till secondary school (Table 2).

Results observed in our study showed that of the 400 mothers 200 received primary education i.e. 50%, 84/400 received secondary education i.e. 21% and 116/400 were post graduated i.e. 29%. In present study mother were more educated than fathers (Table 2). In current study fruit consumption in a day among children showed following result, 184/200 children said they eat fruits one or two days per week i.e. 46%, 104/400 children answered they preferred fruits 3 or 4 days in a week. However 152/400 children said they never take fruits i.e. 38% (Table 3). The overall intake of fruits was found less in present study among children.

In our study 140/400 children said they never eat vegetable i.e. 35%. 204/400 said they take vegetables once or two days in a week i.e. 51%. 96/400 said they eat vegetable three or four days per week i.e. 24%. The overall intake of vegetables was found to be less common among children in current study (Table 4). 34% children said they slept more than 8 hours a day. Of the 400 parents 200 were found to be overweight i.e. 50% of parents. Parents who were obese were more likely to have obese children. 180/400 children i.e. 45% said their parents restrict them from eating (Graph 1). In present study only 180/400 children said they frequently ride bicycle i.e. 45% whereas 220/400 said they don't ride bicycle at all i.e. 55%. 112/400 children had an habit of evening walk i.e. 28% and 228 children i.e. 57% said they don't like to go for evening walk. 202/400 (50.5%) children were active in sports while 198 said they don't like to play (49.5%). Watching television was favorite time pass among children i.e. 52.5%, 48% preferred to read books (Table 5). In present study 20/40 children were of normal weight, 18/40 were obese i.e. 45% and 2/40 were underweight i.e. 5% (Graph 2).

**Table 1:** Demographic characteristics of participants

Characteristics	No. of Cases	Percentage
<b>Gender</b>		
Male	200	50%
Female	200	50%
<b>Type of school</b>		
Private	200	50%
Public	200	50%

**Table 2:** Parents education

Education	Father	Percentage	Mother	Percentage
Primary	180	45%	200	50%
Secondary	100	25%	84	21%
Post graduation	120	30%	116	29%

**Table 3:** Fruits consumption per week

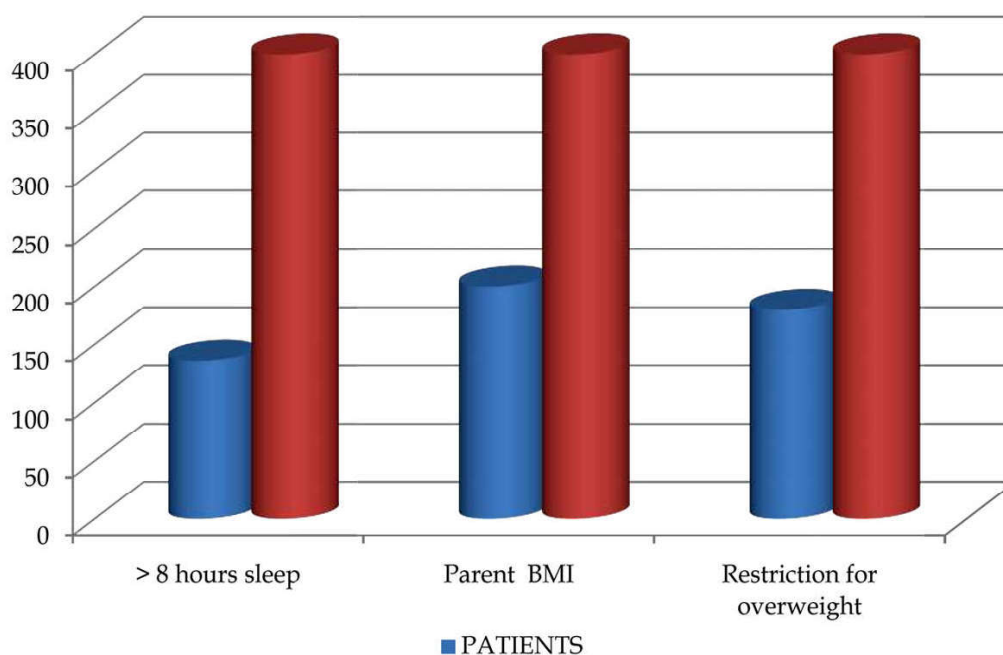
Days	Number of patients	Percentage
Never	152	38%
1-2 days/week	184	46%
3 or more days/week	104	26%

**Table 4:** Vegetables consumption per week

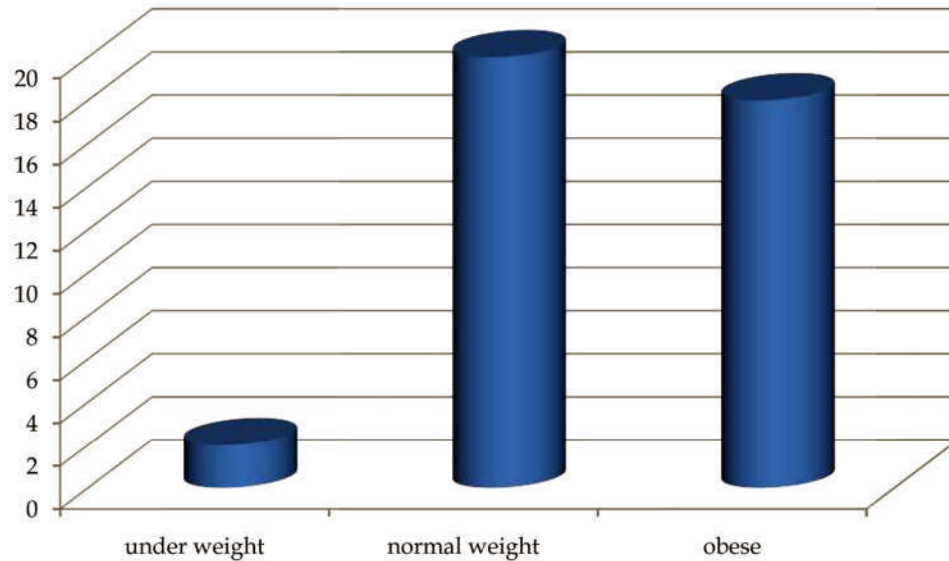
Days	Number of patients	Percentage
Never	140	35%
1-2 days/ week	204	51%
3 or more days/ week	96	24%

**Table 5:** Response on physical activity

Variables	Patients	Percentage
Bicycle ride for min 10 min	Yes-180 No-220	45% 55%
Evening walk	Yes - 112 No - 228	28% 57%
Sports activity	Yes - 202 No- 198	50.5% 49.5%
What do you do in free times?		
Television	210	52.5%
Reading books	180	45%
Computers	76	19%
Others	45	11.2%



**Graph 1:** Association between obesity and risk factors



Graph 2: BMI of children

## Discussion

The results of the present study indicate that the overall prevalence of obesity in present study was found to be 7.2%. Study reported by Desalew et al showed a prevalence rate of 5.8% which was lower than our study [11]. Whereas study reported by Dev DA et. al. reported a prevalence of 9.2% which was higher than our study [12]. Study reported by Sidhu S et. al. showed a prevalence rate of 10% [13]. The prevalence of overweight children was found to be higher among private school children than public school. Our results were in agreement with those reported by Hajian-Tilaki KO et. al. [14].

In present study only 30% fathers and 29% mothers were post graduated. 45% fathers and 50% mothers completed primary school. The overall education of parents was found to be less in current study. The association between obesity and parent's education was found to be significant in present study. Association between parent's occupation and obesity was not checked in present study. A strong association between night time sleep duration and obesity is been reported in literature by many authors [15,16]. In present study only 34% children slept more than 8 hours whereas 66% slept for shorter duration. Based on the evidence available short duration sleep is more likely to cause obesity. In present study a direct relation was evident between parent's obesity and children obesity. Various studies have reported that family environment; parents eating habits can influence children's dietary behaviors.<sup>17</sup>Fisher JO and

Birch LL in their study suggested that high levels of control over children's food intake have been linked to an urge of increased food intake among children. Based on the result of our study 45% children were frequently restricted by their parents for eating [18]. Based on the result of current study children who spent their free time by watching TV and reading books were obese than those who played outdoor games. 52.5% children spent time watching television. Only 45% children were active in bicycle riding 50.5% performed daily sports activity whereas only 28% had an regular habit of evening walk. Various authors have suggested that children who spent more time watching TV and playing computer were about four times more likely to be overweight and obese compared to those who spent their time reading [19,20]. Spending more time watching television reduced physical activity among children which further leads to obesity. Authors have suggested that increase in each hour of watching television increases prevalence of obesity by 2% [21].

Consumption of vegetables and fruits was found to be less common among children in present study. Children prefer junk foods and sweet beverages more than vegetables and fruits. Junk foods served are rich in carbohydrate and many studies have linked it directly with obesity in past [22]. Sweetened beverages are more liked by children; they are potential risk factors for obesity. Sweetened beverages can be consumed quicker due to its less filling nature, quicker consumption results in increased intake of calorie thus leads to obesity [23].

## Conclusion

This study revealed that approximately 1 in every twenty children is suffering from obesity. Parents as well as children lifestyle has a great impact on increasing prevalence of obesity. Proper dietary habits can help to prevent it. The key risk factors to obesity includes less sleeping hours, parents BMI and restriction on eating. Parents as well as school staffs should take an effort to motivate children for physical activities as well as healthy diet. Importance of a proper routine should be explained to children.

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