

ORIGINAL ARTICLE

PREVALENCE OF OBESITY IN SCHOOL CHILDREN OF HAZARA DIVISION

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**Background:** Limited data is available in Pakistan regarding prevalence of obesity in school going children. The objective of this study was to find out obesity prevalence in school going children in Hazara division. **Methods:** It was descriptive study. Data of 3200 students was collected over six month period, from Hazara Division. Four schools were selected in each district two for boys and two for females. District Kohistan was excluded from study as female education is not permitted beyond primary education. Children 5–14 year age group were included in the study. Initial 20 students of each class were selected for study. Anthropometric data (weight, height) for each student was collected and entered on Performa structured for this purpose. BMI was calculated and values were compared with standard BMI charts of National Health Centre for health statistics. **Results:** Prevalence of obesity was 4.78%. Out of 3,200 children enrolled 153 (4.78%) were obese. Male to female ratio was 1:1.2. The prevalence of obesity was high in private school students than government schools (66.66% and 33%). The prevalence was high in both sexes in 12–14 years and 6–7 years age groups (49% and 20.26%). **Conclusion:** Prevalence of obesity in present study is similar to the results from developing countries in the region but prevalence is lower than developed countries. Problem of obesity also exists in developing countries and there is need to create awareness about obesity and related complications.

**Keywords:** Obesity, BMI, Nutrition, Hazara, Children

INTRODUCTION

Childhood obesity is on the rise becoming global health problem. According to WHO, 22 million children under 5 years age are over weight.<sup>1</sup> Obesity is the result of excess body fat not simply excess body weight which can be muscle or fat.<sup>2</sup> Obesity is a chronic disease that is increasing in prevalence worldwide. Similar to adult obesity childhood obesity has become a serious threat to the public health.<sup>3</sup> Asia containing about 70% of world malnourished children is also facing problem of over weight children.<sup>4</sup> In the last two decades number of overweight children and adolescence has doubled in the United States and world wide including developing countries.<sup>5</sup> Excessive energy intake and reduced physical activity are world wide accepted contributing factors for childhood obesity.<sup>6</sup> Other contributory factors include obesogenic environment, genetic, cultural and racial factors.<sup>7</sup> Obesity in childhood has impacts on the health in both short term and long term.<sup>5</sup> Obesity, in addition to glucose intolerance and hypertension, is reported to be strongly associated with increased risk of premature death from endogenous causes.<sup>8</sup> Estimates of the prevalence of obesity will be helpful in determining magnitude of problem in selected population so that need for preventive measures can be assessed and high risk population groups identified.<sup>9</sup>

Present study was conducted to determine prevalence of obesity in school going children in different districts of Hazara Division.

MATERIAL AND METHODS

This is a descriptive study conducted in different schools of Hazara Division. Four schools were selected from each district two for boys and two for the girls from government and private sector public schools equally (200 subjects from each school). As there is no school for girls in private sector and girls are not allowed schooling after primary education Kohistan district was not included in the study. Children from 5 to 15 years age group were included in this study. Anthropometric measurements were recorded for each student. All the base line information (name, age, sex, address, weight, height, family history, socioeconomic history) were recorded on Performa. Weight and heights of parents and other sibs of obese children were also recorded. BMI was calculated from weight and height readings using formula (weight in kilograms/height in m<sup>2</sup>) and international cut off points were used to classify obesity.<sup>10</sup> Data was calculated using SPSS-10.

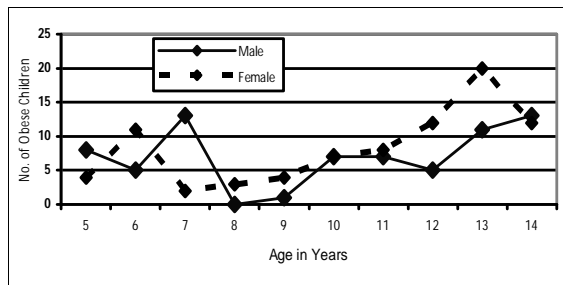
RESULTS

Study population included 3,200 children, 1,600 males and 1,600 females. Prevalence of the obesity was 4.78%. One hundred fifty-three (4.78%) were obese using the criteria of BMI >95<sup>th</sup> percentile for age and sex. Male to female ratio of obese children was 1:1.2. In individual districts prevalence of obesity was high (7.12%) in Haripur district and lowest (2.41%) in Battagram district. The prevalence

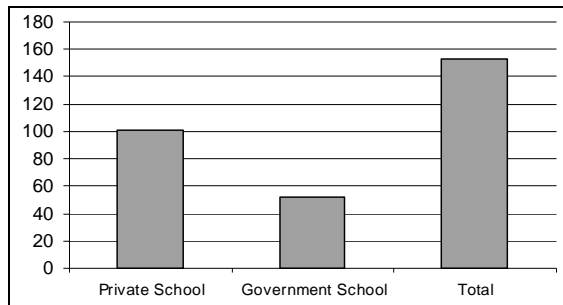
of obesity was high in private school children (66.66%) compared to children from government schools (33%). The prevalence of obesity was high in both sexes around adolescence, 49% in 12–14 year age group and 20.26% in 6–7 years age group.

**Table-1. Distribution of selected sample of students**

| Name of District | Male |         | Female |         |
|------------------|------|---------|--------|---------|
|                  | Govt | Private | Govt   | Private |
| Batagram         | 200  | 200     | 200    | 200     |
| Mansehra         | 200  | 200     | 200    | 200     |
| Abbottabad       | 200  | 200     | 200    | 200     |
| Hariipur         | 200  | 200     | 200    | 200     |



**Figure 1: Age-wise distribution of obese children**



**Figure-2: Distribution of obesity in Govt. and Private Schools**

## DISCUSSION

The prevalence of obesity has been reported differently in different studies. Although prevalence of obesity is less in this study when compared with developed countries, the results are comparable to the data from developing countries. The prevalence of obesity in year 2000 was 22% and 17.5% from West and East Germany respectively.<sup>11</sup> In study from Thailand the prevalence of obesity was reported 7.9% in 2–5 years age groups and 6.7% in 6–12 years age groups.<sup>12</sup> The prevalence of obesity in present study (4.78%) is comparable to the results published in India in year 2005 where prevalence of obesity and overweight was 6.57%.<sup>13</sup> Another study from India in 1995 reported prevalence of obesity 6.4%.<sup>14</sup> Regional differences of obesity were noted in school children from different districts. The prevalence of obesity was 3.2% and 2.4% from districts Mansehra and Battagram, while prevalence from districts

Abbottabad and Hariipur was 6.5% and 7.14%. Later districts are more developed than formers and children stay home most of the times watching television and using crispy foods and use transport for schools. Children from district Mansehra and Battagram have less privileged environment. Regional differences have also been reported from Saudi Arabia where prevalence of obesity was high (18%) in Riyadh and low (11.1%) in Sabea.<sup>15</sup> Social, cultural, ethnic, economic and nutritional factors are contributing factors.<sup>15</sup> The prevalence of obesity was high in females (54%) than males (45%) and obese females were concentrated in 12–14 years age group. The prevalence of obesity was high in private school children (66%) than government school children (33%). Increased trends of obesity in children from private schools has been reported from India.<sup>13</sup> This factor points towards better nutrition and socioeconomic condition of children from private schools.<sup>16</sup> Obesity is on the rise in most Asian countries associated with nutritional evolution.<sup>17</sup> Physical inactivity and unhealthy eating habits contribute to increased incidence of obesity.<sup>18</sup> This relationship is reversed in developed countries.<sup>19</sup> Genetic factors are also important<sup>20</sup>, as in this study the prevalence of obesity was high in the presence of other obese family members (parents or siblings).

## CONCLUSION

Protein calorie malnutrition is the common problem in our region. Keeping in mind the long term complications of obesity, including hypertension and diabetes mellitus, it is imperative to initiate steps for effective intervention at local and national levels.

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