

PREVALENCE OF THINNESS, OVERWEIGHT, AND OBESITY AMONG SCHOOL CHILDREN IN DISTRICT SWABI, KHYBER PAKHTUNKHWA, PAKISTAN

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Abstract

Overweight is defined as having a higher body weight in relative to height as equated to some standard or desirable weight norm. Being overweight can be initiated by an increase in fat in body or an increase in slender muscle. Obesity is frequently defined as a disorder characterized by unexpected or excessive fat buildup in adipose tissue to the point that health is jeopardized. It becomes clear that various kinds of childhood malnutrition, ranging from short stature (SS) and underweight to overweight, are rising worldwide health concerns that affect both industrialized and developing countries. In Swabi, the prevalence of obesity, overweight, and thinness remained unknown. The perseverance of this observance was to look at the prevalence of overweight, obese, and underweight children in Swabi on a nationwide scale. This cross-sectional survey was carried out between January and May of 2022. Body mass index (BMI) was used to calculate obesity and other weights. Bray's (1978) technique was used to compute BMI. $BMI = \text{Height in Kilograms}/(\text{Height in Meters}) = \text{kg}/\text{m}^2$. Our survey covers 303 kids from Tehsil Topi, 300 students from Tehsil Swabi, and 287 students from Tehsil Lahore. Various parameters were used, such as food, outdoor activities, family income, domicile, and so on. In district Swabi, the means of overweight kids were 36.16%, underweight pupils were 35.34%, and obese

students were 30.20%. Obesity, overweight, and thinness accounted for 33.9% of all students in district Swabi. Obesity was higher in Tehsil Topi (36.3%) than in Tehsil Swabi (29%) and lower in Tehsil Lahore (18.755%).

Key Word:

Thinness, overweight, obesity, prevalence, Swabi.

1. INTRODUCTION:

Obesity, thinness, and overweight are all related concepts. There is a wealth of evidence on the epidemic of childhood obesity in affluent countries, but there are fewer studies on the other extreme—thinness. Despite rising mean BMI, more kids and pubescent globally are reasonably or harshly underweight than obese [1]. Obesity is frequently defined as a disorder characterized by abnormal or excessive fat buildup in adipose tissue to the point that health is jeopardized [1]. Obesity is not an illness in and of itself, but rather a complex symptom of another. The numerous factors known to be connected with childhood obesity in terms of adult morbidity and mortality include increased plasma insulin levels, higher blood lipid and lipoprotein levels, and elevated blood pressure. Obesity is a key risk factor for a variety of chronic and non-communicable sicknesses [2]. Sedentary behavior and the eating of calorie-dense meals with low nutritional content may be the most important etiological variables contributing to the extremely high rate of pediatric obesity in developing countries [3]. Overweight is defined as having a higher body weight in family member to height as compared to some tolerable or desired weight norm. Overweight can be triggered by an increase in body fat or an increase in wiry muscle. Awareness of a balanced diet, improvements in education and socioeconomic situations, and greater physical exercise may all aid in the reduction of childhood obesity [4]. It is also advised that schoolchildren pass at least one hour of their program of study time engaging in reasonable somatic action; schools have largely overlooked the need of implementing physical activity opportunities [5]. Obesity is caused by an imbalance between our energy intake and output [6]. Overweight is one of the peak 10 health threats in the world, and one of the top five in industrialized countries, according to the World Health Organization (WHO) [7]. The United States Centers for Disease Control and Prevention (CDC) 2000 growth charts for ages 2 to 19 years are frequently used to describe overweight and obesity in children. A wide range and

number of risk factors for pediatric obesity have been found [8]. In 1990. By 2005, only six states had obesity rates lower than 20% [9]. Despite the fact that it comprises countries where the bulk of the population is malnourished, Pakistan is also experiencing an increase in childhood obesity. [10]. The prevalence of overweight and obese in Saudi Arabia's school student (20% boys and 11% 19 girls), and other gulf states have similar patterns. For example, in the United Arab Emirates, around 16.5% boys and 16.9% of girls, are obese and overweight [11]. Obesity in children has also become a community health problem in nations such as India, where there has been a large upturn in the proportion of overweight and obese children, predominantly in urban areas [12]. The obesity prevalence among adults (25-44 years) in rural areas of Pakistan was 9% among men and 14% among women [13]. However, the prevalence of obesity was significantly higher in municipal areas, with males 22% and women 37% of obese [14]. According to a study accompanied in polar region of Pakistan, the age familiar prevalence of overweight and obesity is around 13.5% for men and 14.1% for women, with a rise in prevalence every year for both men and women [15] According to a recent study, a quarter of Pakistan's inhabitants would be classified as overweight or obese if Indo-Asian BMI cutoff values were used [16] Mansur DI et al, discovered that according to conventional BMI for age (thinness), 19 (11.25%) male and 24 (9.2%) female children were thin out of 428 youngsters. As a result, it was discovered that the prevalence of thinness was slightly higher among male children than female youngsters. There was a statistically significant difference ($p < 0.05$) [17].

The aim of the current study is to know about the prevalence of underweight, overweight and obesity among school going children of district Swabi, KP, Pakistan.

2. METHODS AND MATERIALS

2.1. Study Area:

The study was carried out in different government and private schools of District Swabi, Khyber Pakhtunkhwa. Swabi is Khyber Pakhtunkhwa's fourth most populous district. The Swabi District was established on July 1, 1988. It had formerly been a Tehsil of the Mardan District since its inception in 1937. The total population of district swabi was 1,625,477 according to 2017 census. The total area of the District is 1,543 square Kilometres [18].

2.2. Sample size and sample selection criteria:

In the present study, data were collected from school going children of 6-11 years' age from three tehsils of district Swabi. A total of 300 from tehsil Topi, 180 children from Tehsil Swabi and 287 children were added from Tehsil Lahore.

2.3.Data collection:

In this study, a multistage random sampling procedure was used. Initially, random samples were drawn from each government school in each of these Tehsils using the El-said *et al.* approach. Each individual's age, gender, place of residence, and so on were recorded. Food preparation, consumption patterns, and activity level were also documented. Students were chosen based on their seating arrangement in the classroom. Data was gathered from pupils who had given their permission.

2.4.BMI calculations:

Obesity and other weights were evaluated using body mass index (BMI). Bray's (1978) technique was used to compute BMI. $BMI = \text{Height in Kilograms} / (\text{Height in Meters})^2 = \text{kg/m}^2$

Prior to measurement, the instruments were calibrated in accordance with the standard preparation. Measured weight by using a weight-scale steadiness to the bordering 160 kg with pupils clothed in light clothing and without shoes. Height was measured to the closest 2m with an inch tap. BMI was defining as the ratio of body weight to body height squared, given in kilograms per square meter.

2.5.Criteria of the IOTF

The BMI was calculated by using IOTF criteria (weight in kg/height in meter square). Normal, underweight, overweight, and obese children were classified.

3. RESULTS

The study shows the prevalence of underweight, overweight and obesity. In the present study the total underweight children were 35.34%, overweight was 36.16% and obese were 30.20%. In tehsil Topi; a total of 43.80% of students are underweight, 46% overweight and 36.36% are obese, in tehsil Swabi; the underweight are 28.21%, overweight is 29.26% and the obese children

are 29% & in tehsil Lahore; the underweight are 34%, overweight children are 33.17% and the obese are 18.75%.

The various parameters were checked to assess the prevalence of underweight, overweight and obesity among school going children of district Swabi. The prevalence of underweight, overweight and obesity were 3.25%, 24.5%, and 71.87% respectively. While, the students eating the sweets were 5.81% underweight, 15.04% overweight, and 6.25% obese. The eaters of the fruit are 10.25% underweight, 13.15% overweight, and 4.17% obese children. The children eating soft food were 2.44% underweight, 20.01% overweight and 4.17% obese. The sweets eaters that are underweight, overweight, and obese children were 5.80%, 15.04% and 6.25% respectively. The children having a low-income father are 34.12% underweight, 49.07% overweight, and 37.41% obese children. The prevalence in children performing outdoor activities were 40.76% underweight, 27.18% overweight, and 6.25% obese. The flow among the children belonging to rural areas were 70.65% underweight, 69.44% overweight, and 75% obese while the children from urban areas were 62.68% underweight, 63.88% overweight, and 58.33% obese. The vegetable-eaters were 58.74%, 17.82% and 6.25% children underweight, overweight, and obese respectively. 93.72% of underweight children lunch at home while 6.25% outside, 82.64% of overweight children launch at home, and the rest 17.36 outside and 30.20% of obese children launch at home and 69.80% outside the home.

| Characteristics | Tehsil Topi | | | Tehsil Swabi | | | Tehsil Lahore | | | Total Mean | | |
|---------------------|-------------|--------|-----------|--------------|--------|-----------|---------------|--------|-----------|------------|---------|------------|
| | UW (%) | OW (%) | Obese (%) | UW (%) | OW (%) | Obese (%) | UW (%) | OW (%) | Obese (%) | UW Mean | OW Mean | Obese Mean |
| Fast food | | | | | | | | | | | | |
| Yes | 5.99 | 24.54 | 100 | 2.71 | 23.955 | 43.75 | 1.05 | 25 | 0 | 3.25 | 24.5 | 71.88 |
| No | 93.95 | 80 | 0 | 97.28 | 76.04 | 56.25 | 98.95 | 75 | 100 | 96.72 | 75.5 | 28.13 |
| Eating Sweet | | | | | | | | | | | | |
| Yes | 5.92 | 25 | 0 | 2.175 | 14.58 | 18.75 | 9.32 | 5.56 | 0 | 5.81 | 15.04 | 6.25 |
| No | 94.05 | 75 | 100 | 97.82 | 85.42 | 81.25 | 90.80 | 94.44 | 100 | 94.23 | 84.95 | 93.75 |
| Fruits | | | | | | | | | | | | |
| Yes | 5.19 | 20 | 0 | 5.98 | 8.33 | 12.5 | 21.30 | 11.11 | 0 | 10.82 | 13.15 | 4.17 |
| No | 94.75 | 80 | 100 | 94.02 | 91.66 | 87.5 | 78.70 | 88.89 | 100 | 89.17 | 86.85 | 95.83 |
| Soft food | | | | | | | | | | | | |
| Yes | 1.88 | 25 | 0 | 2.71 | 17.30 | 6.25 | 2.72 | 17.705 | 6.25 | 2.437 | 20.00 | 4.17 |
| No | 98.11 | 75 | 100 | 97.28 | 82.29 | 93.75 | 97.28 | 82.29 | 93.75 | 97.55 | 80.00 | 95.83 |
| Sweets | | | | | | | | | | | | |
| Yes | 5.92 | 25 | 0 | 2.17 | 14.58 | 18.75 | 9.32 | 5.56 | 0 | 5.80 | 15.04 | 6.25 |
| No | 94.08 | 75 | 100 | 97.82 | 85.42 | 81.25 | 90.67 | 94.44 | 100 | 94.20 | 84.96 | 93.75 |
| Father's | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---------------------------|--------|------|-----|-------|-------|-------|-------|--------|------|-------|-------|-------|
| income (low) | | | | | | | | | | | | |
| Yes | 35.65 | 87.5 | 100 | 25 | 20.83 | 12.25 | 41.7 | 38.89 | 0 | 34.12 | 49.07 | 37.41 |
| No | 66.415 | 12.5 | 0 | 75 | 79.16 | 87.25 | 58.3 | 61.11 | 100 | 65.88 | 50.93 | 62.59 |
| Outdoor activities | | | | | | | | | | | | |
| Yes | 59.95 | 25 | 0 | 11.97 | 17.70 | 18.75 | 50.35 | 38.85 | 0 | 40.76 | 27.18 | 6.25 |
| No | 40 | 75 | 100 | 89.53 | 82.30 | 81.25 | 50.65 | 61.115 | 100 | 59.24 | 72.82 | 93.75 |
| Residence | | | | | | | | | | | | |
| Rural | | | | | | | | | | | | |
| Yes | 100 | 100 | 100 | 55.98 | 54.16 | 62.5 | 55.98 | 54.16 | 62.5 | 70.65 | 69.44 | 75 |
| No | 0 | 0 | 0 | 44.02 | 45.83 | 37.5 | 44.02 | 45.83 | 37.5 | 29.34 | 30.56 | 25 |
| Urban | | | | | | | | | | | | |
| Yes | 100 | 100 | 100 | 44.02 | 45.83 | 37.5 | 44.02 | 45.83 | 37.5 | 62.68 | 63.88 | 58.33 |
| No | 0 | 0 | 0 | 55.98 | 54.16 | 62.5 | 55.98 | 54.16 | 62.5 | 37.32 | 36.12 | 41.66 |
| Vegetable eating | | | | | | | | | | | | |
| Yes | 67.705 | 0 | 0 | 70.10 | 31.25 | 18.75 | 38.42 | 22.22 | 0 | 58.74 | 17.82 | 6.25 |
| No | 32.295 | 100 | 100 | 29.90 | 68.75 | 81.25 | 61.58 | 77.78 | 100 | 41.26 | 82.18 | 93.75 |
| Place of lunch | | | | | | | | | | | | |
| Home | 93.65 | 75 | 0 | 87.50 | 72.92 | 68.75 | 100 | 100 | 100 | 93.72 | 82.64 | 56.25 |

| | | | | | | | | | | | | |
|-------------------|-----|----|-----|-------|-------|-------|---|---|---|------|-------|-------|
| Restaurant | 6.3 | 25 | 100 | 12.50 | 27.08 | 31.25 | 0 | 0 | 0 | 6.28 | 17.36 | 43.75 |
|-------------------|-----|----|-----|-------|-------|-------|---|---|---|------|-------|-------|

Table shows the overall samples collection from District Swabi.

4. Discussion:

According to our findings, total obesity was 30.20% and overweight was 36.16% in districts Swabi, which diverges from a study accompanied in 2011 in Lahore (Pakistan) comprising 1860 primary school children that found 17% of children aged 5 to 12 were overweight and 7.5% were obese. Currently, due to the effortlessness of access to foodstuff and minimal bodily activity, as well as the globalization of managed food and fast food, because it is much low-priced than hale and hearty food, expansion, and socioeconomic status (are the factors), a quarter of Pakistan's population is overweight according to Asian specific BMI. A study published in the Khyber Medical University Journal found that students were 16.2% obese and 15% overweight, specifying that Pakistan's younger generation is at heightened risk of death and indisposition due to obesity-related difficulties and disease [19]. Overall, 75% of rural children were obese, with 69.44% being overweight. and the urban children were 58.33% obese and 63.885 overweight; a parallel study conducted by Saraswathi et al among Mysore children indicated that the prevalence of overweight and obesity was 10 times greater among urban children than rural children (8.75% vs. 0.8%) [20]. According to the research in cities, obesity is higher (56% of men and 67% of women) than in rural areas. It is also on the rise among young people. According to 2013 figures, it was 10%, which is a staggering level. Obesity claimed the lives of nearly 3.4 million individuals in 2010 [21]. The revision by Goyal et al and Kotian *et al* also directed toward a higher prevalence of overweight and obesity among children of upper and middle socioeconomic status [22]. The 6.25% of obese, 27.18% overweight, and 40.76% underweight children were involved in outdoor activities in our sampling that was also reported in other studies [23]. Reduced somatic activity at school is knowingly related to overweight and obesity.

Conflict of Interest:

The authors declare no conflict of interest regarding the data presented in the manuscript

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