



## A STUDY ON PREVALENCE OF OVERWEIGHT AND OBESITY IN SCHOOL CHILDREN FROM SALEM

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### ABSTRACT

**Aim:** (1) To measure the height, weight and body mass index (BMI) of school children from salem and develop charts as appropriate for age, gender and socio-economic status.(2) To find out the prevalence of overweight and obesity in school children from low and uppers socioeconomic status (LSES and USES respectively).

**Studydesign:** Cross sectional study

**Methods:** Government schools (non-fee paying) and Private Schools (fee paying) in salem . 484 children, 242 (122 boys, 120 girls) from government schools and 242 (124boys, 118 girls) from private schools. Methods: Assessment of height and weight and calculation of BMI were done for all children . Children were classified as normal, overweight and obese as per IOTF guidelines. Prevalence of overweight and obesity was assessed and analysed between the two socio-economic groups.

**Results:** A significant difference was noted in height, weight and BMI between LSES and USES. Overweight and obesity prevalence of in upper socio economic group children was 17.5% and 7.1% in boys and 8.1% and 3.2% in girls respectively.

**Conclusions:** There is a significant variation in anthropometric measurements between children from USES and Lower socio economic group, with a high prevalence of overweight and obesity in USES children.

**KEYWORDS :** School children, Socioeconomic status BMI, Obesity, Overweight,.

**Background:** There has been an increase in the percentage of overweight and obese children in affluent urban families of India in the past decade. Evaluation of obesity in children is important as it provides an opportunity to identify the problem and prevent disease progression into adulthood. Childhood obesity is associated with several risk factors for later heart disease and other chronic diseases including dyslipidemia, hyperinsulinemia, and hypertension BMI is widely used in adult population to define obesity and a cut off point of 30 kg/m<sup>2</sup> is recognized internationally as a definition of adult obesity and 25 kg/m<sup>2</sup> as a cut off for overweight. There has been a trend towards increasing prevalence of overweight and obesity among developing countries. It is becoming obvious that these disorders starts in childhood, with progression to childhood obesity. In recent years, Type 2 diabetes is seen even in children. This study was aimed at to evaluating in detail, the spectrum of childhood obesity and compare the prevalence in two different socio-economic strata.

**Aim :** (1) To assess the height, weight and body mass index (BMI) of school children from government and private school of Salem and generate charts as appropriate for age, gender and socio-economic status.(2) To determine the prevalence of overweight and obesity in school children from low and uppers socioeconomic status (LSES and USES respectively).

**Methods.** period : January 2017 to December2017. : Study design: Cross sectional study. School children from both sexes in the age group of 5-15 years, belonging to Government and Private Schools in Alagapuram of Salem District. The Government school children were to represent the LSES group, while those studying in Private schools were considered representative of the USES. A prior consent for the study was taken from the school administration and from the parents. At the time of initiating the study the parents of each participant were informed about the study protocol and gave written consent to their children's participation. Inclusion criteria: School children of age group 5 – 15 years of both sex in government and private school except those mentioned in exclusion criteria .Exclusion criteria Short Stature Hypothyroidism Malnourished children Procedure: Height was measured to the nearest 0.1 cm using a stadiometer with the subject standing

straight with head held in Frankfurt horizontal plane. Children weight, with bare foot and with light garments on was measured to the nearest 0.1 kg, using an electronic scale. Height and weight measurements were taken twice and the mean of two measurements was used to calculate BMI, which was defined as the ratio of body weight to body height squared, expressed in kg/m<sup>2</sup>. The cut off values of BMI, at each age and for each gender obtained by Cole, *et al.* were used to classify children as Normal, Overweight and Obese. An analysis of the prevalence of overweight and obesity in LSES and USES was done for each age group for both sexes.

**Results:** A total of 484 children in the age group 5 to 15 years were evaluated for height, weight and BMI. These included 242 (122 boys, 120 girls) from the Government school. and 242 (124 boys, 118 girls) from the Private School . Charts for height, weight and BMI were constructed separately for Government school LSES and Private School children USES. Children from Government school- LSES were significantly shorter compared to those belonging to Private School USES. This difference is seen for each age category, for both the sexes. *Tables 1&2* depict the BMI for boys and girls for both socio economic groups. Children from Government school- LSES weighed significantly less compared to those from Private School - USES.. The BMI for children from Government school LSES, were significantly lower than those from private school

Children from both socioeconomic groups were categorized on the basis of BMI into normal, overweight and obese, as per the cut offs provided by Cole, *et al.*. The prevalence of overweight and obesity among the Government school boys was 8.5% and 0.7% respectively and among boys from Private School was significantly higher at 17.5% and 7.1 % respectively (P <0.05). Similarly, the prevalence of over weight and obesity among the LSES schoolgirls was 3% and 0.5% as compared to 8.1% and 3.2% respectively among girls from USES (P < 0.05). Children from 6 years of age started showing an increase in BMI, with 8.6% being overweight and 2% obese in this age group. Among the different age groups, 11-15 years old USES boys (18.5% overweight) and 6-10 year old Private School - USES girls (17%) showed higher prevalence of overweight

compared to other age groups. To summarize, children from Private School USES were significantly taller and heavier and consequently had a significantly higher BMI compared with their age matched counterparts from LSES Government school children. A higher prevalence of overweight and obesity were seen in USES, starting as early as 6 years of age.

**Table:1**

| Govt_Age * Govt_BMI Cross tabulation |       |               |             |             |     |       |
|--------------------------------------|-------|---------------|-------------|-------------|-----|-------|
|                                      |       | Govt_BMI LSES |             |             |     | Total |
|                                      |       | <18.50        | 18.50-24.99 | 25.00-29.99 | >30 |       |
| Govt_Age                             | 0-5   | 29            | 0           | 0           | 0   | 29    |
|                                      | 6-10  | 88            | 60          | 2           | 1   | 151   |
|                                      | 11-15 | 1             | 33          | 26          | 2   | 62    |
| Total                                | 117   | 93            | 28(11.5%)   | 3(1.2%)     | 242 |       |

**Table: 2**

| Private_Age* Private_BMI Cross tabulation |       |                  |             |             |     |       |
|---|-------|------------------|-------------|-------------|-----|-------|
|   |       | Private_BMI USES |             |             |     | Total |
|   |       | <18.50           | 18.50-24.99 | 25.00-29.99 | >30 |       |
| Private_Age                               | 0-5   | 25               | 4           | 0           | 0   | 29    |
|   | 6-10  | 52               | 73          | 21          | 5   | 151   |
|   | 11-15 | 0                | 1           | 41          | 20  | 62    |
| Total                                     | 77    | 78               | 62(25.6%)   | 25(10.3%)   | 242 |       |

**Conclusion:**

A Significant variation was noted in anthropometric measurements between children from Government school -USES and Private School- LSES, with a high prevalence of overweight and obesity in Private School- USES children

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