

Prevalence of Overweight and Obesity in School Children in Delhi

We conducted a cross-sectional study to document the prevalence of overweight and obesity in children belonging to low and middle socioeconomic groups in Delhi. The list of all the schools in low income group (LIG) category with their total enrollment was obtained from the Government of Delhi. Using PPS (population proportionate to size) methodology, 30 schools/clusters were selected. All children in the age group of 5-18 years were enlisted and with the help of random number tables, 170 children were selected from each school for the purpose of study. Similar methodology was adopted for selection of children from Middle Income Group (MIG). All the Government schools in Delhi were considered to be in LIG category, while all Kendriya Vidyalayas were under the MIG category.

Each child was briefed about the objectives of the study. Written informed consent was obtained from parents of the subjects. This study was linked with the annual health examination. The study protocol was approved by ethical committee of All India Institute of Medical Sciences (AIIMS), New Delhi.

Anthropometric measurements of weight, height and skinfold thickness were recorded utilizing the standard equipments and methodology(1). International Obesity Task Force (IOTF) classification

given by Cole, *et al.*(2) was utilized for the estimation of overweight and obesity in subjects. Prevalence of overweight and obesity was also assessed by triceps skin fold thickness measurement and the Must, *et al.*(3) classification was used for estimating the prevalence of overweight and obesity.

In the LIG category a total of 5087 children were included in the study. Of these, 47% were males. According to IOTF classification, the prevalence of overweight and obesity was 0.2% and 1.4% respectively and as per Must, *et al.* classification, the prevalence of obesity and overweight was 1.0% and 2.4% (**Table I**). Similarly, from MIG category 5134 children were included in the study. Of these, 53% were males. According to IOTF classification, the prevalence of overweight and obesity was 0.6% and 6.7% respectively and as per Must, *et al.* classification, the prevalence of obesity and over-weight was 2.5% and 5.4%, respectively (**Table I**).

The present study documented that the prevalence of overweight and obesity was higher in the MIG children as compared to LIG for all the age groups.

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TABLE I PREVALENCE OF OVERWEIGHT AND OBESITY AMONGST SCHOOL AGE CHILDREN ACCORDING TO SOCIOECONOMIC GROUPS

| Criteria used for defining obesity | LIG (n=5087) | | | | MIG (n=5134) | | | |
|------------------------------------|-------------------|----------|--------------------|----------|-------------------|----------|--------------------|----------|
| | 5-10 yrs (n=1946) | | 11-18 yrs (n=3141) | | 5-10 yrs (n=2244) | | 11-18 yrs (n=2890) | |
| | Overweight | Obesity | Overweight | Obesity | Overweight | Obesity | Overweight | Obesity |
| BMI | 31 (1.6) | 4 (0.2) | 41 (3.1) | 3 (0.2) | 130 (5.8) | 8 (0.4) | 217 (7.5) | 23 (0.8) |
| TSFT | 27 (1.4) | 17 (0.8) | 94 (3.0) | 35 (1.1) | 72 (3.2) | 74 (3.3) | 206 (7.1) | 75 (2.6) |

Abbreviations used: *BMI: Body Mass Index; TSFT: Triceps Skin Fold Thickness; LIG: Low Income group; MIG: Middle Income Group*

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Universal Newborn Screening for Congenital Hypothyroidism

Universal screening of all neonates has for long been recognized as the most effective method to prevent the severe developmental and physical morbidities associated with congenital hypothyroidism(1). However, despite its proven community benefits, for health planners in India, this newborn screening program remains a low priority.

Screening of neonates for congenital hypothyroidism (CH) was commenced at the Malankara Orthodox Syrian Church Medical College, Kochi in October 2006. The blood is sampled between 72-120 hours of life by heel prick, on to 'Three' pre-marked circles of 1 cm diameter on Schleiecher and Schuell specimen collection filter paper, air dried and TSH levels estimated by Sandwich Enzyme Linked Immunoassay using Bio-rad® Quantase™ kit. TSH levels less than 10 mU/L were considered normal, 10-20 mU/L considered borderline and >20 mU/L as abnormal(2). The cost per TSH screening test was Rs 85/-.

Infants with TSH values ≥ 10 mU/L were reassessed by measuring a 'formal' serum T4 and TSH by ELISA (Lilac®). Those with formal serum TSH ≥ 20 mU/L and T4 < 7 $\mu\text{g/dL}$ were considered as hypothyroid and included for the present analysis. These infants were immediately commenced on thyroxin replacement therapy of 10-15 $\mu\text{g/kg/day}$ (3). Infants with borderline T4 or TSH values were followed up at biweekly to monthly intervals, until both T4 and TSH levels reached normal levels or serum T4 estimates dropped to hypothyroid levels. 2964 term babies were screened by heel prick over a

12 month period between 1st October 2006 and 30th September 2007. 2872 of these were inborn and were considered for calculating the hospital based incidence of CH. TSH values were ≥ 10 mU/L in 106 infants. Serum T4 and TSH assay confirmed neonatal hypothyroidism in 6 of them. All of them were inborn infants. The study revealed congenital hypothyroidism incidence of 2.1 per 1000 (6/2872) amongst inborn term infants, much higher than the incidence of 1 in 4000 reported in Western literature and 1 in 1700 from other regions of India(4,5). The better pick up rate and the lower costs makes TSH assay a better screening tool than T4 assessment(2,4).

Despite the overwhelming evidence of a high prevalence of congenital hypothyroidism in India, this eminently treatable cause for developmental delay and mental retardation continues to await a credible universal screening program. We believe that the filter paper method for TSH assessment is a viable option for the 'universal screening' of newborns for congenital hypothyroidism in India. How long do we have to wait before a mandatory screening program is implemented in our country?

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