

Obesity and its Complications Among Suburban Schoolchildren

Childhood obesity is escalating at an alarming rate throughout the world. The present study aimed to estimate the prevalence of obesity in children attending government schools in Navi Mumbai, India, and to assess the associated dietary habits and lifestyle patterns.

This cross-sectional study was conducted in 2010-2011 among children (age 5-15 years) going to suburban schools, attending the pediatric outpatient department of our hospital as part of periodic school health check-up program. Written informed consent was obtained from the head of the respective institutions who had obtained prior approval of the parents through school diary. The study protocol was approved by the Institute Ethics Committee. Children diagnosed to be obese due to endogenous causes or those on long term medications such as steroids and hormone preparations were excluded. Children with syndromic features were also excluded. A total of 1682 students were included in the study. Weight (electronic scale, sensitivity 0.1 kg) and height (stadiometer, sensitivity 1 mm) were recorded and body mass index (BMI) was calculated. Children were categorized into undernourished, normal and obese based on BMI percentile less than 5th, 5th and 95th, and >95th, respectively-based on nomogram with respect to their age and sex. Their diet pattern, physical activity and television viewing was also recorded. Fasting blood samples were taken from 66 obese children for blood sugar, lipid profile, C-reactive protein (CRP), liver transaminase, thyroid function tests and serum insulin levels. The statistical analyses were done with SPSS.

Prevalence of obesity was 9.3%, with male preponderance. Fifty percent of obese children consumed excess calories with significantly (<0.001) more calories in dinner, and higher intake of junk food. Obese children watched television for significantly more time than non-obese children (82 vs. 56 min; $P<0.002$). History of asthma was found to be more common ($P<0.001$) in obese (6.7%) as compared to non-obese children (0.7%). Out of 66 obese children, two had impaired glucose tolerance, and none had overt diabetes. All obese children had high serum fasting insulin levels indicating insulin resistance. Total cholesterol was

borderline elevated in 10 (15.1%), and high in 4 (6.1%) children. Triglycerides was borderline elevated in 12 (18.1%) and high in 7 (10.6%) children and LDL was borderline elevated in 10 (15.1%) and high in 6 (9.1%) children. HDL level was borderline in 19 (28.8%) children and low in 5 (7.5%) children. Two (3.0%) children had a low T3, and 1 (1.5%) child had a low T4; TSH was high in 7 (10.6%) children. Liver transaminases were within normal range in all children.

The prevalence of childhood obesity varies from 4.5 to 45% in different parts of the world [1,2]. Consumption of junk foods and snacking in between the meals increase the likelihood of obesity [3]. Hyperinsulinemia, insulin resistance and deranged lipid profile is common in obese children [4,5]. Elevation of TSH is also frequently found in obese children, and is reversible after weight loss [6].

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