

A Preliminary Study on the Prevalence of Obesity and Assessment of Insulin Resistance in Overweight and Obese Adolescents

M.P. De Silva, W.M.E.T. Wijesooriya, K. Kandeepan, S. Balakumar and V. Arasaratnam
Department of Biochemistry, Faculty of Medicine, University of Jaffna, Sri Lanka.

The increase in the trend of chronic diseases linked to the nutrition transition and associated dietary & lifestyle changes are of growing concern in Sri Lankan adolescents. Aim of this study was to determine the prevalence and assessment of insulin resistance in overweight and obese adolescents attending National Schools (*n*4) in Jaffna zonal division of Education. This was a cross-sectional descriptive study and a total of 1659 adolescents [754 (45.4%) males] were selected. Anthropometric measurements (height and weight) were measured. The Body Mass Index (BMI)-for-age was used to derive overweight (BMI-for-age >+1SD) and obese (BMI for age >+2SD) adolescents. Fasting plasma glucose and Insulin were measured. Insulin resistance test was performed by using HOMA-IR calculator. The prevalence of overweight was 7.23% (*n*=120). The trend in prevalence of overweight was significantly increased with age (the Pearson's correlation, $p < 0.05$). Of the total of 120 students, 45 (37%) have responded for further biochemical assessments. Among the 45 students, 19 (42.2% %) were males. The mean (\pm SD) fasting plasma glucose, fasting plasma insulin and insulin resistance were 77.45 (\pm 11.84) mg/dL, 13.88 (\pm 5.86) μ IU/mL, 2.705 (\pm 1.27) for males and 104.19 (\pm 15.41) mg/dL, 16.89 (\pm 9.43) μ IU/mL, 2.98 (\pm 1.75) for females respectively. Of the 45 students, 13.34% of the students were affected with impaired Insulin sensitivity and 42.22% had high insulin resistance. The mean fasting plasma glucose level was significantly lower in males (77.45 mg/dL) than in females (104.19 mg/dL) ($p < 0.05$). Mean fasting plasma insulin level was contrastingly higher for females (16.89 μ IU/mL) than the males (13.88 μ IU/mL) ($p < 0.05$). The mean insulin resistance was higher in females (2.9) than in males (2.7). In this study, the prevalence of overweight and obesity was high in adolescent students attending National schools, Jaffna. The overweight and obese adolescents showed higher insulin resistance and the females showed higher value than the males.

Keywords: Insulin resistance, Obese, Body Mass Index-for-Age, HOMA-IR, Plasma glucose