Underestimation of the prevalence of excessive body fatness in primary school children in Mauritius: assessment of body composition by isotope dilution technique

Background & Aims: Global estimates of overweight and obesity prevalence in children are based upon the World Health Organization (WHO) body mass index (BMI)-for-age. As part of the ROUND-IT Africa project (a cross-sectional multi-center study conducted in 11 countries) our aim was to validate the accuracy of WHO BMI-for-age as a means of assessing excessive body fatness in primary school children in Mauritius.

Methods: We studied 377 children (200 boys and 177 girls) aged 8-13 years and belonging to the two main ethnic groups –Indians (South Asian descent) and Creoles (African/Malagasy descent). Body weight was measured to the nearest 0.1 kg (using an electronic portable scale with the participant barefoot and wearing light clothes), height was measured to the nearest 0.1 cm using a stadiometer, and the BMI calculated. Z scores were calculated using WHO Child Growth Charts and WHO Reference 2007 Charts, and the cut-off value of BMI-for-age > +1SD (overweight) used to estimate excess fatness. Actual body fat was assessed from total body water measured by the isotope dilution technique using Deuterium oxide (D_2O), and excess fatness was determined using the criterion-referenced thresholds of >25% for boys and >30% for girls.

Results: The percentage of children with excess fat was found to be greater using reference (isotope dilution) method than using WHO BMI-for-age, namely 43% vs 34%. Overall, about 6% of boys and 12% of girls were misclassified (as normal fatness rather than excess fatness), and the proportion of misclassification being greater among Indians (9% boys and 13% girls) than among Creoles (2% boys and 8% girls). Furthermore, linear regression analysis of body fat% versus BMI-for-age reveals a significantly higher body fat% (by ˜ 4 units, p< 0.001) in Indians than in Creoles among boys, though not among girls.

Conclusions: The use of BMI-for-age cut-off points for classifying excess fatness needs to take into account both ethnicity and gender in order to avoid gross adiposity status misclassification in this population known to be at high risk for later development of type 2 diabetes and cardiovascular diseases.

Country

Mauritius

Institution

Ministry of Health and Quality of life

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