Childhood obesity classification systems and cardiometabolic risk factors: a comparison of the Italian, World Health Organization and International Obesity Task Force references.

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Background: Body Mass Index Italian reference data are available for clinical and/or epidemiological use, but no study compared the ability of this system to classify overweight and obesity and detect subjects with clustered cardiometabolic risk factors with international standards. Therefore our aim was to assess 1) the agreement among the Italian Society for Pediatric Endocrinology and Diabetology (ISPED), the World Health Organisation (WHO) and the International Obesity Task Force (IOTF) Body Mass Index cut-offs in estimating overweight or obesity in children and adolescents; 2) the ability of each above-mentioned set of cut-points to detect subjects with cardiometabolic risk factors.

Methods: Data of 6070 Italian subjects aged 5-17 years were collected. Prevalence of normal-weight, overweight and obesity was determined using three classification systems: ISPED, WHO and IOTF. High blood pressure, hypertriglyceridemia, low high density lipoprotein-cholesterol and impaired fasting glucose were considered as cardiometabolic risk factors.

Results: ISPED and IOTF classified more subjects as normal-weight or overweight and less subjects as obese as compared to WHO (p<0.0001) in the whole sample and in groups divided by gender and age. The strength of agreement between the three methods compared to each other was excellent for overweight (including obesity) definition (k> 0.900), while it differed for obesity definition, ranging from the highest agreement between ISPED and IOTF (k 0.875) to the lowest between ISPED and WHO (k 0.664). WHO had the highest sensitivity, while ISPED and IOTF systems had the highest specificity, in identifying obese subjects with clustered cardiometabolic risk factors. Analogous results were found in subjects stratified by gender or age.

Conclusions: ISPED and IOTF systems performed similarly in assessing overweight and obesity, and were more specific in identifying obese children/adolescents with clustered cardiometabolic risk factors; on the contrary, the WHO system was more sensitive. Given the seriousness of the obesity epidemic, we wonder whether the WHO system should be preferable to the national standards for clinical practice and/or obesity screening.