

Metabolic syndrome, body composition and physical activity score in uruguayan school age children

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Background and Objectives:

The increase in overweight and obesity among children in Uruguay predict that more children are likely to develop Metabolic Syndrome (MS), increasing the risk to suffer cardiovascular disease and type2 diabetes mellitus.

The objective was to study body composition (%fat mass-%FM), the prevalence of MS components, and physical activity score (PAS) in overweight/obese (OW/O) and normal weight (NW) Uruguayan school children.

Methods:

Descriptive study of 77 children aged 6-9 of public schools in Montevideo. Measurements: BMI, waist circumference (WC,WHO), blood pressure (BP), fasting blood glucose (G), serum lipids, body composition by deuterium oxide dilution, and physical activity (Godard-Score). Diagnostic criteria for MS were: $WC \geq P90$, $AP \geq P90$, Triglycerides (Tg) ≥ 110 mg/dL, $c\text{-HDL} \leq 40$ mg/dl and $G \geq 100$ mg/dl. It was considered obesity when $BMI/age > +2SD$ and overweight $BMI/age > +1SD \leq +2SD$ (WHO,2007).

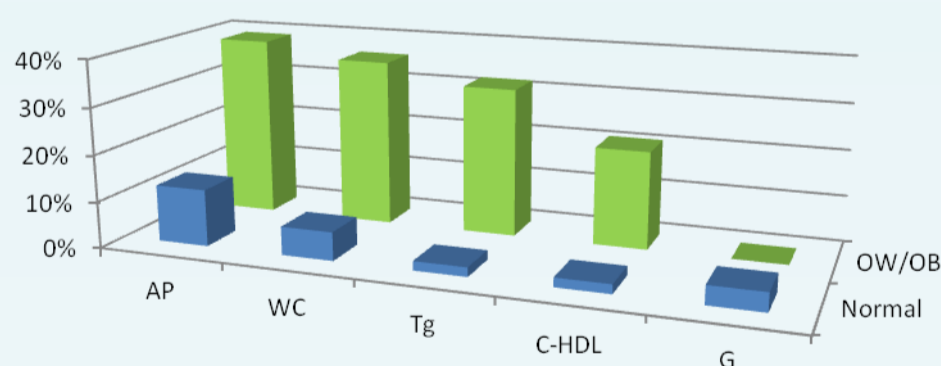
Results:

28 children with OW/O and 49 NW were studied. Table 1 shows mean values of MS components evaluated with significant p values. The prevalence of MS components altered in OW/O and NW is shown in Figure 1. The %FM was 28.5 ± 1.2 (95%CI 26.1;30.9) in OW/O and 21.8 ± 0.9 (95%CI 19.9;23.6) in NW ($p=0.00$). Differences in Physical Activity Score (4.7 ± 0.23 (95%CI 4.26;5.17) in NW, 4.9 ± 0.27 (95%CI 4.37;5.42) in OW/O) were not significant ($p=0.617$). The prevalence of the presence of one or more components of MS showed a positive trend with BMI/age and %FM.

Table 1: Mean values of MS components by nutritional status in 77 children. Montevideo 2012

Variable	Normal Mean \pm SE (IC 95% 57,3;59,9)	OW/OB Mean \pm SE (IC 95% 65,3;71,0)	P
WC	58,6 \pm 0,66 (IC 95% 57,3;59,9)	68,2 \pm 1,5 (IC 95% 65,3;71,0)	0,000
Tg	72,2 \pm 2,53 (IC 95% 67,3;77,2)	99,9 \pm 8,2 (IC 95% 83,8;115,9)	0,003
C-HDL	61,8 \pm 1,6 (IC 95% 58,6;65,0)	51,1 \pm 2,2 (IC 95% 46,8;55,3)	0,000

Fig 1: Prevalence of MS components by nutritional status in 77 children. Montevideo 2012



100% of children with three or more components of MS (n=6), had OW/O with average %FM 31.2 ± 2.5 (95%CI 26.2;36.1) vs. 22.9 ± 0.4 (95%CI 20.9;24.9) of children without MS components ($p=0.020$).

Conclusions:

The prevalence of MS components in children with OW/O is high at school age. The MS is strongly associated with OW/O and a fat mass $\geq 26\%$.

Partially funded by the International Atomic Energy Agency (IAEA).

Keywords:

Overweight / obesity, metabolic syndrome, body composition, physical activity.