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 type 2 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≥P90, AP≥P90, Triglycerides (Tg)≥110mg/dL, c-HDL≤40mg/dl and G≥100mg/dl. It was considered obesity when BMI/age>+2SD and overweight BMI/age>+1SD≤+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.

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≥26%.

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

<table>
<thead>
<tr>
<th>Variable</th>
<th>Normal Mean ± SE</th>
<th>OW/O Mean ± SE</th>
<th>P</th>
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<tbody>
<tr>
<td>WC</td>
<td>58.6 ± 0.66 (IC 95% 57.3;59.9)</td>
<td>68.2 ± 1.5 (IC 95% 65.3;71.0)</td>
<td>0.000</td>
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<tr>
<td>Tg</td>
<td>72.2 ± 2.53 (IC 95% 67.3;77.2)</td>
<td>99.9 ± 8.2 (IC 95% 83.8;115.9)</td>
<td>0.003</td>
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<tr>
<td>C-HDL</td>
<td>61.8 ± 1.6 (IC 95% 59.6;65.0)</td>
<td>51.1 ± 2.2 (IC 95% 46.8;55.3)</td>
<td>0.000</td>
</tr>
</tbody>
</table>

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).

Keywords:

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