Feasibility of a complex intervention to improve diet in Maltese children

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The high prevalence of childhood obesity in Malta is a challenging health problem. Schools can potentially be ideal for implementing successful dietary interventions when well designed. The main aim of this study was to assess the feasibility of a complex intervention to reduce sugar intake and increase water consumption in Maltese school children aged 9–11 years.

3 schools were recruited during the school year 2011–2012. This feasibility study used the Intervention Mapping Protocol² design and based the strategy on the recommendations laid out by the Medical Research Council guidelines for designing complex interventions³. The dietary outcomes were measured at school using the novel web-based 24-hour recall dietary assessment tool, REALITYMALTA⁴, developed at the Rowett Institute of Nutrition and Health, and further developed and validated for use in Maltese school children⁴. The study included an educational component by supplying a printed leaflet on reduction of sugars, particularly non-milk extrinsic sugars (NMES) and through interactive sessions for both parents and children⁵. It also included an environmental component through the free supply of water in the intervention classrooms for a period of twelve weeks. 48 children (30 boys, 18 girls) completed both the pre-intervention and post-intervention assessments. Food counts and nutrients results were then compared using Wilcoxon signed-rank tests and paired sample t-tests respectively. No significant differences were found for food counts, except for increased fruit consumption (p = 0.03). A statistically significant reduction was reported for energy intakes (kJ/day) (p = 0.03), and small (but non-significant) reductions (p > 0.05) were reported for fats (g/day), and NMES (g/day). Water consumption rates remained similar pre- and post-intervention (p = 0.49).

In conclusion, the reductions in energy, NMES and fats intakes reported in this feasibility study are encouraging, although only small changes were noted. These results could inform the design of a larger study of longer duration involving both intervention and control schools, whilst modifying the intervention design to ensure a positive effect for water consumption.


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<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Pre-Intervention Mean</th>
<th>S.D.</th>
<th>Post-Intervention Mean</th>
<th>S.D.</th>
<th>P Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy (kJ/day)</td>
<td>7733</td>
<td>2046</td>
<td>6809</td>
<td>2224</td>
<td>0.03*</td>
</tr>
<tr>
<td>Fats (g/day)</td>
<td>73.5</td>
<td>28.5</td>
<td>62.3</td>
<td>26.7</td>
<td>0.06</td>
</tr>
<tr>
<td>NMES (g/day)</td>
<td>84.4</td>
<td>38.4</td>
<td>75.2</td>
<td>45.7</td>
<td>0.34</td>
</tr>
<tr>
<td>Water (ml/day)</td>
<td>1554</td>
<td>442.1</td>
<td>1495</td>
<td>366.5</td>
<td>0.49</td>
</tr>
</tbody>
</table>

* Significant at p < 0.05 (Paired t-test)