Influence of child and maternal variables on childhood obesity in the municipalities of Fundão, Montijo, Oeiras, Seixal and Viana do Castelo

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BACKGROUND
Childhood obesity has been considered a global epidemic and its prevalence has increased worldwide in the last decades1. Portugal has one of the most negative scenarios in Europe, one of the countries with the highest prevalence of childhood obesity, representing nowadays 32.2% of overweight and 14.6% of obesity, and also one of the highest prevalence of physical inactivity in the European Union. Such trends as gain special interest in the scientific community and their causes have been largely studied. In this context it is recognized the importance of more study on obesity influences. According to the literature childhood obesity is linked with some child and maternal features2. A community-based action program in health promotion can identify the main areas of action for the protection of the population against health threats and the promotion of guidelines that can lead to healthier lifestyle3. MuniS Project works from the cooperation between the Health Ministry (DGS/PCO), the Municipalities of Fundão, Oeiras, Montijo, Seixal and Viana no Castelo, and University Atlântica, which has, as main objective, the creation and workability of an Integrated System for Nutritional Observation. This study aims to evaluate the relationship between child and maternal variables and childhood obesity in school aged children from Fundão, Montijo, Oeiras, Seixal and Viana do Castelo municipalities.

METHODS
Longitudinal study developed into three phases (2008-2011). The present data results from the first stage, 167 public schools were selected from the 5 municipalities, where 3851 children were included. The nutritional status was evaluated according the Centers for Disease Control and Prevention (CDC, 2000) growthcharts criteria percentiles of Body Mass Index (BMI) and the child and maternal variables was obtained from a self-response family questionnaire. The statistics analysis was obtained through descriptive analysis and Binomial Logistic Regression Model was used and the odds ratios for confidence intervals were set at 95%.

RESULTS
During the first year of the project, it was implemented a nutritional surveillance system on the 167 schools. 3173 children was evaluated, 50.6% were female with a mean age of 7.5 years (±sd=0.8). The prevalence of overweight was 32.1% (BMIp95%) and 14.5% was obese (BMIp95%). Childhood breastfeeding occurred among almost children (90.1%) and showed a protective association with childhood obesity (childhood not-breastfeeding OR=1.6; 95%CI: 1.1-2.2). High children birthweight was positively associated with childhood obesity (OR=2.5; 95%CI: 1.3-4.6)*. The durability of breastfeeding, maternal weight, gestational age and maternal age did not show relevant link with childhood obesity.

CONCLUSION
The child and maternal variables are associated with the development of childhood obesity, however in the present study, just not-breastfeeding and children birth weight showed a statistic link with childhood obesity. Furthermore investigation is useful in order to validate these results, and better understand the influence of child and maternal factors on child development. Child and maternal variables are specific health concerns for which health promotion strategies are set, where the role of local authorities is clear.

REFERENCES
1 Global status report on noncommunicable diseases 2010. World Health Organization 2011
4 CDC, Center for Disease Control and Prevention. 2008 Growth Charts: United States. Available at URL: http://www.cdc.gov/growthcharts

Table 1. Association between breastfeeding and childhood obesity

Table 2. Association between birth weight and childhood obesity

<table>
<thead>
<tr>
<th>Birth weight (g)</th>
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<th>2500-4000</th>
<th>&gt;4000</th>
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<td>18</td>
<td>2</td>
<td>0.05</td>
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<tr>
<td>2500-4000</td>
<td>182</td>
<td>271</td>
<td>14.1</td>
<td>V.R.</td>
</tr>
<tr>
<td>&gt;4000</td>
<td>184</td>
<td>32</td>
<td>28.4</td>
<td>V.R.</td>
</tr>
</tbody>
</table>

* OR adjusted for sex, age of parents, breastfeeding, breastfeeding and duration ** OR adjusted for sex, age of parents and birth weight

V.R. - Variable Reference

Graph 1

Underweight
Normal/Pre-obesity
Obesity