Overall and central obesity incidence in an urban Portuguese population

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Objective. To provide overall and central obesity incidence estimates by gender, age and educational level in an urban Portuguese population.

Methods. As part of the EPIPorto study, 1,621 Porto, Portugal adult residents were evaluated in 1999–2003 and 2005–2008. Overall obesity was defined by a BMI ≥ 30.0 kg/m² and central obesity by a WC > 88.0 cm in women and > 102.0 cm in men. Relative risks (RR) and 95% confidence intervals (95% CI) were computed using Poisson regression. Survival analysis was also performed.

Results. The age-adjusted incidence rates/100 person-years of overall and central obesity were, respectively, 1.70, 95% CI: 1.34–2.19 and 5.97, 95% CI: 5.09–7.03 in women; 1.08, 95% CI: 0.73–1.64 and 2.38, 95% CI: 1.81–3.20 in men. In multivariate analysis, older women presented a higher risk of overall obesity. Moreover, a significant inverse association was found between obesity and education in women (>11 vs. ≤5 years: RR = 0.43, 95% CI: 0.22–0.84, for overall obesity; RR = 0.45 95% CI: 0.29–0.69, for central obesity). For overall obesity, 10.1% of women and 5.1% of men became obese during the 5-year study period. Higher proportions were observed regarding central obesity, 29.1% and 11.4% for women and men, respectively.

Conclusions. Over time, individuals developed central obesity faster than overall obesity. Our results support that increasing levels of education limit this ongoing development of obesity, particularly among women.

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Introduction

Obesity is a serious worldwide public health concern (Ogden et al., 2007). Rapidly increasing prevalence trends were observed in the United States (Ogden et al., 2006) and in Europe (Berghofer et al., 2008). The highest European prevalences, defined as those greater than 25%, were found in both sexes in Italy and Spain as well as in women in Portugal, Poland, the Czech Republic, Romania and Albania (Berghofer et al., 2008).

The single National Portuguese survey of adults aged 18 to 64 years based on reliable and objective height and weight measurements indicates that overall overweight/obesity prevalence increased from 49.6% in 1995–1998 to 53.6% in 2003–2005 (Carmo et al., 2008).

Studies describing the prevalence of obesity in adults have been limited primarily to BMI, with less information available regarding abdominal adiposity measured by waist circumference (WC) (Formiguera and Canton, 2004). Nevertheless, central obesity is also an independent risk factor for cardiovascular disease (Bergman et al., 2007). In fact, central obesity is one of the most prevalent features of the metabolic syndrome in our population, affecting 23.9% of the subjects (27.0% of women and 19.1% of men) (Santos et al., 2005). However, in Portugal there is no longitudinal data on BMI or WC allowing the evaluation of total or central obesity incidence. Also, worldwide longitudinal analyses are scarce (Gonzalez-Villalpando et al., 2003, Nemesure et al., 2007, Williamson et al., 1990, 1991), emphasizing the relevance of providing obesity incidence evidence.

Although several obesity determinants have been analyzed and prevalence estimates are well known, there is a clear need to explore longitudinal data, namely, the incidence of central obesity at the population level, which will support future public health interventions. Using a representative sample of urban adults and considering objective measurements of BMI and WC, this study will provide the first obesity incidence estimates by gender, age and educational level in Portugal.

Methods

Participants are part of a cohort study, the EPIPorto study, that comprises a representative sample of 2,485 Portuguese adults (61.8% women) aged 18 to 92 years residing in Porto, an urban center in northwest Portugal. The baseline evaluation was conducted during 1999–2003, and the re-evaluation of the cohort during 2005–2008.