Severe obesity prevalence in 8-9 year old Italian children: how big is the problem?

Margherita Caroli[1], Flavia Lombardo[2], Marta Buoncristiano[2], Gianfranco Mazzarella[3], Mariano Giacchi[4], Anna Lamberti[2], Paola Nardone[2], Sabrina Senatore[2], Angela Spinelli[2] and the OKkio alla SALUTE Group 2010

[1]Local Health Unit Brindisi, [2]Italian National Institute of Health, [3]Local Health Unit Naples 3 South, [4]University of Siena

Background. Severe obesity prevalence is an increasing problem "at glance", but no information is available on its entity in childhood. Getting an estimate of its prevalence is essential to understand its trend and to take effective measures for treatment. In June 2012 the cut-offs for severe obesity defined by IOTF have been published, corresponding to a BMI of 35kg/m^2 at 18 years.

Aim. This study aims to assess the prevalence of severe obesity in the 8-9 year old Italian children participating in the national nutritional surveillance system (OKkio alla SALUTE) and in the Childhood Obesity Surveillance Initiative (COSI), using the IOTF cut-offs.

Methods. In 2010, 41,762 8-9 year old children (20,227 females and 21,533 males) have been measured in school setting according to the WHO protocol and BMI has been calculated. The survey uses a stratified cluster sample design with school classes as the primary sampling units.
All the children filled a questionnaire on their eating and physical activity habits. The parents filled a questionnaire on the same topics, referring in addition their educational level, their height and weight, and their nationality. From parents' self-referred weight and height, BMI has been also calculated. The statistical analysis has been performed using STATA. Prevalence estimates, 95% confidence intervals (95%CI) and the logistic regression analysis take into account of the survey design.

Results. 1020 children out of 41,592 are affected by severe obesity (2.7%); the prevalence is statistically different between males (2.9%) and females (2.5%) (p=0.04) and between 8 year olds (3.0%) and 9 year olds (2.1%) (p=<0.0001). Severe obesity is more frequent in families with parents with low educational level (3.8%) as compared with medium (2.6%) and high one (1.2%) (p<0.0001). The prevalence of severe obese children is higher in families with obese parents (7.4%) as compared with families with normal-weight parents (0.8%) (p<0.0001). A clear North-South trend is shown with a percentage of children affected by severe obesity which is lowest in North of Italy (1.6%), medium in the Centre (2.0%) and highest in the South (4.1%) (p<0.0001). No difference has been detected according to the parents' nationality. The association of severe obesity with all the above mentioned characteristics is confirmed in the multivariate model, but the association with gender. Furthermore, severe obesity was strongly associated with the obesity of at least one of parents (ORadj=8.6; 95%CI: 6.5-11.5) and parental low educational level (ORadj=2.3; 95%CI: 1.7-3.1).

Discussion. A prevalence of severe obesity in almost 3% of 8-9 year old children (corresponding to about 30,000 of the total 8-9 year old Italian children) is an alarming signal for the health of the future adult generation. We do not have more information on the clinical significance of these values and thus further studies are required to assess the relationship with metabolic derangements and chances to recover. It is also important to assess its trend in Italy as well as in other European countries. No doubt prevention efforts in very young age, as well as during fetal life, must be implemented if we want to lower this prevalence.