The purpose of the study was to determine the association of birth weight as a risk factor for obesity at first grade in a cohort of elementary school Chilean children. Height and weight at birth and follow up measurements at first grade were analyzed from a national cohort of 119,070 new borns. Subjects were classified by anthropometric characteristics: new born weight in kilograms, Ponderal Index, (birth weight/height 3 x 100), and gestational age (physical maturity) categories at birth. The study tested the hypothesis that a macronomic newborn (4,000 g or > 8.8 pounds) or Large for Gestational Age, would be at higher risk to be obese at first grade. A positive relationship between birth weight 4,000 g, (O.R. =1.55), (p < 0.001), high Ponderal Index (O.R. = 1.39), (p < 0.001), and obesity at first grade was found. Macrosomic children were more likely to be obese at first grade after controlling for the effects of confounding prenatal variables (O.R. = 1.67, (p < 0.001). When weight gain between birth and first grade was 120% of reference value, the obesity risk was 20 times higher (p < 0.001). A direct and statistically significant relationship between high birth weight and obesity at first grade in this group of Chilean children were observed. These results highlight the significance of birth weight as an important tool for healthcare providers that can be used as an indicator of obesity risk for children.

**Keywords**

Obesity, Children, Birth Weight, Cohort study, Chile.