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Prevención de la obesidad en niños
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The prevalence of overweight and obesity in childhood and adolescence has been increasing throughout much of the developed and developing world for the past several decades. It has become increasingly clear that excess adiposity in childhood predisposes individuals not only to increased risk of obesity and its sequelae as adults, but also to increased risk of multiple chronic diseases in childhood and adolescence. Through mechanisms not clearly delineated, excess body weight and adiposity is associated with type 2 diabetes mellitus and its complications, cardiovascular disease risk factors, non-alcoholic fatty liver disease and asthma in youth.

While children and adolescents in many regions are experiencing dramatic increases in the rates of overweight, youth in the United States are among the heaviest in the world. The National Health and Nutrition Examination Surveys (NHANES), a series of cross-sectional examinations conducted on nationally representative samples in the US between 1971 (NHANES I) and the present day, have documented a marked increase in the prevalence of overweight among children of all race/ethnic groups. With overweight in youth defined as having a BMI ≥ 95th percentile for age and sex, the prevalence among white children increased from 5% to 12%, among black children from 6% to 18% and among Mexican-American children from 8% to 21% from 1971 to 2002. Some of the greatest increases have been observed in the most extreme BMI range: as much as 6-7% of black girls and Mexican-American boys had BMIs ≥ the 99th percentile in 2002 compared to 1% in 1971. The upward trend in rate of overweight does not appear to be abating as the NHANES 2003-2004 data indicate a 1.1% increase over the 1999-2002 data in the overall rate for youth in the US.

While it is generally accepted that the highest rates among youth occur in the most industrialized countries, almost all regions of the world experience some degree of overweight, with sub-Saharan Africa being the most notable exception. Depending upon the definition of childhood overweight (eg, International Obesity Task Force cutpoints or CDC/WHO BMI-for-age percentiles), the global estimates range from 3.3% to 10%. Regardless of differences in global prevalence estimates, multiple surveys have identified particular regions as being of primary concern for excess weight: the Middle East, North Africa and the Americas, including Mexico. As a middle income country, Mexico is experiencing a dramatic shift from undernutrition among its children to overnutrition. The prevalence of ‘at risk’ of overweight (ie, ≥ 85th percentile of BMI-for-age) among preschool children in Mexico, while much lower than Mexican-American children across the border in the US, increased from 21.9% to 28.7%.

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between the first two National Nutrition Surveys conducted in Mexico in 1988 and 1999.12 Among older children in Mexico, 6-11 years of age, the prevalence of overweight was quite high at 8.8% at the national level in 1999, with regional differences ranging from 5.5% in the south to 12.7% in the north.12 As countries become more economically developed and experience increased urbanization and industrialization, the prevalence of undernutrition decreases and the risk of overweight and its complications among all segments of the population increases, including children and adolescents.11,14

Among the complications of obesity in youth, type 2 diabetes is of primary concern. Altered glucose metabolism in overweight children is strongly associated with the increase in prevalence of childhood obesity.15 Reports of type 2 diabetes, or what was previously referred to as adult-onset diabetes, occurring among youth began to appear with some regularity in the medical literature in the 1990’s. Most of the early reports came from non-Caucasian populations suffering from high rates of obesity, both within and outside the United States. For example, the first study in youth was among adolescent Pima Indians of Arizona where the reported prevalence of type 2 diabetes was greater than 1%,16 this was followed by studies among the First Nation in Canada where again the prevalence among the general population of adolescents was very high (0.3%), with a 5:1 female:male ratio.17-19 It was becoming clear that overweight adolescents were being diagnosed with type 2 diabetes with increasing frequency; in Cincinnati, OH, over 33% of newly diagnosed cases in the 10-19 year age range were type 2 and over 70% of the patients were African-American.20 Similarly, Mexican-American teens were being diagnosed with diabetes at higher than expected rates in California.21 Around the same time studies from Japan and Libya reported high incidences of type 2 diabetes among overweight adolescents (ranging from 13.9/10^5 in Japanese males to >35/10^5 in Libyan females).22,23

More recently, the SEARCH for Diabetes in Youth Study Group published the results of a prevalence survey of physician-diagnosed diabetes among youth in the United States. Among children younger than 10 years the population prevalence of type 2 diabetes was very low, 1 per 100,000, while among children of all race/ethnic groups between 10 and 19 years of age the rate was 22 per 100,000.24 The prevalence estimates varied dramatically by ethnicity, with the lowest rates among non-Hispanic whites, 19 per 100,000, and the highest among American Indians, 174 per 100,000.24 While type 2 diabetes was diagnosed among teens of all race/ethnic groups, it accounted for only 6% of diagnoses among non-Hispanic whites but 76% in American Indians.

Peripheral insulin resistance coupled with overweight and obesity in childhood seems to be the primary driving force behind the deteriorating glucose metabolism of type 2 diabetes in youth. Several studies have supported the association between overweight in youth and insulin resistance, including those using indirect measures of insulin resistance25 and those with more direct measures of glucose and insulin metabolism.26 Although there is not a consensus on the definition of the metabolic syndrome in childhood, several groups report its presence, with rates ranging from 10% in children and adolescents with moderate overweight to 22% in those with extreme BMIs (≥99th percentile BMI-for-age).27-29 Of particular concern is a recent report concerning end-stage renal disease (ESRD) among young and middle-aged adults with youth-onset type 2 diabetes (ie, <20 years at onset) compared to those with adult-onset diabetes.30 The incidence of ESRD was more than five-fold higher for those with youth-onset diabetes (25 vs 4.6/1000, respectively). In addition, they had significantly higher age-and-sex adjusted death rates from natural causes.30 All these data suggest derangements with glucose and insulin metabolism can begin early in childhood and adolescence with excess body weight and can increase risk of type 2 diabetes not just in adulthood, but during childhood. The ESRD incidence and mortality data provide solid evidence that the longer duration of type 2 diabetes from youth-onset of the disease can be highly detrimental.

Among overweight youth with type 2 diabetes lipid abnormalities are prevalent, with up to 30% having elevated total cholesterol and triglyceride levels and possibly as high as 40% with depressed HDL-cholesterol levels.31 In addition to type 2 diabetes, obesity is associated with hypertension32,34, impaired vascular function,35 dyslipidemia31,32 atheroma35 and systemic inflammation.35,36 The Bogalusa Heart Study has accrued over 9000 children since 1973 in seven cross-sectional examinations and followed over 2600 for a mean of 17 years of follow-up.132 In the total sample of 9167
children, 11% were overweight and were 2.4 times more likely as children with BMI<85th percentile to have elevated total cholesterol and diastolic blood pressure. Overweight children also had odds ratios of 3.0 of having elevated LDL-cholesterol, 4.5 of having elevated systolic blood pressure and 7.1 of having elevated fasting triglycerides. Of the 2617 children followed into adulthood, 77% remained obese (BMI≥30 kg/m²) as adults. A modest association between childhood BMI and adult CVD risk factors was reported which could be completely accounted for by the maintenance of excess body weight from youth. Unlike with type 2 diabetes in youth, the concern with hypertension, dyslipidemia and other cardiovascular risk factors is less immediate and more long-term, eg, there is greater all-cause and cardiovascular and cerebrovascular mortality in long-term followup of overweight children.

Non-alcoholic fatty liver disease (NAFLD) is now the leading cause of pediatric liver disease and a growing concern among obese adolescents. NAFLD encompasses a range of hepatic histologic changes and outcomes in the absence of alcohol use, with the mildest form being a simple steatosis in which triglyceride accumulates in the hepatocytes. Obesity, along with insulin resistance and type 2 diabetes, is an established risk factor for NAFLD in children. NAFLD can progress to non-alcoholic steatohepatitis which involves inflammation and liver cell death, and ultimately, cirrhosis. While the population prevalence of NAFLD among children and adolescents is difficult to establish, there has been an increase in diagnosis paralleling the increase in childhood overweight. Recent studies suggest that NAFLD, diagnosed in overweight adolescents through abnormal plasma alanine aminotransferase concentrations, suggested an overall prevalence of 23% with significantly higher rates among boys (44%) than girls (7%) and among Hispanic (36%) than white (22%) or black (14%) teens. The association of NAFLD and obesity among children and adolescents is a relatively new area of investigation and much more research is needed before there is a complete picture of the prevalence and complications.

Finally, the potential association between asthma and overweight among children and adolescents has garnered a great deal of interest over the past 30 years without any firm conclusions being drawn. The scientific interest has been driven in large part by the concurrent rise in the prevalence of both conditions, although recent evidence suggests there may be a slowing or cessation of the increase in asthma prevalence. Unlike much of the data on the association between overweight or obesity in youth and other chronic disease risk, those for asthma have been relatively inconsistent. A recent meta-analysis of the effect of overweight in childhood on subsequent development of asthma showed a 50% increase in relative risk among the overweight compared to those of normal weight; overweight boys, but not girls, were found to have an increased risk of developing asthma in the National Longitudinal Survey of Youth (hazard ratio = 2.4), and data from NHANES III supported a strong independent cross-sectional association between overweight and asthma in youth. In contrast, however, several cross-sectional surveys outside the United States have reported little to no association between overweight and asthma in children; and a recent prospective study found no increased relative risk for asthma in overweight Spanish children. Weight loss also is controversial and itself may or may not improve asthma symptoms, although it can make quality of life better for the patients. The medical community is undecided on whether or not a true association exists nor can a potential causal mechanism be agreed upon. This may be one case where environmental changes were occurring which impacted the prevalence of both obesity and asthma independently.

In conclusion, overweight and obesity among children and adolescents is a major concern in Mexico, the United States and much of the world. Overweight and obesity in childhood has been associated with several chronic diseases, leading to long term negative health outcomes. Most problematic and prevalent of these is type 2 diabetes. In addition, lipid abnormalities, NAFLD and possibly asthma are all associated with excess body weight in childhood.

References

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