Using an Electronic Health Record to estimate the prevalence of overweight and obesity in children and adolescents and frequency of these diagnoses by physicians

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Abstract and Objective

Growth and nutrition assessment is an essential component of pediatric healthcare and a fundamental tool for the early detection of childhood obesity. We estimated the prevalence of overweight and obesity using anthropometric data from an EHR and compared it to the frequency of overweight and obesity diagnoses registered by primary care physicians. From 14743 patients aged 2- 19 years, 22.1% were overweight and 12.4% were obese. In contrast, the registry of the diagnosis of overweight in the EHR was 3.3% and 1.1% for obesity. Despite the use of more sensible references for screening obesity, a large number of patients remain undiagnosed. An EHR provides quick and easy access to anthropometric data and growth charts in the clinical setting for monitoring growth and early detection of children at nutritional risk. The objective of this paper is to estimate the prevalence of overweight and obesity in a pediatric population based on BMI data in contrast to the frequency of recorded diagnosis by primary care physicians, their referral to specialists and laboratory tests ordering using an EHR.

Keywords:

Computerized medical record system, Overweight, Obesity, Prevalence, Body Mass Index, Child, Adolescent

Methods

We performed a cross-sectional study that included all patients affiliated to the HMO of the Hospital Italiano de Buenos Aires, from both genders, aged 2 - 19 years, who had at least one well-child visit between January 1st, 2007 and December 31st, 2008 registered in the EHR. We carried out the study based on an adaptation of the research methodology used by Benson et al (Pediatrics. 2009 Jan;123(1):e153-8). using similar variables and data extraction from the EHR.

The prevalence of overweight and obesity was estimated based on WHO 2006-2007 BMI references, calculated from anthropometric data registered in the EHR. For each patient we selected the highest BMI value for the period analyzed.

Overweight and obesity were defined as Z BMI $\geq$ 1 and < 2 and Z BMI $\geq$ 2 respectively.

In order to estimate the frequency of diagnosis of overweight and obesity by primary care physicians, we mapped the problems in the EHR by means of its SNOMED CT codes.

Additionally, we estimated the frequency of confirmed referral to a nutrition or endocrinology specialist, and laboratory results (glycemia, HDL cholesterol, LDL cholesterol) registered in the EHR.

Results

From 14743 selected patients, 22.1% were overweight and 12.4% obese. Prevalence of overweight and obesity (defined as the diagnosis registered in the EHR) increased directly with the BMI categories. Only 11.5% of the overweight or obese patients had these diagnoses registered in the EHR. The disagreement between prevalence of overweight and obesity based on anthropometric classification and diagnosis registered in the EHR showed that almost 90% of the patients classified as overweight and obese are subregistered (x^2 1305, p < 0.001; x^2 976, p < 0.001 respectively).

The referral to a nutrition or endocrinology specialist, and the frequency of selected laboratory tests based on categories of BMI ranged between 11.8% and 52.5% based on BMI categories and increased in concordance with the increment of BMI Z score.

More than 80% of the patients who had the diagnosis of overweight or obesity registered in the EHR were referred to a specialist. Laboratory tests (HDL, LDL and glycemia), were slightly higher ordered in the group with diagnosis of obesity.

Conclusion

Prevalence of overweight and obesity is high in the population studied, even when the estimation based on physician's diagnosis is lower. Also, the referral to specialists and the request of laboratory tests is low. The EHR provides quick and

easy access to anthropometric and clinical data useful in order to evaluate quality of health care, and to facilitate tools to physicians in terms of improving their awareness regarding relevant problems as overweight and obesity.