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1

The worldwide epidemic of female obesity

Sheona Mitchell, MD, MPH, FRCSC, Assistant Professor [a, 1], Dorothy Shaw, MB, ChB, FRCSC, VP Medical Affairs, BC Women's Hospital and Health Center [b, *]

[a] University of British Columbia, Northern Medical Program, 3333 University Way, Prince George, BC V2N 4Z9, Canada
[b] British Columbia Women's Hospital and Health Center, B242, 4500 Oak Street, Vancouver, BC V6H 3N1, Canada

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The rapidly rising number of individuals who are overweight and obese has been called a worldwide epidemic of obesity with >35% of adults today considered to be overweight or obese. Women are more likely to be overweight and obese than their male counterparts, which has far-reaching effects on reproductive health and specifically pregnancy, with obese women facing an increased risk of gestational diabetes, preeclampsia, operative delivery, fetal macrosomia, and neonatal morbidity. The etiology of obesity is highly complex encompassing genetic, environmental, physiologic, cultural, political, and socioeconomic factors, making it challenging to develop effective interventions on both a local and global scale. This article describes the extent and the cost of the obesity epidemic, which, although historically seen as a disease of high-income countries, is now clearly a global epidemic that impacts low- and middle-income countries and indigenous groups who bear an ever-increasing burden of this disease.

* Corresponding author. Tel.: +1 604 875 3536.
E-mail addresses: Sheona.Mitchell-Foster@unbc.ca (S. Mitchell), dshaw@cw.bc.ca (D. Shaw).
[1] Tel.: +1 250 960 5430.

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Definition

Obesity was first recognized as a disease by the World Health Organization (WHO) in 1948 at the time of its formation [1], and since then multiple measures have been trialed to accurately measure body fat percentage, the most accepted of which is body mass index (BMI) measured in kilograms of weight per meter squared of height [2]. Although, historically, obesity has been considered a disease primarily of industrialized countries, there are now growing data on the rising prevalence of obesity across the world as it becomes a leading cause of morbidity and mortality globally [3,4]. Much controversy exists over the use of BMI as an indicator of body fat mass because the percentage of body fat differs by sex, age, and ethnicity making it an imperfect tool for categorizing individuals who are overweight and obese [5]. Two individuals with the same BMI may have markedly differing percentages of total body fat. Other guidelines suggest the use of waist circumference as an assessment of visceral fat as this is a better correlate with insulin resistance and metabolic dysfunction [6]. Despite its limitations, BMI is a general reflection of body fat mass and is widely used globally [2,5,7]; it also correlates with the risk of morbidity and mortality associated with obesity [8,9] as well as all-cause mortality. Adults with a BMI of 25–30 kg/m^2 are considered overweight and those with a BMI of >30 kg/m^2 are defined as obese [2].

Scope of the epidemic

An estimated 1.1 billion adults were considered overweight in 2005 [9], and this is predicted to increase to 1.5 billion by 2015, 300 million of whom are classified as obese [10] (see Fig. 1). A staggering 35.8 million disability-adjusted life years (DALYs) are lost due to overweight and obesity accounting for 2.3% of global DALYs with 35% of adults globally considered overweight or obese [10]. Global obesity has doubled in the period between 1980 and 2008 with 2.8 million deaths attributable to this disease. Significant challenges present themselves in measuring the scope of obesity globally with additional barriers in low- and middle-income countries (LMICs). BMI is often calculated based on self-reported height and weight with inherent limitations of underestimating weight [1]. In LMICs, the country reporting is skewed by disparate accessing of health-care systems, with those of higher socioeconomic

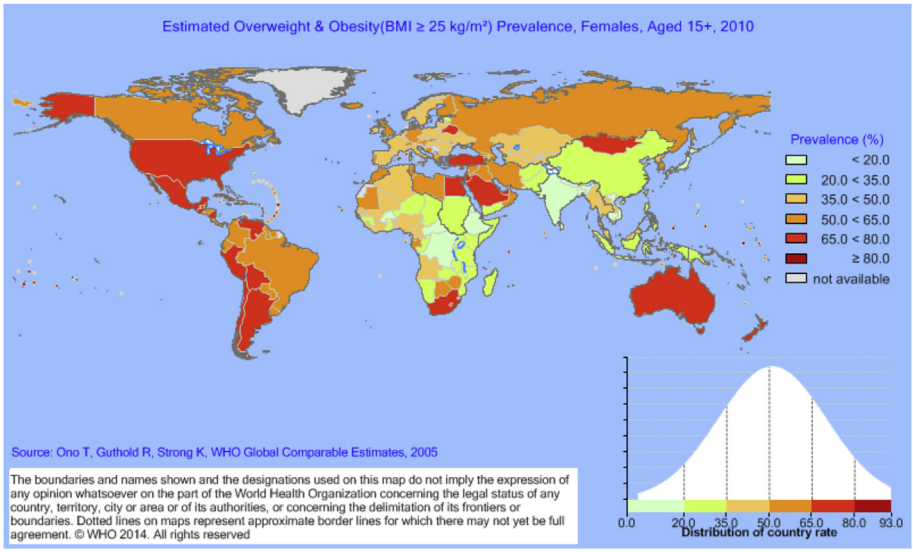

Fig. 1. Global prevalence of overweight and obesity in females aged 15 years and older, 2010. Reproduced, with permission of the publisher from "WHO Global Comparable Estimates", 2010. (https://apps.who.int/infobase/Comparisons.aspx, accessed 22 August, 2014).