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BMI: A vital sign for patients and health professionals

ABSTRACT

Body mass index (BMI) is a significant indicator of health and well-being. The notion of considering BMI as a vital sign was first put forward over a decade ago; however, many health-care professionals do not routinely measure height and weight, or calculate BMI. Given the current obesity epidemic, this oversight has implications for the diagnosis and management of obesity and for appropriate healthcare delivery for obese patients. The authors propose that BMI should be considered a vital sign. They suggest that protocols be put in place to encourage health-care providers to record BMI routinely and to take action to address a BMI that is outside the normal range. Promoting the routine calculation of BMI on admission or initial assessment may encourage health-care professionals to become more aware of obesity and its impact on the patient and the health system.

Body mass index (BMI) is calculated by dividing a person's weight in kilograms by their height in metres squared. It is a standard and internationally accepted measure for determining if the person is overweight or obese. [The World Health Organization \(WHO\)](#) (2000) categorizes people as being overweight if they have a BMI of 25–30 kg/m² and as obese if the BMI is greater than 30 kg/m². There is a wealth of evidence to indicate that individuals with a higher BMI are at greater risk for comorbidities such as diabetes, hypertension, high blood cholesterol (WHO) and for asthma, arthritis, and poorer overall health status (Mokdad et al., 2003). With chronic diseases accounting for a significant proportion of morbidity and mortality worldwide, the impact of the obesity epidemic on these diseases has the potential to overwhelm health systems.

WHO predicts that three billion people worldwide will be overweight or obese by 2015. Almost 60 per cent of Canadian adults are overweight or obese, with rates having doubled in some parts of Canada in just two decades ([Tjepkema, 2006](#)). Despite the magnitude of this problem, obesity is neither effectively diagnosed nor managed ([Block, DeSalvo,& Fisher, 2003](#); [Epstein & Ogden, 2005](#)).

In addition to the impact of obesity on an individual's health, there are important safety and financial implications for health-care professionals and the healthcare system, including the challenges of transferring, lifting and positioning patients for procedures, and the need for adequately sized equipment ([Hahler, 2002](#)). The direct cost of obesity in Canada was estimated at more than \$1.6 billion in 2001, equivalent to 2.2 per cent of total health-care expenditures for all diseases in Canada ([Katzmarzyk& Janssen, 2004](#)). These figures do not account for indirect costs of obesity, such as absenteeism associated with injuries sustained by health-care providers when lifting heavier patients.

The overwhelming implications of obesity have resulted in increasing calls for the routine calculation of BMI as a standard vital sign that health-care professionals can use to assess physical well-being ([Johnson, 2002](#); [Lau et al., 2007](#); [Low, Bouldin, Sumrall, Loustalot,& Land, 2006](#); [Noël & Pugh, 2002](#)). A high BMI should be seen as a red flag and requires further investigation. Until more precise alternative measures, such as waist circumference, become widely used in routine clinical practice, BMI is the health-care professional's best option for diagnosing obesity.

The use of BMI is not without controversy; as an index of weight and height, BMI does not take into account fat distribution or distinguish between lean and fat tissues ([Prentice & Jebb, 2001](#)). It should be used with caution in assessing older people ([Cook, Kirk, Lawrenson,& Sandford, 2005](#)), children or athletes and is not sensitive to gender, racial or ethnic differences in body composition ([Prentice & Jebb](#)). However, when used in conjunction with other observations, BMI is a quick and easy measure that does not require expensive, specialized equipment; the Canadian Medical Association ([Lau et al., 2007](#)) and the [Heart and Stroke Foundation of Canada](#) (2007) acknowledge its significance in guidelines for the treatment and prevention of obesity. Indeed, the U.S. [National Institutes of Health](#) (1998) and the Canadian Cardiovascular Society (1998) have long recognized the connection between BMI and health status and the importance of measuring and documenting BMI.

THE THEORY-PRACTICE GAP

The fact remains that BMI is not being routinely and consistently measured. Preliminary findings from a survey of birth units we conducted in Atlantic Canada indicate that obesity is not being diagnosed in women before they become pregnant ([Kirk, Cramm, Price, Jarvie, & Power, 2008](#)), yet evidence shows that obesity is associated with complications during pregnancy, labour and delivery ([Sarwer, Allison, Gibbons, Markowitz, & Nelson, 2006](#)). When women who are obese are admitted to birth units, nurses can encounter significant challenges in providing safe care and may be putting themselves at risk as well.

Under diagnosis of obesity is a widespread problem. In a study by Perrin, Flower and Ammerman (2004), more than 31 per cent of the members of the North Carolina Pediatrics Society responded that they “never” referred to BMI when determining overweight in a patient. In another U.S. study (Lemay et al., 2003), physicians, nurse practitioners and medical residents in a primary care clinic were also found to consistently under diagnose obesity; those patients who were appropriately diagnosed had a significantly higher BMI than those who were not, suggesting that diagnosis was made by observation, a clinical measure that is less sensitive than BMI.

The possible explanations for not routinely recording BMI are a lack of recognition by patients of their own weight problems; time pressures on health-care providers; inadequate training on weight issues (Block et al., 2003; Brown, Stride, Psarou, Brewins, & Thompson, 2007); and lack of access to appropriate teaching materials (Potter, Vu, & Croughan-Minhane, 2001). In addition, health-care professionals may lack confidence in their abilities to manage obesity in patients or have their own problems with weight (Hensrud, 2006; Kushner, 2003). Some health-care professionals may also be reluctant to discuss weight with their patients, possibly due to the sensitivity surrounding obesity as a health problem (Scott et al., 2004).

BEST PRACTICE PROTOCOLS

Just as there are protocols for dealing with patients with low respiratory rates, high temperatures or falling oxygen saturation, protocols should be in place to encourage health-care providers to record BMI routinely and to act on a BMI that is outside the normal range (Kushner, 2003). Despite rising rates of obesity in pregnant women, the birth units we surveyed did not have specific care protocols or have plans to create policies related to obesity diagnosis and management. Of particular concern to us is that the respondents (health-care professionals) reported that injuries to staff and patients might have occurred as a result of a patient’s excess weight. The majority of respondents indicated that there were no guidelines in place for staffing levels or safety measures for the handling and transfer of obese patients. Given the global prevalence of obesity, it is likely that the problems we discovered are occurring elsewhere.

Evidence-based protocols protect patients and health-care professionals. The clinical practice guidelines on the management and prevention of obesity in adults and children provide an excellent starting point for reviewing current practices ([Lau et al., 2007](#)). Unit or institution-specific guidelines for care plans, referrals, screening, monitoring for complications, and education and support for weight loss or maintenance could then be developed for patients who have been identified as having a high BMI. Protocols should outline measures health-care professionals can take to protect themselves and their patients from injury.

HEIGHT, WEIGHT, ACTION!

Calculating a patient's BMI can optimize health outcomes, and, if incorporated into care plans, this practice can enhance the care we provide to obese clients. We need more research to examine the barriers health-care professionals perceive in translating height and weight into a measure of BMI and – more broadly – in adopting obesity management strategies ([Harvey, Glenny, Kirk, & Summerbell, 2002](#)). The integration of electronic medical records throughout the health-care system may help to overcome resistance to recording BMI, leading to better diagnosis and surveillance of obesity. Of course, we should assess the meaning of BMI calculation in the context of other factors, as we do with other vital signs. But failure to act on the issues associated with obesity is no longer an option, and nurses are well placed to lead the way in implementing the required changes to practice.

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