CORRESPONDENCE

Body Mass Index, Waist Circumference, and the Risk of Type 2 Diabetes Mellitus: Implications for Routine Clinical Practice

by Silke Feller, Heiner Boeing, Tobias Pischon in volume 26/2010

Consider Body Height

In their large cohort study, the authors have shown unequivocally that abdominal obesity as measured by waist circumference predicts the risk of diabetes beyond the body mass index (BMI). From this they conclude that to determine the diabetes risk, waist circumference should always be included with fixed threshold values. I agree unreservedly that a measure of abdominal obesity is essential for preventing risk, but I think that waist circumference is problematic, for the following reason:

A man of 1.50 meters in height would have to accumulate much more abdominal/visceral fat than a man measuring 2 meters in order to reach the same threshold value of 102 cm in waist circumference. A set maximum value in short people therefore underestimates the risk associated with abdominal fat and overestimates it in tall people (1).

This potential problem can be circumvented by using a measure that includes height—for example, the waist to height ratio. Recent studies have shown that this ratio predicts cardiovascular risk to a small but statistically significant degree better than other measures of abdominal obesity (2, 3).

Feller et al have avoided height related distortions in using waist circumference because they adjusted their analyses for body height. It is thus not surprising that the results remain the same if, instead of waist circumference, the waist to height ratio is used. However, this adjustment will not happen in everyday clinical practice, unless the waist to height ratio is used.

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In Reply:

We are delighted that our article has prompted such positive feedback and that the critical interest in the topic is so high. In the following we comment in detail on Dr Schneider's remarks.

In order to assess the risk of health relevant endpoints, the simultaneous consideration of body mass and fat distribution is essential. We were able to underline this by means of our results with regard to the risk of type 2 diabetes, by showing that the strength of the association of waist circumference with the risk of type 2 diabetes depends on the BMI. This is particularly relevant for people of normal weight or even underweight, who constitute a thus far neglected risk group if they have an increased waist circumference.

Measuring waist circumference only does not take into consideration body height. As Dr. Schneider describes, the waist to height ratio would be a simple measure in this context. However, our investigations have shown that when BMI and height are taken into consideration, the risk increases in tandem with increasing waist circumference (1,2). This fact presents problems in determining set maximum threshold values for assessing the risk, for waist circumference as well as the waist to height ratio. We are aware, however, that for the purposes of medical practice, using simple maximum threshold values to identify persons at increased risk is extremely helpful. This points to the necessity of a critical revision of current guidelines. Calculating separate maximum values for the waist dependent parameter within different BMI categories seems sensible in this setting. Our article did not intend to answer the question of what these maximum threshold values may be or which measure is most appropriate for gauging abdominal fat. These questions will have to be investigated in future studies.

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Conflict of interest statement

The authors of both contributions declare that no conflict of interest exists according to the guidelines of the International Committee of Medical Journal Editors.