Invited commentary

Universal cut-off BMI points for obesity are not appropriate

The World Health Organization (1998) defines obesity as a condition with excess body fat to the extent that health and well-being are adversely affected. The BMI (weight/height$^2$, kg/m$^2$) is normally used for classification. The use of BMI as a surrogate measure for body fat percentage (BF%) is justified on the observation that BMI correlates well with BF% and is hardly dependent on height. The suggested cut-off points for overweight (BMI ≥ 25 kg/m$^2$) and obesity (BMI ≥ 30 kg/m$^2$) are based on observational studies in Europe and USA on the relationship between morbidity and mortality with BMI. In Caucasians, a BMI 30 kg/m$^2$ corresponds to a BF% about 25% in young adult males and about 35% in young adult females (World Health Organization, 1995).

The argument that different cut-off points for different ethnic groups should be based on proper evidence. Such evidence should not only be based on the relationship between BMI and BF%, but also on morbidity and mortality risks in relation to BMI. For example, according to BF% and health risks in Singapore, lowering the cut-off point for obesity from 30 kg/m$^2$ to 27 kg/m$^2$ would increase the prevalence of obesity from about 6% to 16% (Deurenberg-Yap et al. 2000). Such an ‘increase’ has of course an enormous impact on the public health policies of a country. However, in the long term, the economic burden of a hidden obesity prevalence might be much higher. On the other hand, it is interesting to note that the cut-off point for underweight might also be different among ethnic groups. For example in the recent National Health Survey (Ministry of Health, 1999) in Singapore, as much as 11% females and 7% males had a BMI < 18.5 kg/m$^2$. The proportion of Singaporeans with a BMI < 20 kg/m$^2$ were 25 and 15% for females and males respectively. There is no reason at all to assume that undernutrition is epidemic among Singaporeans.

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Recent studies also show that in some ‘Asian’ populations morbidity and mortality of obesity-related diseases are high already at a low level of BMI. This affirms the World Health Organization (1998) definition of obesity, namely that not only BF% should be increased, but that in addition also health and well being should be affected.

The consequence of these observations, if true, is obvious: an universal BMI cut-off point for obesity is not appropriate.

Changing the level of BMI cut-off points has consequences for the prevalence of obesity. For example, according to BF% and health risks in Singapore, lowering the cut-off point for obesity from 30 kg/m$^2$ to 27 kg/m$^2$ would increase the prevalence of obesity from about 6% to 16% (Deurenberg-Yap et al. 2000). Such an ‘increase’ has of course an enormous impact on the public health policies of a country. However, in the long term, the economic burden of a hidden obesity prevalence might be much higher. On the other hand, it is interesting to note that the cut-off point for underweight might also be different among ethnic groups. For example in the recent National Health Survey (Ministry of Health, 1999) in Singapore, as much as 11% females and 7% males had a BMI < 18.5 kg/m$^2$. The proportion of Singaporeans with a BMI < 20 kg/m$^2$ were 25 and 15% for females and males respectively. There is no reason at all to assume that undernutrition is epidemic among Singaporeans.

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countries: no scientist wants to compare apples with pears and that is precisely what is happening when using a universal cut-off point.

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References


