Understanding the determinants of obesity

It has been well established that overweight and obesity are associated with an increased likelihood of type 2 diabetes mellitus, hypertension, hyperlipidaemias, cardiovascular diseases and certain cancers i.e. breast, colorectal and uterine cancer.[1] Obesity can therefore be regarded as an important factor in the increasing prevalence of non-communicable diseases and thus contributes to premature mortality in the population.[2] In South Africa, 87% of type 2 diabetes, 68% of hypertensive disease, 61% of endometrial cancer, 45% of ischaemic stroke, 38% of ischaemic heart disease, 31% of kidney cancer, 24% of osteoarthritis, 17% of colon cancer and 13% of postmenopausal breast cancer were attributable to a BMI ³ 21kg/m^2.[3] Being overweight or obese was estimated to have contributed to 36 504 deaths of all deaths in South Africa in 2000.[3] Furthermore, a survey in an economically active population in South Africa documented that certain risk factors were predictive of being overweight or obese. These included Black ethnicity, low level of education, inactivity and at least one overweight parent.[4]

In this issue of the SAJCN, Malhotra et al report on determinants of obesity in an urban township.[5] This is a welcome addition to the current pool of knowledge as there is paucity of data on obesity in African townships, although there is a fair amount of literature on obesity in developing countries. Firstly, the findings indicate that some 52% of men and 80% of women had a BMI greater than 25 kg/m^2. Secondly, their findings indicate that female gender and being married were associated with a high BMI and large waist circumference. Additionally, recent migration was associated with a smaller waist circumference. Interestingly, the level of physical activity was not associated with BMI or waist circumference.

In general terms, the determinants for obesity appear to be similar across the globe. The most common determinants being economic status,[6-9] level of education,[8,10-12] female gender,[7-9,11] inactivity,[13-16] age,[10] urban residence,[7] smoking,[11,16,17] and maternal overweight.[17,18] In relation to socioeconomic status, we need to be reminded that early literature provided evidence for the positive relation between socioeconomic position and obesity in adult women in developing countries, while an inverse association was observed in women from low socioeconomic groups in developed countries. Today, however, available data indicates that that the burden of obesity generally shifts towards poorer groups as countries improve their level of economic development.[6]

Based on the findings that 83.2% of overweight and obese women and 41.6% of overweight and obese men reported being very active i.e. walking more than 45 minutes a day, Malhotra and colleagues suggest that physical activity may play less of a role in obesity control than indicated by other studies.[13-16] A recent study by Ebersole et al[19] would appear to support this hypothesis. Nigerian and Chicago African women showed that in neither cohort was there a meaningful association between measures of active energy expenditure and adiposity. If generalisable, these findings suggest that reduction in active energy expenditure may have less of a role in the development of obesity than anticipated.[19] Ebersole et al[19] propose that variation in type and duration of activity may play a role not captured by total active energy expenditure. Such findings do, however, need to be replicated in different settings.

Although the determinants of obesity appear to have been well documented, their interpretation may be in need of better understanding in the sense that such determinants may not be of equal prognostic importance, at least in terms of morbidity. In this regard, the reference by Malhorta et al in their introduction on the concept of 'healthy or

benign obesity' is, perhaps, of special interest. Emerging evidence[20,21] indicates that, among US adults, there exists a high prevalence of cardiometabolic abnormalities among normal weight individuals as well as a high prevalence of overweight and obese individuals who are metabolically healthy. Phenotypically, metabolically benign obese individuals appear not to have insulin resistance or early atheroschlerosis, and ectopic fat in the liver may be of greater importance than visceral fat in determining risk of disease. It would thus appear that obesity may be a less homogeneous disease than previously thought and only improvements in our knowledge will, in time, afford perspective on risk of disease as well as on our approaches to intervention measures. Until such time, obesity per se should be afforded the prominence it enjoys at present in relation to disease predisposition.

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