

## THE METABOLIC SYNDROME

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The metabolic syndrome - the clustering of abdominal obesity, dyslipidemia, hyperglycemia and hypertension - is a major public health challenge worldwide.<sup>1,2</sup> The metabolic syndrome is not benign; it is associated with a substantially elevated risk of type 2 diabetes (5-fold) and of cardiovascular disease (CVD) (2-3-fold),<sup>1</sup> and its increasing prevalence could possibly reverse the gains made through recent declining CVD mortality.

The metabolic syndrome is not a new condition. It was first described in the 1920s by Kylin, a Swedish physician, as the association of hypertension, hyperglycemia and gout.<sup>3</sup> In the 1940s, attention was drawn to upper body adiposity (android or male-type obesity) as the obesity phenotype commonly associated with type 2 diabetes and CVD.<sup>4</sup>

This constellation of CVD risk factors has been given a number of names, including "deadly quartet", "syndrome X", and "insulin resistance syndrome",<sup>1</sup> but "metabolic syndrome" is likely to hold sway for the foreseeable future.

Just as the metabolic syndrome has borne a variety of different names, numerous definitions have also surfaced. The World Health Organization definition,<sup>5</sup> and two others, developed by the European Group for the Study of Insulin Resistance<sup>6</sup> and the National Cholesterol Education Program - Third Adult Treatment Panel (ATP III),<sup>7</sup> have been the main ones in use. Each of these agreed on the core components of obesity, hyperglycemia, dyslipidemia and hypertension. However, the definitions differ in the cut-points used for each component, and the way in which the components are combined, leading to considerable confusion.<sup>1</sup> The confusion has been particularly apparent in attempts to compare the burden in different populations, where the use of different definitions has seriously hampered the ability to make comparisons between and within communities.<sup>1,2</sup>

The parameters for assessing obesity have been most problematic, with the current definitions failing to account for ethnic differences for cut-points in waist circumference and body mass index. It was also

uncertain which of the definitions best predicted those at risk of CVD and diabetes, although from a clinical perspective, the ATP III definition was probably the most practical for alerting health care professionals to subjects at risk.<sup>1,7</sup>

Because of the confusion, the International Diabetes Federation (IDF) embarked on the process of developing consensus on a new global definition.<sup>8,9</sup>

The definition recognizes the mounting evidence that visceral adiposity is common to each of the components of the metabolic syndrome. Thus, an excessive waist circumference is now a necessary requirement for the metabolic syndrome.

Furthermore, as it is clear that the level of obesity at which the risk of other morbidities begins to rise varies between population groups,<sup>1,10</sup> ethnic-specific waist circumference cut-points have been incorporated into the definition, so that for South and South-East Asians, 90 cm and 80 cm are the cut-points for men and women, respectively, and those for Japanese men and women are >85 cm and >90 cm, respectively.

Much recent discussion about the metabolic syndrome has appropriately raised questions about its definition, its clinical role, and even its existence.

Ford reports that the syndrome is rarely, if ever, recorded as a diagnosis in clinical practice and this diagnosis is often missed.<sup>12</sup>

According to the first phase of Isfahan Healthy Heart Program (IHHP), the prevalence of the metabolic syndrome by ATP III criteria is approximately 21.9% in adults in Central Iran.<sup>13</sup> The high prevalence of the metabolic syndrome in Iran requires urgent attention and appropriate health strategies should be adopted accordingly.

Community-based programs should place special emphasis on lifestyle modification, in a bid to control the metabolic syndrome via increasing physical activity, healthy nutrition, non-smoking, and control of mental tensions.

Such efforts should contribute to reduction of CVD prevalence and better control of diabetes and other non-communicable diseases.

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## References

1. Eckel RH, Grundy SM, Zimmet PZ. The metabolic syndrome. *Lancet* 2005;365:1415-28.
2. Cameron AJ, Shaw JE, Zimmet PZ. The metabolic syndrome: Prevalence in worldwide populations. *Endocrinol Metab Clin N AM* 2004;33:351-76.
3. Kylin E. Studien uber das Hyperonie-Hyperglykamie-Hyperurikamie syndrom. *Zenterabl f inner Med Leipz* 1923;81:05-27.
4. Vague J. Sexual differentiation. A factor affecting the forms of obesity. *Presse Med* 1947;30:339-340.
5. Alberti KG, Zimmet PZ. Definition, diagnosis and classification of diabetes mellitus and its complications. Part 1: diagnosis and classification of diabetes mellitus provisional report of a WHO consultation. *Diabet Med* 1998;15:539-53.
6. Balkau B, Charles MA. Comment on the provisional report from the WHO consultation. European Group for the Study of Insulin Resistance (EGIR). *Diabetes Med* 1999;16:442-43.
7. Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults. Executive summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). *JAMA* 2001;285:2486-97.
8. International Diabetes Federation. The IDF consensus worldwide definition of the metabolic syndrome. Brussels: IDF, 2005. Available at: [http://www.idf.org/webdata/docs/IDF\\_Metasyndrome\\_definition.pdf](http://www.idf.org/webdata/docs/IDF_Metasyndrome_definition.pdf) (accessed May 2005).
9. Alberti KGMM, Zimmet PZ, Shaw JE. The metabolic syndrome - a new world-wide definition from the International Diabetes Federation consensus. *Lancet* 2005;366 (9491):1059-62.
10. WHO Expert Consultation. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *Lancet* 2004;363:157-63.
11. Stern MP, Williams K, Gonzalez-Villalpando C, Hunt KJ, Haffner SM. Does the metabolic syndrome improve identification of individuals at risk of type 2diabetes and/or cardiovascular disease? *Diabetes Care* 2004;27: 2676-81.
12. Ford ES: Rarer than a blue moon: the use of a diagnostic code for the metabolic syndrome in the U.S. *Diabetes Care* 2005;28:1808-809.
13. Gharipour M, Kelishadi R, Baghaie AM, Boshtam M, Rabeie K. Prevalence of Metabolic Syndrome in an Iranian Adult Population. *Advanced Research Yield in Atherosclerosis* 2005;1:188-92.

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