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Current Medical Research and Opinion

ISSN: 0300-7995 (Print) 1473-4877 (Online) Journal homepage: informahealthcare.com/journals/icmo20

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**To cite this article:** Anthony S. Wierzbicki, Emmanuel S. Ganotakis & Dimitri P. Mikhailidis (2007) Shape of the Nations survey and attitudes to cardiometabolic risk, Current Medical Research and Opinion, 23:1, 25-28, DOI: 10.1185/030079906X162638

**To link to this article:** https://doi.org/10.1185/030079906X162638

CURRENT MEDICAL RESEARCH AND OPINION®
VOL. 23, NO. 1, 2007, 25–28

0300-7995
doi:10.1185/030079906X162638


EDITORIAL COMMENTARY

# Shape of the Nations survey and attitudes to cardiometabolic risk

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It is well recognised that obesity and consequent diabetes are increasing modern health problems[1,2]. However, there are much less data on whether this perception has filtered down to primary care and patients. The Shape of the Nations survey assessed perceptions of cut-offs for abdominal obesity and of the importance of cardiometabolic risk factors in 27 countries by questioning 100 primary care physicians, 100 at-risk patients and 400 members of the general population in each country[3]. The characteristics of the at-risk groups were depressing; about 39% of patients attending primary care were obese (a frightening 49% in the USA). This is a worrying portent of the likely increase in rates of diabetes in years to come.

The deficiencies of using body mass index (BMI) for assessment of obesity are well known. Using the BMI it is impossible to distinguish fat from muscle mass or to factor in the differential excess risk associated with abdominal adiposity (waist circumference, WC)[4,5]. In this survey, 58% of physicians recognised BMI and WC as risk factors for cardiovascular disease (CVD) but many still considered BMI a better risk indicator. There is now substantial evidence that WC predicts risk over and above BMI[6,7]. In the InterHEART survey of coronary heart disease in 50 countries, abdominal obesity, measured by WC or waist to hip ratio was a better predictor of cardiovascular risk than BMI (even after adjusting for several other risk factors) and thus should be the prime measure of obesity[7]. However, in the Shape of the Nations survey[3], 45% of physicians never measure WC and only about 17% regularly measure it. In addition, many physicians assumed the risk threshold for WC was greater than it actually was in their populations as only approximately half in any country knew the correct cut-off values. This may reflect the predominance of US literature with inappropriately high WC cut-offs. Given the evidence, measurement of WC should be routine in clinical practice.

The National Cholesterol Education Program (NCEP) Adult Treatment Panel III (ATP3) definition of abdominal obesity, derived from the clinical definition of the metabolic syndrome in the USA, uses 102 cm for men (88 cm for women)[8] and this is often inappropriately applied to other populations[9,10]. Thus, far lower cut-offs are necessary in the Indian Asian or Chinese population[11]. In addition, there is confusion between definitions of the metabolic syndrome and this may be reflected in the results of the survey. The new and less known International Diabetes Federation (IDF) definition uses a 94 cm cut-off for men (80 cm in women) for Europids and other values for different ethnicities[12]. In the Shape of the Nations survey[3] the NCEP-ATP3 definition was used for the USA and Canada and the IDF definition was applied in all other countries[12]. The reason for the discrepancy in US and

non-US Caucasian cut-off levels has more to do with politics of health perception than medical science or epidemiology. There is no reason why the USA should not use 94 cm apart from the fact that it would result in more than 50% of the population being classified as having a disease condition, as coded on health databases (ICD277.7).

A number of other factors are also of concern. Despite the abundant evidence for the clinical significance overall, in the Shape of the Nations survey 69% of the primary care physicians would treat abdominal obesity and 77% would treat generalised obesity, but there are some surprising values for individual countries; only about 50% would treat abdominal obesity in the UK, Germany, Finland or Japan. While attitudes to obesity vary there may be a reluctance to consider this condition as a medical problem in these countries and thus a tendency to ignore the role of professional intervention[13]. This is despite evidence that treatment of obesity through intensive lifestyle and dietetic intervention has multiple beneficial effects including reduction in WC as well as improved lipids and fasting glucose[13,14]. In those where lifestyle therapy does not succeed there are clinical trials that show beneficial effects on cardiometabolic parameters with sibutramine[15] or orlistat[16] when combined with a diet (500–800 kcal/day). Further data are becoming available on a novel agent – rimonabant – a cannabinoid type 1 receptor antagonist which has similar effects on reducing WC and weight, as well as inducing parallel improvements in high-density lipoprotein cholesterol (HDL-C), triglycerides and glucose[17–19]. Approximately half of the effect of rimonabant on these cardiometabolic risk factors is modelled as being beyond that expected from weight loss alone, suggesting possible direct effects of the drug on glucose and lipid metabolism. The effects of anti-obesity medications on blood pressure are variable, with reductions with lifestyle and some with orlistat[20], though pressor responses are seen in some patients with sibutramine[14] and lesser effects than expected with rimonabant[17–19]. In those with morbid obesity, evidence exists for treatment of obesity and its complications by bariatric surgery or by insertion of gastric balloons[21].

It is also a matter of concern that a family history of obesity, indicating either a genetic or family environment predisposition, and thus resistance to likely therapy, is not considered significant[22]. Though many factors are viewed as relevant to cardiometabolic care in the Shape of the Nations survey, and rated in the 70–80% range of opinion as significant, some are relatively ignored. For example, low HDL-C[23], high triglycerides[24] and an impaired fasting glucose[25] are considered important by fewer than 50% of primary care physicians, despite ample evidence for the significance of low HDL-C[23,26–28] (and, by implication, high triglycerides[29]) for CVD, let alone the importance of fasting hyperglycaemia as a risk factor for future type 2 diabetes. Therefore, they are unlikely to be measured in primary care, let alone treated. It seems that many primary care physicians will not recognise or manage the cardiometabolic risk associated with abdominal obesity. Also, if they do not recognise the importance of low HDL-C, high triglycerides, or impaired fasting glucose, they are unlikely to consider a diagnosis of the metabolic syndrome. This is of special concern in populations where a high prevalence of the metabolic syndrome is associated with large increases in cardiovascular risk, e.g., Indian Asians[30,31], Polynesians[32,33], Arabs[34] and Turks[35,36].

General population education lags behind medical views. Many in the Shape of the Nations survey did not know their WC, and only 13% remembered their primary care practitioner measuring it. Only 42% of the general population were aware of the risk of CVD associated with abdominal obesity. Similar data have previously been reported in a survey of attitudes of patients with metabolic syndrome in Greece[37]. This is worrying as the main risk associated with the presence of the metabolic syndrome is future type 2 diabetes[25,38–40]. The number of metabolic syndrome risk factors predicts the risk of diabetes far more strongly than the risk of coronary heart disease[41]. In the Shape of the Nations study, the poor recognition of abdominal obesity and other cardiometabolic risk factors indicates that persons at high future risk of diabetes will not be detected. Though drug treatment can improve these clustering risk factors, current evidence shows that strict diet, exercise and lifestyle modification are superior to drug therapy[42,43]. This was well demonstrated in the Diabetes Prevention Program study where diet and exercise were superior to metformin in preventing progression to new type 2 diabetes[42]. While drugs have a role to play in the improvement of risk factors, in the long-term only significant changes in population lifestyle will be successful in arresting the epidemic of obesity and diabetes.

The Shape of Nations study shows that while physicians and patients recognise abdominal obesity as a cardiometabolic risk factor they have a poor knowledge of the cut-offs that ought to be applied, though some of this may be related to the lack of international consensus about the exact cut-offs for different populations. This is not surprising as the two major definitions of the metabolic syndrome vary in the thresholds of WC used to identify patients at increased cardiometabolic risk, and in the importance given to WC. The NCEP-ATP3 definition relies on the finding of three from five equal factors, while the IDF definition gives primacy to WC (admittedly with

a different cut-off to the NCEP-ATP3) and then two factors from four[44]. Similar issues have arisen in the past when comparing the NCEP-ATP3 with the World Health Organization (WHO) definition[45]. Physicians surveyed in the Shape of the Nations study seem to underestimate the significance of cardiometabolic risk factors commonly associated with abdominal obesity, including low HDL-C, hypertriglyceridaemia and increased fasting glucose, and are thus unlikely to recognise or treat patients at increased risk. The Shape of the Nations survey clearly shows that more education is required to alert clinicians to the significance of WC as a risk factor for diabetes and CVD. Physicians also need to be reminded of the clustering of other risk cardiometabolic factors associated with increased WC.

## Acknowledgements

***Declaration of interest:*** The authors have attended conferences and participated in advisory boards and trials and given talks sponsored by various pharmaceutical companies. This Editorial represents the independent opinion of the authors, who were neither offered nor received any funding from industry for writing this editorial.

## References

1. Zimmet P, Alberti KG, Shaw J. Global and societal implications of the diabetes epidemic. Nature 2001;414:782-7
2. James PT, Rigby N, Leach R. The obesity epidemic, metabolic syndrome and future prevention strategies. Eur J Cardiovasc Prev Rehabil 2004;11:3-8
3. Smith SC, Haslam D. Abdominal obesity, waist circumference and cardiometabolic risk: awareness among primary care physicians, the general population and patients at risk – the Shape of the Nations survey. Curr Med Res Opin 2007;23:29-47
4. Folsom AR, Kushi LH, Anderson KE, Mink PJ, et al. Associations of general and abdominal obesity with multiple health outcomes in older women: the Iowa Women's Health Study. Arch Intern Med 2000;160:2117-28
5. Kragelund C, Omland T. A farewell to body-mass index? Lancet 2005;366:1589-91
6. Dagenais GR, Yi Q, Mann JF, Bosch J, et al. Prognostic impact of body weight and abdominal obesity in women and men with cardiovascular disease. Am Heart J 2005;149:54-60
7. Yusuf S, Hawken S, Ounpuu S, Bautista L, et al. Obesity and the risk of myocardial infarction in 27 000 participants from 52 countries: a case-control study. Lancet 2005;366:1640-9
8. 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
9. Tan CE, Ma S, Wai D, Chew SK, et al. Can we apply the National Cholesterol Education Program Adult Treatment Panel definition of the metabolic syndrome to Asians? Diabetes Care 2004;27:1182-6
10. Wierzbicki AS, Nishtar S, Lumb PJ, Lambert-Hammill M, et al. Metabolic syndrome and risk of coronary heart disease in a Pakistani cohort. Heart 2005;91:1003-7
11. Snehalatha C, Viswanathan V, Ramachandran A. Cutoff values for normal anthropometric variables in Asian Indian adults. Diabetes Care 2003;26:1380-4
12. Alberti KG, Zimmet P, Shaw J. The metabolic syndrome – a new worldwide definition. Lancet 2005;366:1059-62
13. Antipatis VJ, Kumanyika S, Jeffery RW, Morabia A, et al. Confidence of health professionals in public health approaches to obesity prevention. Int J Obes Relat Metab Disord 1999;23:1004-6
14. Li Z, Maglione M, Tu W, Mojica W, et al. Meta-analysis: pharmacologic treatment of obesity. Ann Intern Med 2005;142: 532-46
15. James WP, Astrup A, Finer N, Hilsted J, et al. Effect of sibutramine on weight maintenance after weight loss: a randomised trial. STORM Study Group. Sibutramine Trial of Obesity Reduction and Maintenance. Lancet 2000;356: 2119-25
16. Torgerson JS, Hauptman J, Boldrin MN, Sjostrom L. Xenical in the prevention of diabetes in obese subjects (XENDOS) study: a randomized study of orlistat as an adjunct to lifestyle changes for the prevention of type 2 diabetes in obese patients. Diabetes Care 2004;27:155-61
17. Van Gaal LF, Rissanen AM, Scheen AJ, Ziegler O, et al. Effects of the cannabinoid-1 receptor blocker rimonabant on weight reduction and cardiovascular risk factors in overweight patients: 1-year experience from the RIO-Europe study. Lancet 2005;365:1389-97
18. Hirschel B. Effect of rimonabant on weight reduction and cardiovascular risk. Lancet 2005;366:369-70
19. Pi-Sunyer FX, Aronne LJ, Heshmati HM, Devin J, et al. Effect of rimonabant, a cannabinoid-1 receptor blocker, on weight and cardiometabolic risk factors in overweight or obese patients: RIO-North America: a randomized controlled trial. JAMA 2006;295:761-75
20. Holt R. Orlistat reduces features of the metabolic syndrome: the XENDOS study. Diabetes Obes Metab 2003;5:356
21. Maggard MA, Shugarman LR, Suttorp M, Maglione M, et al. Meta-analysis: surgical treatment of obesity. Ann Intern Med 2005;142:547-59
22. Loos RJ, Bouchard C. Obesity – is it a genetic disorder? J Intern Med 2003;254:401-25
23. Wierzbicki AS, Mikhailidis DP. Beyond LDL-C – the importance of raising HDL-C. Curr Med Res Opin 2002;18:36-44
24. Burchfiel CM, Laws A, Benfante R, Goldberg RJ, et al. Combined effects of HDL cholesterol, triglyceride, and total cholesterol concentrations on 18-year risk of atherosclerotic disease. Circulation 1995;92:1430-6
25. Alberti KG. Impaired glucose tolerance: what are the clinical implications? Diabetes Res Clin Pract 1998;40(Suppl):S3-8
26. Chapman MJ, Assmann G, Fruchart JC, Shepherd J, et al. Raising high-density lipoprotein cholesterol with reduction of cardiovascular risk: the role of nicotinic acid – a position paper developed by the European Consensus Panel on HDL-C. Curr Med Res Opin 2004;20:1253-68
27. Sacks FM. The role of high-density lipoprotein (HDL) cholesterol in the prevention and treatment of coronary heart disease: expert group recommendations. Am J Cardiol 2002;90:139-43
28. Wierzbicki AS. Have we forgotten the pivotal role of high-density lipoprotein cholesterol in atherosclerosis prevention? Curr Med Res Opin 2005;21:299-306
29. Rizos E, Mikhailidis DP. Are high-density lipoprotein and triglyceride levels important in secondary prevention: impressions from the BIP and VA-HIT trials. Int J Cardiol 2002;82:199-207
30. Nishtar S, Wierzbicki AS, Lumb PJ, Lambert-Hammill M, et al. HDL-cholesterol and waist-hip ratio predict risk of coronary heart disease in Pakistan. Curr Med Res Opin 2004;20:55-62
31. Chambers JC, Eda S, Bassett P, Karim Y, et al. C-reactive protein, insulin resistance, central obesity, and coronary heart disease risk in Indian Asians from the United Kingdom compared with European whites. Circulation 2001;104:145-50
32. Simmons D, Shaw LM, Scott DJ, Kenealy T, et al. Diabetic nephropathy and microalbuminuria in the community. The South Auckland Diabetes Survey. Diabetes Care 1994;17: 1404-10
33. Zimmet PZ, McCarty DJ, de Court. The global epidemiology of non-insulin-dependent diabetes mellitus and the metabolic syndrome. J Diabetes Complications 1997;11:60-8

34. Abdul-Ghani MA, Sabbah M, Muati B, Dakwar N, et al. High frequency of pre-diabetes, undiagnosed diabetes and metabolic syndrome among overweight Arabs in Israel. Isr Med Assoc J 2005;7:143-7
35. Onat A. Risk factors and cardiovascular disease in Turkey. Atherosclerosis 2001;156:1-10
36. Hergenc G, Schulte H, Assmann G, von EA. Associations of obesity markers, insulin, and sex hormones with HDL-cholesterol levels in Turkish and German individuals. Atherosclerosis 1999;145:147-56
37. Athyros VG, Ganotakis ES, Bathianaki M, Monedas I, et al. Awareness, treatment and control of the metabolic syndrome and its components: a multicentre Greek study. Hellenic J Cardiol 2005;46:380-6
38. Sattar N, Gaw A, Scherbakova O, Ford I, et al. Metabolic syndrome with and without C-reactive protein as a predictor of coronary heart disease and diabetes in the West of Scotland Coronary Prevention Study. Circulation 2003;108:414-9
39. Alexander CM, Landsman PB, Teutsch SM, Haffner SM. NCEP-defined metabolic syndrome, diabetes, and prevalence of coronary heart disease among NHANES III participants age 50 years and older. Diabetes 2003;52:1210-4
40. Zimmet P, Boyko EJ, Collier GR, de Court. Etiology of the metabolic syndrome: potential role of insulin resistance, leptin resistance, and other players. Ann N Y Acad Sci 1999;892:25-44
41. Sattar N, Gaw A, Scherbakova O, Ford I, et al. Metabolic syndrome with and without C-reactive protein as a predictor of coronary heart disease and diabetes in the West of Scotland Coronary Prevention Study. Circulation 2003;108:414-9
42. Knowler WC, Barrett-Connor E, Fowler SE, Hamman RF, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. N Engl J Med 2002;346:393-403
43. Liberopoulos EN, Tsouli S, Mikhailidis DP, Elisaf MS. Preventing type 2 diabetes in high risk patients: an overview of lifestyle and pharmacological measures. Curr Drug Targets 2006;7:211-28
44. Athyros VG, Ganotakis ES, Elisaf M, Mikhailidis DP. The prevalence of the metabolic syndrome using the National Cholesterol Educational Program and International Diabetes Federation definitions. Curr Med Res Opin 2005;21:1157-9
45. Hunt KJ, Resendez RG, Williams K, Haffner SM, et al. National Cholesterol Education Program versus World Health Organization metabolic syndrome in relation to all-cause and cardiovascular mortality in the San Antonio Heart Study. Circulation 2004;110:1251-7

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http://www.cmrojournal.com
Paper CMRO-3459_3, *Accepted for publication*: 03 November 2006
*Published Online:* 29 November 2006
doi:10.1185/030079906X162638