

EDITOR'S NOTE

Excess Prevalence and Mortality Rates of Diabetes and Cardiovascular Disease Among South Asians: A Call to Action

According to the 2006 census, Canada's visible minority population is growing at a rate of 27%, 5 times faster than the 5% rate for the rest of the population (1). From 2001 to 2006, 60% of immigrants to Canada came from Asia. If current population and immigration trends continue, 1 in 3 Canadians will belong to a visible minority by 2031 (2). In 2006, South Asians surpassed Chinese to become Canada's largest visible minority group. Nearly 1.3 million Canadians in 2006 identified themselves as South Asian (i.e. from India, Pakistan, Bangladesh, Sri Lanka or Nepal), and this sub-population is projected to reach between 3.2 and 4.1 million by 2031 (2). South Asians have high rates of diabetes and one of the highest rates of premature cardiovascular disease (CVD) in the world (3).

India, together with China and the Middle East, are now considered the "hot spots" of diabetes, with a projected doubling in incidence of the disease over the next 20 years (4). The prevalence of diabetes is conservatively estimated to be 12% in India and will continue to rise with urbanization (5). South Asian immigrants in diverse developed countries (United Kingdom [UK], United States [US], South Africa and Canada) are revealing similar temporal changes in the prevalence of diabetes and prediabetes associated with Westernization (6). Emerging evidence suggests that obesity and diabetes are the principal drivers for the rising prevalence and mortality rates of CVD (7,8). Data from the Study of Health Assessment and Risk in Ethnic Groups (SHARE) confirm that Canadians of South Asian origin from urban centres have a higher prevalence of, and risk factors for, CVD than Canadians of European and Chinese descent (9), with similar findings observed in South Asians living in the UK and elsewhere (10). More recent data from population health surveys between 1996 and 2007 also reveal that people of South Asian descent living in Ontario have higher CV risk profiles than Canadians of Caucasian or Chinese origin (11). A brief overview of why South Asians appear to be more susceptible to the development of diabetes and CVD is appropriate, before discussing possible strategies to address this emerging public health issue.

Lifestyle changes and increasing affluence, as seen in South Asians transitioning from rural to urban communities in India, and in South Asian immigrants to developed countries such as Canada, US and UK, have led to a high

prevalence of obesity, insulin resistance, type 2 diabetes and CVD (5,6,8-10). Data from the UK suggest that the increase in childhood obesity and overweight rates are steeper in South Asian children, who were 27% more overweight and 45% more obese than Caucasian children (12). Diabetes prevalence rates are 2- to 6-fold higher than those of age- and sex-matched Caucasian adults (8,10,11). Importantly, diabetes is diagnosed 10 years earlier in South Asians, at a mean age of 46 years, compared with 57 years in Caucasians, and at a lower body mass index (BMI) (13). South Asians enrolled in the United Kingdom Prospective Diabetes Study had more CVD risk factors at the time of diagnosis of diabetes and differences in clinical and biochemical parameters persisted during the study, which may result in poorer diabetes outcomes (14). Indeed, South Asians with type 2 diabetes have more aggressive microvascular and CVD complications, and increased CVD mortality (15,16).

The standard mortality ratios for insulin-treated South Asian patients diagnosed under age 30 years were 3.9 in men and 10.1 in women, compared with 2.7 and 4.0 in non-South Asians, respectively (16). Furthermore, second and third generation South Asians appear to have many of the same diabetes and CVD risk profiles as their ancestors, and the tendency toward insulin resistance, despite lower BMI, is already evident in childhood (17). South Asian children aged 8 to 11 years have higher serum insulin, triglyceride and fibrinogen levels than white children (17). In addition to migration and disadvantaged socioeconomic status, excess diabetes and CVD risk may also be attributed to lower physical activity levels in both South Asian adults and in 9- to 10-year-old children (18). The SHARE data corroborated that for a given BMI, elevated levels of glucose- and lipid-related factors were more likely to be present in South Asians (9). When comparing the risks for diabetes and dyslipidemia, the BMI cut points for South Asians corresponding to the obesity BMI cut point of 30.0 kg/m² for Caucasians is only 21.0 kg/m² (9). This finding implies that South Asians have more abdominal adiposity than Caucasians for a given BMI, and partially explains why they are more prone to obesity and related complications. The 9 coronary risk factors identified in the INTERHEART case-controlled study—abnormal lipids, smoking, diabetes, hypertension, abdominal obesity, psychosocial factors, low

fruit and vegetable consumption, low alcohol consumption and low physical activity—which accounted for more than 90% of cases of myocardial infarction worldwide—were equally important for South Asians (3,7). An important striking difference was the mean age of occurrence of acute myocardial infarction: 53.0 years in South Asians, compared with 58.8 years in other countries (3,7).

If diabetes and CVD risk factors are similar between South Asians and other populations, how do we explain the increased susceptibility to the 2 chronic diseases? Multiple hypotheses have been advanced; however none can adequately explain the disturbing trends observed in epidemiological and population studies. Some of these hypotheses include genetic susceptibility and environmental differences, as well as access to healthcare and healthcare delivery (10). For example, data from Ontario documented that ethnic minorities, including South Asians, are less likely to utilize physician and possibly other healthcare services, and may explain the ethnic disparities in health outcomes of chronic diseases such as diabetes and CVD (19). Continuing prospective studies, such as the Prospective Urban and Rural Epidemiological (PURE) study, involving 28 500 people from 5 locations in India and 36 500 people from Bangladesh and Pakistan, will provide further insight into the proximal cause of obesity, diabetes and CVD risk factors in South Asians attributable to urbanization (20).

It is clear that we face significant challenges in devising strategies to reduce the burden of diabetes and CVD in Canadians of South Asian origin. The most effective—but most daunting—approach is prevention of obesity and diabetes at the population health level. This translates into programs and policies that are culturally specific and sensitive to South Asians. With respect to South Asians affected by diabetes, high-quality educational initiatives and intervention programs specifically designed for this high-risk population are lacking but desperately needed, as reported by a recent systematic review of published studies (21). Multiple initiatives are underway across the country to tackle this enormous health burden. In mid-June, the Canada-India Cardiovascular Health Conference, hosted jointly by Simon Fraser University and Fraser Health Authority, will bring together healthcare professionals, researchers and policymakers. It is hoped that the knowledge and information shared by conference delegates will result in specific, outcome-driven recommendations to improve the CV health of South Asians from Canada and around the world. For its part, the Canadian Diabetes Association has taken a small step in producing nutrition materials aimed primarily at Canadians of South Asian descent (22). Still, much more needs to be done. There is an urgent call to action: to bring together all stakeholders, including healthcare professionals from all disciplines, policymakers, and public, lay and

private sector representatives, to address the emerging public health issue among Canadians of South Asian origin.

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