Prevention and Management of Diabetes in South Asians

Parmjit S. Sohal MD PhD CCFP

Department of Family Practice, University of British Columbia, Vancouver, British Columbia, Canada

This paper was presented in part at the Canadian Diabetes Association/Canadian Society of Endocrinology and Metabolism Professional Conference and Annual Meetings, Toronto, Ontario, Canada, October 18–21, 2006.

ABSTRACT

South Asians, the fastest growing immigrant population and the second-largest visible minority in Canada, are 3 to 5 times more likely to have diabetes than the white population. This review discusses challenges related to the prevention and management of diabetes in the South Asian population in Canada. Several studies have suggested that, despite their generally lower body mass index, South Asians have an increased incidence of abdominal obesity, insulin resistance and metabolic syndrome. In addition, although the incidence of diabetes among South Asians has increased in recent decades, the majority of cases are still undiagnosed and thus poorly controlled. Suboptimal treatment of diabetes in South Asians may be due to several barriers, including a lack of knowledge about diabetes, negative beliefs and attitudes relating to diabetes, and noncompliance with lifestyle changes such as diet, weight control and physical activity, all of which are compounded by a lack of culturally sensitive and ethnic-language-specific diabetes education centres in Canada. Improved efforts toward the primary prevention and optimal management of type 2 diabetes are necessary to reduce the burden of diabetes and its complications among South Asians in Canada.

KEYWORDS

Coronary artery disease, diabetes, ethnicity, impaired glucose tolerance, metabolic syndrome, prediabetes, primary prevention, South Asians

Address for correspondence:
Dr. Parmjit Sohal
15156 Fraser Highway
Surrey, British Columbia
Canada V3R 3P1
Telephone: (604) 585-9696
Fax: (604) 585-9688
E-mail: drsohal@shaw.ca

RÉSUMÉ

Les Asiatiques du Sud, qui représentent la population immigrante dont la croissance est la plus rapide et sont au deuxième rang des minorités visibles au Canada, sont de trois à cinq fois plus exposés au diabète que la population de race blanche. Cet article traite des défis associés à la prévention et à la prise en charge du diabète chez les Asiatiques du Sud du Canada. Plusieurs études ont laissé entendre que même si les Asiatiques du Sud ont généralement un indice de masse corporelle inférieur, l'incidence de l'obésité abdominale, de l'insulinorésistance et du syndrome métabolique est plus élevée chez eux. De plus, même si l'incidence du diabète a augmenté chez les Asiatiques du Sud au cours des dernières décennies, la majorité des cas de diabète n'ont pas encore été diagnostiqués et sont par conséquent mal maîtrisés. Le traitement sous-optimal du diabète chez les Asiatiques du Sud pourrait être attribuable à plusieurs facteurs dont un manque de connaissances sur le diabète, des croyances et des attitudes négatives au sujet du diabète et le non-respect des recommandations liées au mode de vie, soit à l'alimentation, au contrôle du poids et à l'activité physique. À tous ces facteurs s'ajoute le manque de centres d'information diabétique adaptés à leur culture et où ils pourraient s'exprimer dans leur langue. Pour réduire le fardeau du diabète et de ses complications chez les Asiatiques du Sud du Canada, il faudra redoubler d'effort pour la prévention primaire et la prise en charge optimale du diabète de type 2.

MOTS CLÉS

Asiatiques du Sud, diabète, origine ethnique, coronaropathie, prévention primaire, intolérance au glucose, pré-diabète, syndrome métabolique

INTRODUCTION

South Asians are those whose ethnic origin is the Indian subcontinent, which comprises India, Pakistan, Sri Lanka, Nepal and Bangladesh. The combined population of these 5 countries is about 1.5 billion, representing more than 20% of the global population (1). The fastest-growing immigrant population and the second-largest visible minority in Canada (1), South Asians represent 3.1% of the Canadian population (917 070 people) according to the 2001 census, and will be the most prominent visible minority group in Canada by 2017, at an estimated 1.7 million (1).

The prevalence of diabetes is much higher among South Asians than it is in the general population (2-6); indeed, South Asians are 3 to 5 times more likely to develop type 2 diabetes (3-9), and the prevalence of diabetes among South Asians living in the United Kingdom, the United States and Canada has been found to be as high as 12 to 15%, compared with 3 to 5% in white people (6-9). In addition, South Asian children and adolescents have an increased risk of diabetes: it develops about 10 years earlier in South Asians than in Europeans (6). This review discusses the challenges of preventing and managing diabetes in South Asians in Canada.

ETHNIC DISPARITY: REASONS

What are the reasons for South Asians' increased risk of developing diabetes? Several studies have suggested that it is due in part to genetic susceptibility, as well as increased incidence of abdominal obesity, insulin resistance and metabolic syndrome among South Asians compared with other populations (3-9), and indeed, South Asians have been shown to have an increased prevalence of prediabetes as well as diabetes (4-11).

Genetic susceptibility

According to the thrifty-gene hypothesis, genetically susceptible South Asians exposed to a Western lifestyle involving a high-calorie diet and minimal physical activity will be more likely to develop insulin resistance and diabetes (10-15). Some researchers have proposed that the thrifty-phenotype hypothesis accounts for the seemingly fetal origin of the disease (15,16) in this population. Low birth weight has been shown to be related to the development of type 2 diabetes later in life (16), and since almost one-third of all newborns in India have a low birth weight (15,16), this observation may, at least in part, explain the epidemic of diabetes in India. Others have also suggested a development origin of health and disease (7-11,17). The Pune Maternal Nutrition Study, 1 of the first studies to follow maternal health through prepregnancy, serial fetal growth and postnatal growth, suggested that the thin-fat phenotype (muscle thin, body fat), which is more common in South Asian babies, is associated with an increased risk of developing diabetes (9,17). Finally, a recent study showed that South Asian babies have increased levels of cord leptin and insulin, suggesting an intrauterine origin for adiposity and hyperinsulinemia (17).

Fat distribution

Fat distribution, which varies widely in different populations, confers differential health risks, and South Asians are likely to have more visceral fat at any body mass index (BMI) than white people. Having more visceral fat is associated with a higher degree of insulin resistance, and indeed, South Asians also tend to manifest excessive insulin resistance, even in the absence of obesity (7-12). As well, a number of adipokines are secreted by visceral fat. High levels of leptin, high-sensitivity C-reactive protein and nonesterified fatty acids, as well as low levels of adiponectin, are associated with insulin resistance, and several small studies have found such levels in South Asian patients (10,11,18).

Because South Asians have been found to have an increased incidence of both diabetes and coronary artery disease at lower BMIs than white people (7-11), the World Health Organization now recommends different BMI cutoff points for these patients (overweight, BMI >23 kg/m^2; obese, BMI >25 kg/m^2) (19).

Metabolic syndrome

Several definitions of metabolic syndrome have been proposed since Reaven noted its existence in 1988 (20), but central obesity (abdominal obesity), insulin resistance, dysglycemia and hypertension are the essential components, regardless of the specific definition used. According to the International Diabetes Federation (IDF) (21), central obesity is an essential component of metabolic syndrome because of its strong correlation with other features of the syndrome. Because several studies (10,11,20,21) have suggested that metabolic abnormalities are present in certain ethnic groups (such as South Asians) at much lower waist circumferences, the IDF (21), like the WHO, has recommended ethnic-specific waist circumference cutoff points for South Asians (90 cm for men; 80 cm for women) that are lower than those for Europeans.

PRIMARY PREVENTION OF DIABETES

Despite the increased prevalence of diabetes among South Asians, a majority of cases go undiagnosed and, as a result, poorly controlled (4,8). Several studies (7-9) have shown that many South Asians have diabetes-related complications at the time of diagnosis, indicating a prolonged latent phase of undiagnosed diabetes.

Lifestyle intervention

In the past 5 years, many large clinical trials focusing on the role of lifestyle intervention in primary prevention have been published (22-26). Two large, randomized clinical trials – the Finnish Diabetes Prevention Study (22) and the American Diabetes Prevention Program (23) – have found that intensive lifestyle modifications are associated with a 58% reduction in the incidence of diabetes in people at high risk of developing the disease. Similarly, the results of several trials of pharmacological interventions to prevent