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Systematic Review/Meta-analysis

Ethnic Differences in Cardiovascular Disease Risk Factors: A Systematic Review of North American Evidence

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ABSTRACT

Background: Canada is often referred to as a 'land of immigrants,' and the high level of immigration has resulted in significant ethnic diversity in Canada.

Methods: We performed a systematic review of the literature published from 2000 onward to summarize the evidence on ethnic differences in cardiovascular disease (CVD) risk factors; by comparing the presence of CVD risk factors of Arab, black, Chinese, Hispanic, indigenous, and Filipino ethnic groups with that of CVD risk factors in the white ethnic group.

Results: One hundred ten studies met the inclusion criteria for this review. Evidence consistently reported greater prevalence of hypertension in black individuals, greater prevalence of diabetes, overall and abdominal obesity and smoking in indigenous people, greater prevalence of diabetes in Hispanic individuals, and lower prevalence of overall obesity and smoking in Chinese individuals compared with their white counterparts. Although inconsistent, most evidence also indicated higher diastolic blood pressure in black individuals, higher hypertension prevalence in indigenous people, higher prevalence of obesity and diabetes in black individuals, and lower prevalence of

RÉSUMÉ

Introduction : Le Canada est souvent désigné comme une « terre d'immigration », et le niveau élevé de l'immigration a donné lieu à une grande diversité ethnique au Canada.

Méthodes : Nous avons effectué une revue systématique de la littérature publiée à partir de l'an 2000 pour résumer les évidences de différences ethniques concernant les facteurs de risque des maladies cardiovasculaires (MCV); en comparant l'existence de facteurs de risque de MCV pour les groupes ethniques arabe, noir, chinois, hispanique, autochtone, et philippin avec celle de facteurs de risque de MCV d'un groupe ethnique blanc.

Résultats : Cent dix études répondaient aux critères d'inclusion de cette revue. Les évidences ont constamment rapporté une plus grande prévalence de l'hypertension chez les personnes noires, une plus grande prévalence du diabète, de l'obésité globale et abdominale et du tabagisme chez les populations autochtones, une plus grande prévalence du diabète chez les personnes d'origine hispanique, et une plus faible prévalence de l'obésité globale et du tabagisme chez les individus chinois par rapport à leurs homologues blancs. Bien qu'incompatibles, la plupart des évidences ont également indiqué une

Canada is often referred to as a 'land of immigrants,'[1] and the high level of immigration has resulted in significant ethnic diversity in Canada. The most prevalent ethnic groups in Canada comprise individuals of European origin (61.3%), followed by individuals of Aboriginal (5.6%), South Asian (4.9%), Chinese (4.5%), Filipino (2.0%), West Central Asia and Middle East (2.4%), African (2.3%), and Caribbean (1.9%) origin.[2] Canada's diversity is projected to continue to increase, with individuals of South Asian and Chinese origin remaining the largest visible minority groups, and Arab and West Asian populations growing at the fastest rate.[3]

Cardiovascular disease (CVD) is one of the leading causes of death in Canada; approximately 20% of all deaths are attributed to CVD.[4] It is estimated that 1.3 million Canadians are currently living with CVD.[5] CVD rates among Canadians have been shown to differ among ethnic groups. Aboriginal people in Canada have a greater frequency of CVD compared with Canadians of European origin.[6] Individuals of Chinese origin exhibit lower rates of coronary heart disease compared with individuals of European, and South Asian origin.[7] Furthermore, the prevalence of CVD was lower in Canadians of Chinese and African and Caribbean descent than among those of European and South Asian origin.[8] Moreover, rates of death from ischemic heart disease in Canada were observed to be significantly lower among Chinese Canadians compared with their European and South Asian counterparts.[9] The disparity of CVD

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smoking in Filipino and Hispanic individuals compared with white individuals. The evidence on ethnic differences in CVD risk factors in Arab, Chinese, and Filipino individuals compared with white individuals is limited.

Conclusions: We observed significant ethnic differences in CVD risk factors. However, because most studies were of cross-sectional design and many of them explored the ethnic differences in CVD risk factors without adjustment for potential confounders, more robust designs are needed to get a better insight into where the true differences lie, what factors they are attributed to, and whether they persist or change over time.

pression artérielle diastolique plus élevée chez les personnes noires, une prévalence plus élevée de l'hypertension chez les populations autochtones, une plus forte prévalence de l'obésité et du diabète chez les personnes noires, et une prévalence inférieure du tabagisme chez les individus philippins et hispaniques par rapport aux personnes blanches. La preuve de différences ethniques pour les facteurs de risque de MCV chez les individus arabes, chinois, et philippins par rapport aux personnes blanches reste limitée.

Conclusions : Nous avons observé des différences ethniques considérables concernant les facteurs de risque de MCV. Cependant, étant donné que la plupart des études avaient une approche transversale et que beaucoup d'entre elles ont exploré les différences ethniques des facteurs de risque de MCV sans ajustement pour les potentiels facteurs confondants, des approches plus robustes sont nécessaires afin d'avoir une meilleure vision de là où les véritables différences se trouvent, à quels facteurs elles sont attribuées, et si elles persistent ou changent au fil du temps.

burden in these ethnic populations might be in part due to differences in CVD risk factors. Therefore, the objective of this study was to systematically review recent North American evidence on the differences between modifiable CVD risk factors in the most common ethnic groups in Canada.

Methods

We performed a systematic review of recent North American (Canada, Mexico, and United States) evidence from 2000 to 2014 for ethnic differences in modifiable CVD risk factors (Fig. 1). The following databases were searched: Academic Search Premier, Biomedical Reference Collection: Comprehensive, CINAHL, Global Health, MedLine, and Social Sciences. The search strategy included terms from 2 categories: ethnicity and modifiable CVD risk factors. Ethnicity terms included the 6 largest ethnic groups in Canada: Aboriginal/First Nations/Native Americans/Indians, African American/Black, Chinese, European/white/Caucasian, Filipino, and Arab. Although the South Asian ethnic group is the largest visible minority group in Canada, this group was excluded from the review, because a review article dedicated to this group is in this issue of the *Canadian Journal of Cardiology*.[10] For all searches, the European/white/Caucasian ethnic group was used as a reference ethnic group, and combination searches of the reference group with all other ethnic groups of interest were performed (eg, Caucasian + Aboriginal, Caucasian + Chinese, Caucasian + African American). Terms related to modifiable CVD risk factors included hypertension/blood pressure, cholesterol/triglycerides, diabetes/glucose, smoking, and obesity. Terms from ethnicity and risk factor categories were combined using controlled vocabularies such as 'AND' and 'OR'. For example, we searched ((European*) AND (Chinese) AND (blood pressure)) OR ((European*) AND (Chinese) AND (cholesterol)) (see the *Search Terms* section of the Supplementary Material).

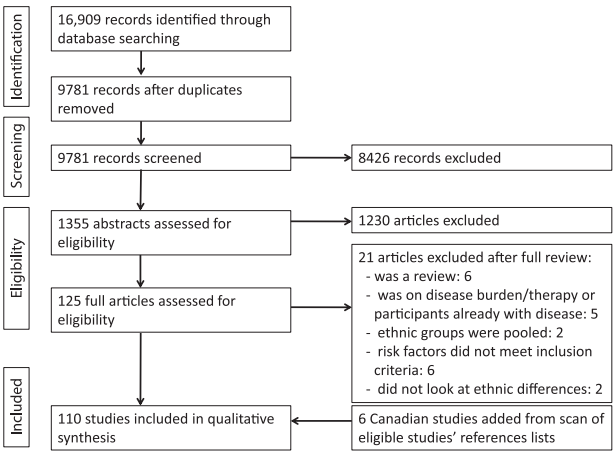

Figure 1. Results of the literature search for ethnic differences in cardiovascular disease risk factors.

Study selection

Two authors (D.G. and E.S.R.) reviewed all abstracts. Studies were included if they covered North American evidence published in the English language from 2000 and onward; focused on primary prevention adult population and major ethnic and/or racial groups in Canada: Aboriginal, African American (black), Chinese, European (white), Filipino, and Arab; compared the differences in CVD risk factors with those of European/white/Caucasian individuals; and were original research. Review articles were excluded. The reviewers were not blinded to the study authors or the journals of publication.

Because of the limited evidence on ethnic differences in CVD risk factors between Aboriginal Canadian and white populations, we also recorded evidence on ethnic differences between Native American individuals from the United States and white individuals; and created an ethnic category, termed indigenous people. Furthermore, in many of the studies that met inclusion criteria for this review there was evidence on ethnic differences in CVD risk factors between Hispanic and white individuals. Because the Hispanic ethnic group is one of the fastest growing populations in the United States and prevalent in Canada, we also reviewed the evidence on ethnic differences in CVD risk factors between Hispanic and white individuals from reports that met the original eligibility criteria. Additionally, because many of the ethnic groups were