

## Review

# Community-Based Programs to Improve Prevention and Management of Hypertension: Recent Canadian Experiences, Challenges, and Opportunities

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### ABSTRACT

High blood pressure (BP) is the greatest risk of ill health and an early death worldwide. It is a key factor in the development of atherosclerosis, the main cause of vascular and cerebrovascular diseases, and is causally linked to kidney failure and dementia. Healthy lifestyle choices coupled with effective, population-based prevention strategies, early detection, and optimal treatment and control of high BP can substantially reduce the burden of vascular and cerebrovascular diseases. Considering the projected increases in the risk factors responsible for these conditions, it is imperative that effective population-based prevention strategies are developed, evaluated, and scaled-up. Extensive and rigorous evidence supports the promotion of healthy lifestyle choices to maintain low BP and prevent associated chronic diseases. Community-based programs are the prime tool for implementing a population strategy of prevention. Their aim is to shift the distribution of risk factors to lower levels across entire populations. Despite their great potential and more than a 4-decade history, it remains unclear to what extent such programs can be effectively implemented, scaled-up and sustained. We provide a broad overview of community-based programs implemented to address cardiovascular disease risk factors, focus on the recent Canadian experience in this area, and highlight the main challenges and opportunities currently

### RÉSUMÉ

L'hypertension artérielle (HTA) est le plus grand risque lié au mauvais état de santé et au décès prématuré à travers le monde. Elle est un facteur clé du développement de l'athérosclérose, la principale cause de maladies vasculaires et cérébrovasculaires, et est liée sur le plan de la causalité à l'insuffisance rénale et à la démence. Des choix pour un mode de vie sain jumelés à des stratégies populationnelles de prévention efficaces, à la détection précoce, au traitement optimal et à la maîtrise de l'HTA peuvent réduire de manière substantielle le fardeau des maladies vasculaires et cérébrovasculaires. Considérant la prévision de l'augmentation des facteurs de risque responsables de ces affections, il est impératif que des stratégies populationnelles de prévention efficaces soient développées, évaluées et étendues à plus grande échelle. Des preuves exhaustives et rigoureuses soutiennent la promotion des choix pour un mode de vie sain pour maintenir la pression artérielle (PA) basse et prévenir les maladies chroniques associées. Les programmes communautaires sont les outils essentiels à la mise en œuvre d'une stratégie de prévention populationnelle. Leur but est de modifier la distribution des facteurs de risque au niveau populationnel pour abaisser les niveaux de risque de populations entières. En dépit de leur grand potentiel et de plus de 4 décennies d'existence, on ignore jusqu'à quel point ces programmes peuvent être

According to the Global Burden of Disease Study 2010,<sup>1</sup> high blood pressure (BP) is the greatest risk of ill health and an early death worldwide.<sup>2–4</sup> In Canada, approximately 2 adults in 5 either have a diagnosis of hypertension or BP in the 'pre-hypertensive' range.<sup>5,6</sup> Moreover, the lifetime residual risk of developing hypertension in people aged 55 to 65 years with normal BP is estimated to be 90%,<sup>7</sup> making high BP a concern for virtually everyone.<sup>8</sup> Early diagnosis and treatment of hypertension can reduce the risk of developing

complications such as heart failure, stroke, and other cardiovascular<sup>5</sup> (CV) and renal diseases.<sup>9</sup> In recent decades, Canada has dedicated much resources and strategic efforts to reduce the hypertension-related burden of disease and currently has the world's highest reported treatment and control rates for elevated BP.<sup>8</sup>

Numerous studies have shown that hypertension could be largely prevented, being mostly a result of modifiable lifestyle behaviours such as unhealthy diet, excessive sodium and alcohol intake, lack of regular physical exercise, and smoking. The INTERHEART (A Global Case-Control Study of Risk Factors for Acute Myocardial Infarction) and INTERSTROKE (A Study of the Importance of Conventional and Emerging Risk Factors of Stroke in Different Regions and Ethnic Groups of the World) studies established that a small set of modifiable risk factors were responsible for the vast majority of myocardial infarction and stroke.<sup>10,11</sup> These risk factors are common, applicable to men and women, and on the rise in Canada and

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associated with them. Recent Canadian initiatives have shown encouraging results, some of them focusing on high-risk subgroups. These initiatives demonstrate feasibility and benefits of implementing community-based programs for the prevention and management of cardiovascular disease in Canada.

globally. Findings from these studies confirm that approaches to prevention can be based on similar principles worldwide and that they have the potential to significantly reduce the global burden of CV disease (CVD). However, Canada, similar to many other countries, does not fare very well on the account of preventing or delaying the onset of hypertension. According to the latest national reports,<sup>12,13</sup> 85% of Canadians are not meeting the weekly physical activity recommendations, fruit and vegetable consumption is in decline, heavy drinking is on the rise, and elevated rates of obesity and overweight remain virtually unchanged, putting approximately 60% of men and 45% of women at an increased health risk because of excess weight. To reverse these trends, effective upstream prevention and intervention strategies involving factors at the individual, health care provider, community, and system level are urgently needed.<sup>14</sup>

Population level interventions were identified as 1 of 2 mutually reinforcing prongs of action required to reduce the population burden of CVD in the recent 2011 Healthy Blood Pressure Framework developed by Hypertension Canada<sup>8</sup> (the other being individual-level interventions focused on high-risk individuals). Community-based programs are the prime tool for implementing a population strategy of prevention.<sup>15</sup> These programs encompass a wide range of interventions delivered in a synergistic way in community settings to target an entire population instead of single individuals. Geoffrey Rose's seminal papers from the 1980s summarize best the rationale for targeting populations as a guide to prevention, stating that "a large number of people at a small risk may give rise to more cases of disease than the small number who are at a high risk"<sup>16</sup> and that "the mass approach is inherently the only ultimate answer to the problem of a mass disease".<sup>17</sup> There is little doubt that high BP qualifies as a mass disease. The aim of such programs is thus to shift the distribution of CVD risk factors to lower levels across the entire population. CVD community-based programs have so far addressed aspects of prevention, treatment, and control by focusing on smoking, high BP, physical inactivity, and unhealthy diet, and using multifactor risk reduction interventions. Key components have included mass media campaigns, self-help programs, universal screenings, contests, mobilization of community leaders and agencies to promote healthy lifestyles, and using volunteers to help administer the programs, among others.<sup>18</sup>

Community-based programs are attractive on several accounts: they have the potential to fight root causes of disease and to prevent the occurrence of new cases; they can have an effect on the prevention of numerous other diseases with common risk factors, an effect that is often synergistic.

mis en œuvre, accrus et maintenus efficacement. Nous présentons un aperçu général des programmes communautaires mis en œuvre pour lutter contre les facteurs de risque de maladie cardiovasculaire, nous concentrons sur l'expérience canadienne récente dans ce domaine, et soulignons les difficultés et les opportunités principales qui y sont actuellement associées. Les récentes initiatives canadiennes ont montré des résultats encourageants, dont certains mettent l'accent sur des sous-groupes de la population exposés à un risque élevé. Ces initiatives démontrent la faisabilité et les avantages de la mise en œuvre de programmes communautaires de prévention et de prise en charge de la maladie cardiovasculaire au Canada.

Furthermore, they present an educational opportunity to reach marginalized (by the conventional health system) populations and advance community organization and activation principles. That is, they contribute to enhancing the capacity of a community by establishing significant coalitions of community resources in the course of an initial program on which other community projects can potentially build.<sup>10,19-24</sup> Moreover, because of the use of mass media or volunteers, community-based programs can have comparatively low cost-effectiveness ratios.<sup>22,25</sup> However, despite this great potential and more than a 4-decade history, it remains unclear to what extent these programs can be effectively implemented, sustained, and scaled-up. Few community-based programs have been rigorously and consistently evaluated. This lack of rigour was confirmed by a recent systematic review and pooled meta-analysis<sup>26</sup> which was unable to identify what type of intervention was most effective for achieving improvements in population health. The aim of this report is to provide a broad overview of the history of community-based programs to address CVD risk factors, and high BP in particular, including recent and promising Canadian initiatives in this area. An additional focus is on the main challenges and opportunities associated with such programs.

### CV Community-Based Programs: An Overview

It is outside the scope of this report to review thoroughly the plethora of CVD community-based programs that have been implemented since their introduction some 40 years ago. Several review articles have been published on the subject<sup>15,18,21,22,26,27</sup> and we refer the reader to them for further details on past programs. Here we provide a brief chronology as a backdrop for describing selected current Canadian initiatives and discussion around scalability and sustainability.

The first CV community-based programs were initiated in Western countries in the 1970s, when CVD rates and risk-factor profiles were high and on the rise, and targeted communities where these rates were highest compared with national averages.<sup>18</sup> The early programs—such as the Stanford Three-Community Study<sup>18,22,28</sup> in the United States and the North Karelia Project<sup>22,29,30</sup> in Finland—appeared to be quite successful in substantially reducing CV risk in intervention communities in comparison with control communities. This spurred a second generation of well-funded demonstration projects with more rigorous evaluation components,<sup>18</sup> such as the 3 field trials funded by the National Heart, Lung, and

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