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Cardiovascular Disease Prevention and Implications for Worksite Health Promotion Programs in Brazil

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ABSTRACT

Economic growth, an aging population, and changes in lifestyle patterns have contributed to the rise in cardiovascular disease (CVD) in Brazil. Worksite health and wellness programs are viewed as a potentially viable means to address the increase in disease burden in Brazil. The purpose of the present review is to investigate actions proposed by the Brazilian Government for CVD prevention and the current state of worksite health promotion. Our review of literature found that the Brazilian Government has been showing a growing interest in developing and promoting CVD preventive strategies, primarily through better control of known risk factors (i.e. smoking, obesity, physical inactivity, high cholesterol, high blood pressure, and high blood glucose). Current initiatives are considered positive steps toward better CVD prevention in Brazil. With respect to worksite health and wellness, additional work is needed to determine optimal program delivery models, financial implications and individual/population compliance with healthier lifestyle choices.

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Cardiovascular disease (CVD) in the adult population clinically manifests as coronary heart disease (CHD), cerebrovascular disease, diseases of the aorta and/or peripheral vascular disease.[1,2] These diseases generally cause limitations in one's work and social life, with negative quality of life, functional and economic impacts, often leading to premature death.[2–6] The negative impact of CVD is felt at both an individual and societal level.

It is estimated that 45.9% of individuals worldwide have some type of non-transmissible chronic disease [i.e. non-communicable diseases (NCDs)], the most frequent of which is CVD,[4,7] with a prevalence of 35% among individuals aged 40 years or older in Brazil.[8] Currently in both Brazil and the United States, approximately 32% of deaths are caused by CVD, disproportionately affecting the elderly and individuals with both low income and eduction.[3,9,10] Regarding risk

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Abbreviations and Acronyms

BMI = body mass index

CHD = coronary heart disease

CVD = cardiovascular disease

HTN = hypertension

IDC = International Classification of Diseases

NCDs = non-communicable diseases

PA = physical activity

T2D = type 2 diabetes

WHO = World Health Organization

factors, systemic hypertension (HTN) is associated with the death of an estimated 7.4 million individuals per year, active or passive cigarette smoking is associated with the death of 6 million, high blood glucose is associated with the death of 3.4 million, physical inactivity is associated with the death of 3.2 million and overweight/obesity is associated with the death of 2.8 million.[3] In recent years, NCDs have accounted for 69% of hospitalization expenditures[8] with CVD being a primary contributor, accounting for 685,780 hospitalizations in 2010.[11]

Despite regional variation in the prevalence of factors associated with the inverse relationship between income and mortality, CVD has been the main cause of death in all regions of Brazil since the 1970s.[5,12] This may be attributed to the current scope of public health services as well as the ongoing demographic transition of the population (i.e. increasing mean age) (Fig 1), an increase in income, and a reduction in death due to infectious/contagious diseases.[3,13–16] These trends observed in Brazil parallel those observed in the US since the 1970s.[7] Indeed, a 3.5-fold increase in death due to CVD is expected over the next 30 years worldwide,[9] with Brazil becoming the country with the highest CVD morbidity and mortality by 2040.[13]

Despite the accelerated growth in CVD, there is consensus that the early adoption of cost-effective disease prevention and health promotion strategies focused on holistic care is capable of reducing risk factors, positively impacting the health of a country's population.[3] According to the World Health Organization (WHO), 80% of CVD cases can be avoided by adopting a healthier lifestyle, including a healthy diet, regular physical activity (PA) and smoking cessation.[17] However, considering the rational allocation of resources and the generation of concrete results, such strategies should be based on scientific knowledge and technological advances, in order to optimize outcomes.

Considering the current situation in Brazil, the aim of the present review was to investigate actions proposed by the Brazilian government for CVD prevention and health promotion focused on non-pharmacological measures directed toward reducing modifiable risk factors, with special considerations given to initiatives in the workplace.

A descriptive review of the literature was first carried out. For the retrieval and selection of documents, a retrospective search was performed for national government documents addressing health issues, especially those on preventive medicine, public health and epidemiology. The Pan American Health Organization and WHO websites were also searched. The following descriptors were used in the searches: (Smoking [MeSH] OR "Metabolic Syndrome X"[MeSH] OR Overweight [MeSH] OR "Physical Fitness"[MeSH] OR Exercise[MeSH] OR Hypercholesterolemia[MeSH] OR Hypertension[MeSH] OR Hyperglycemia[MeSH] AND (Epidemiology[MeSH] OR "Epidemiologic Study Characteristics as Topic"[MeSH] OR "Epidemiologic Measurements"[MeSH] OR "Epidemiologic Factors"[MeSH] OR "Epidemiologic Research Design"[MeSH] OR "Epidemiological Monitoring"[MeSH] OR "Workplace Strategies"[MeSH]).

The titles and abstracts of the papers retrieved were read for the initial selection based on the inclusion criteria regarding the target outcome and methodological criteria. All abstracts that did not provide sufficient inclusion criteria for the full-text analysis were excluded. For the analysis of the Brazilian situation in comparison to situations found in other parts of the world, factors associated with non-pharmacological CVD prevention measures and health promotion actions common to both situations were selected: smoking, obesity, physical inactivity, high cholesterol, HTN and high blood glucose/type 2 diabetes (T2D).

Our analysis of the literature revealed the Brazilian government has been taking an increasing interest and role in CVD preventive strategies, with special focus on addressing established risk factors, according to recent demographic characteristics and future projections.

Measures taken by the Brazilian government regarding the prevention of CVD follow two complementary lines of action, those being pharmacological and non-pharmacological measures. The implementation of non-pharmacological measures is the main challenge for the effective prevention of CVD, as such initiatives depend on the proactive participation of the individual regarding a permanent change in lifestyle habits in order to improve risk factor profile and outcome. However, in comparison to the pharmacological approach, non-pharmacological measures offer both lower costs and the potential, if adhered to, for greater effectiveness in the long term. Considering the diversity of therapeutic measures, care should be focused on the overall CVD risk to which an individual is exposed for the rational use of available resources and the potential adherence to short-term and long-term prevention measures.[1]

In Brazil, strategies aimed at CVD prevention and health promotion are addressed in the government program entitled the "Strategic Action Plan", which was designed to combat NCDs between 2011 and 2022.[3] The structure of this plan is based on common risk factors and unhealthy habits found among individuals with CVD, kidney disease, chronic respiratory disease and cancer, namely, smoking, poor diet and a lack of PA. In addition, the plan defines and prioritizes actions and necessary investments to achieve intended outcomes based on three principles: a) surveillance, information, evaluation and monitoring, b) health promotion, and c) integral care.

In the US, the American Heart Association's Strategic Impact Goal Through 2020 and Beyond places emphasis on HTN, high cholesterol and physical inactivity as the major risk factors to target for the prevention of CVD.[18] Either together or alone, these risk factors are significantly responsible for the high prevalence rates of systemic arterial HTN, T2D, as well as overweight and obesity.[3,7,18,19]

The increasing focus on non-pharmacological measures has led to studies aimed at determining more effective

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