The Need for Brazil to Focus on CVD

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Over the last 5 decades, cardiovascular disease (CVD) has been the leading cause of death in Brazil. This epidemiological scenario is closely related to lifestyle changes due to urbanization, globalization, and population aging along with the increase in life expectancy in the Brazilian population [1]. In 2011, a total of 384,615 deaths were attributed to CVD in Brazil, after correction for underreporting and poorly defined causes, which correspond to 31% of all deaths. Among CVD deaths, 31% were related to coronary heart disease, 30% to cerebrovascular disease, 14% to hypertension, and 18% to other causes [2]. In 2012, CVD accounted for 940,323 hospital admissions (472 per 100,000 population), which, in relative terms, corresponds to 8.3% of all hospitalizations in the country, generating economic expenditure of almost US$1 billion associated with CVD patient care and procedures [2].

Facing the impact of the epidemic pattern of CVD in Brazil by health care professionals as well as the Brazilian population constitutes a fundamental step for efficient prevention and treatment of CVD. This process includes improvement on scientific knowledge and, even more importantly, population awareness of cardiovascular risk factors independently associated with higher risk for developing acute myocardial infarction (AMI) or stroke. Indeed, the INTERHEART (Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries) study [3] was an international, hospital-based, case-control study, with 26,916 individuals from 262 institutions in 52 countries, which clearly and reliably demonstrated that 9 cardiovascular risk factors, easily assessed and identified globally, were independently associated with the occurrence of the first AMI: smoking, apolipoprotein B/apolipoprotein A1 ratio (top vs. lowest quintile), history of diabetes or hypertension, abdominal obesity as measured by waist-to-hip ratio (upper vs. lower tertile), and psychosocial factors (stress/anxiety or depression) were directly associated with AMI; adoption of healthy lifestyle behavior, that is, daily consumption of fruits and vegetables and regular moderate or strenuous physical activity were inversely associated with AMI. Alcohol consumption was also evaluated [3]. A regional analysis of the INTERHEART study in Latin America also supported the overall results with the same risk factors, however, emphasizing quantitative differences in the odds ratios and population attributable risks of specific risk factors in Latin America relative to the other geographic regions. For example, abdominal obesity and permanent stress were markedly more relevant to Latin America than for the other regions [4]. In addition, the case-control INTERSTROKE (Global and regional effects of potentially modifiable risk factors associated with acute stroke in 32 countries) [5] study (similar design of the INTEHEART study) evaluated the risk factors associated with the occurrence of the first stroke (overall, ischemic, and hemorrhagic) and enrolled 26,919 individuals from 32 countries. It robustly demonstrated that 10 easily assessed risk factors accounted for approximately 90% of the population's attributable risk of stroke. These risk factors were similar to those identified in the INTERHEART study, with the addition of cardiac causes that also included atrial fibrillation. Hypertension was the most relevant risk factor for all stroke subtypes [5]. Brazil has effectively contributed to these 2 seminal studies for CVD prevention worldwide, allowing health care professionals and population to assimilate and, sequentially, to implement this scientific knowledge toward reduction in the CVD burden. Unfortunately, availability of scientific evidence does not translate into practical and effective implementation in clinical practice without efficient knowledge translation strategies. In order to achieve that goal, these must be locally customized taking into account the triad of health care professional, population, and government—a new science for reassuring tangible cardiovascular benefits for the population.

Analysis of CVD prevention in Brazil, based on epidemiological research, has also been performed through the PURE (Prospective Urban and Rural Epidemiological Study), which included 20 countries with various degrees of economic development (low-, medium-, and high-income countries) [6]. Sadly, a strikingly low use of priority therapies for secondary prevention, such as aspirin, statins, angiotensin-converting enzyme inhibitors and beta blockers, in patients with coronary artery disease or stroke history had been detected, along with low adoption rates of healthy lifestyle behavior—dietary adherence, smoking cessation, and physical activity [7,8]. It is noteworthy that a country's economic status was relevant in about two-thirds of the variations in the use of secondary cardiovascular prevention medications, whereas one-third was related to individual level factors [6]. In South America, the utilization of evidence-based medication for coronary artery disease or stroke secondary prevention was quite low with no utilization of any medication at all varying from 20% to 48% for coronary artery disease, and from 30% to 66% for stroke [9]. Additionally, rates of treated and controlled hypertension are low globally, including South America, with a proportion of hypertensive individuals with controlled blood pressure levels of 1 in 10 [10].

Health care gaps in the populations were found and can be cited: lack of access to health services by patients with diagnosed CVD; lack of knowledge on the severity of the disease and the importance of long-term delivery of

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recommended treatment and prevention for the patient; and patient adherence compromised by some reasons such as not remembering or refusing to follow recommendations. It is widely appreciated that health care professionals lack knowledge about these performance measures and essential treatments for primary and secondary prevention of cardiovascular events. Guidelines are either unavailable or, when available, complex and difficult to read and difficult to interpret appropriately and apply practically. Hence, current guidelines are infrequently followed. Finally, regarding the government participation, there are inadequate government health policies for prevention and control of chronic noncommunicable diseases, particularly CVD; in addition, priority interventions are not widely available [11].

Proposals to address these and other barriers were presented by the World Heart Federation in 2015 through the Roadmaps. Thus, there is potential for improvement in the CVD prevention management by implementing feasible strategies, such as strengthening the primary health care network; creating straightforward guidelines that are more specific to each country; training adequate numbers of health care professionals to advise and prescribe priority interventions; ensuring that priority medications are available in the health services of primary and secondary care; and conducting public campaigns to educate communities about the importance and need for continued treatment [11].

In Brazil, the implementation of the World Heart Federation Roadmaps has been already started by means of a coalition comprising medical societies, civil society, private stakeholders, and government. A comprehensive regional and local analysis has been initiated and after identifying where the roadblocks preventing effective solutions are located, we would be able to implement strategies to reduce CVD mortality in Brazil over the next decade.

Brazil has faced difficulties in maintaining the health system and establishing the best approach to fight chronic diseases. The strong social lobby similar to the one to foster financing human immunodeficiency virus and cancer research and management of care does not exist for the spectrum of cardiovascular diseases, the leading cause of death but the most neglected public health problem in Brazil. CVD control actions have been recently proposed and the Brazilian government has funded and conducted several programs. The Ministry of Health stated in 2011 that health care data should be used as a foundation for public policy makers in the areas of health care delivery and that the survey of the Universal Health System should be aligned with proposals of the Strategic Actions Plan to Fight Against NCD in Brazil, 2011 to 2022 [12].

However, the vast majority of these actions are focused on the prevalence of risk factors, ways to control childhood obesity, motivational initiatives to improve the level of physical activity, and policies for the reduction of salt intake. These activities are important but will have a mild impact on the outcomes as opposed to the rapid increase on the disease burden. It is urgently warranted that all health care domains establish feasible goals and work together with continuous efforts to rethink which strategies might be truly relevant and effective to be adopted on a nationwide level. Integrated actions involving continuous population-based research, public education, health care professional training, and public policies aiming at strengthening the care network, especially primary and secondary care, will certainly contribute to improving cardiovascular health in Brazil. CVD can no longer be ignored.

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