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# Cardiovascular Disease in Latin America: The Growing Epidemic

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ABSTRACT

Cardiovascular diseases (CVD) produce almost a million deaths a year in Latin America (LA), becoming the main cause of death in the last years, and it is estimated that the number of deaths in the region attributable to CVD will increase in the near future. This new epidemic is a consequence of the demographic, economic and social changes observed in LA in recent years. Coronary heart disease and stroke causes 42.5 % and 28.8%, respectively of the CVD mortality in the region. Chagas heart involvement and rheumatic heart disease, once a major health problem, are responsible of only 1% of the mortality each. Improving in socioeconomic status, increased life expectancy and high prevalence of risk factors for atherosclerosis have been the major determinants of this marked epidemiologic change.



Latin America (LA), with a population of approximately 600 million in 2013, is composed of the American countries where a Latin-derived language (Spanish, Portuguese or French) is the main language. Cardiovascular diseases (CVD) are the main cause of death in this region, and it is estimated that the number of deaths in the region attributable to CVD will increase by more than 60% between 2000 and 2020, compared with an increase of only 5% in the developed world.[1] This increased risk is a consequence of the demographic, economic and social changes observed in LA in recent years. Population aging, urbanization, changes in lifestyle (such as unhealthy diets, increased smoking and obesity and decreased physical activity/PA) and limited access to effective health care are the main causes of the increasing importance of CVDs. From 1965–1970 to 2010–15, life expectancy at birth in LA has increased from 58.9 to 74.7 years, and it is estimated to reach 81.8 years in 2050. This is due to a decrease in total fertility from 5.53 to 2.18 children per woman, a decrease in infant mortality from 91 to 18 per 1000 live births and a reduction in crude death rate from 10.9 to 5.9 per 1000 population.[2]

Income has increased in recent years, from United States (US) $ 3346 in 1994 to US $8981 in 2013. The World Bank has classified several LA countries as emerging economies, with income levels between middle and middle-to-high, whereas Chile and Uruguay were considered by the World Bank in 2013 as high-income countries. Between 1980 and 2013, the Regional Human Development Index in LA increased from 0.573 to 0.741 and surpassed 0.717, which is defined by the United Nations Development Programme as an indicator

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**Abbreviations and Acronyms**

**AMI** = Acute myocardial infarction

**CARMELA** = Cardiovascular Risk Factor Multiple Evaluation in Latin America

**CHD** = Coronary heart disease

**CVD** = Cardiovascular disease

**DM** = Diabetes mellitus

**HF** = Heart failure

**HTN** = Hypertension

**LA** = Latin America

**LDL-C** = Low-density lipoprotein cholesterol

**OR** = odds ratio

**PA** = Physical activity

**PURE** = Prospective Urban and Rural Study

**RHD** = Rheumatic heart disease

**US** = United States

**WHO** = World Health Organization

of high development. However, LA is the world's most unequal region, with an average Gini coefficient (a statistical measure of inequality) of approximately 0.53. In 2011, LA had 177 million inhabitants living below the poverty line, of whom 70 million were in extreme poverty with a cluster of factors such as low income, lower level of education, obesity, smoking and poor control of CVD risk factors.

Rural-to-urban migration has also increased in recent years. Approximately 79% of the population lived in urban areas in 2010, and such migration is associated with the adoption of less healthy lifestyle factors, such as increased intake of energy-rich foods, decreased consumption of fruits and vegetables and reduced PA.

## Risk factors for atherosclerotic disease in Latin America

### *Physical inactivity*

Physical inactivity is an independent risk factor for myocardial infarction[3] and other CVD. Despite the known benefits of exercise, physical inactivity is common in the general population of LA, with reported prevalences of 17.4% in Mexico[4] and 46.2% in Argentina.[5] The population-attributable risk of coronary heart disease (CHD) due to sedentary behavior in LA and the Caribbean is 7.1%, ranging from 2.7% in Guatemala to 11.3% in Argentina. Additionally, the life expectancy would increase by 0.82 years if the LA population were to change its sedentary lifestyle.[6]

### *Obesity*

Over recent decades, obesity has become a global epidemic, representing a major cause of disability and mortality. The frequency of obesity occurrence differs greatly among countries within LA. The prevalence of obesity varies between 13 and 25%, being highest in Chile.[4,5,7–9] In several countries, a pattern of higher obesity in women and in individuals of lower socioeconomic levels and lower levels of education is observed.[4,7,8]

### *Diabetes mellitus (DM)*

Closely linked with obesity, the prevalence of DM has been increasing over recent decades, and it is associated with changes in diet and a sedentary lifestyle. In LA, the overall estimated prevalence of DM is 5%. However, differences have been observed among the LA countries; Chile and Mexico show the highest frequencies of diabetes, with national prevalences of 9.4% and 9.2%.[4,7] The presence of DM in LA is more common in less-educated subjects.[4,7,8]

### *Dyslipidemia (DYS)*

A high prevalence of DYS has been documented in LA, with the most common alteration being the presence of reduced levels of high-density lipoprotein cholesterol. The reported prevalences of DYS were 63.0% in Colombia,[8] 60.5% in Mexico,[4] 48.4% in men and 30.6% in women in Chile[7] and 40% in women and 38% in men in Peru,[10] significantly higher than the 18.9% reported in the US.[11] Furthermore, high low-density lipoprotein cholesterol (LDL-C) levels (≥200 mg/dL) have been reported in 43.6% of the population in Mexico[4] and in 38.5% of men and 39% of women in Chile.[7] The Colombian survey also revealed LDL-C levels higher than 240 mg/dL in 8% of the population, lower results to those observed in Chile (11.6%) and in the US (13.8%).[11]

### *Tobacco smoking*

Tobacco smoking has been shown to cause a variety of diseases and accounts for 50% of preventable deaths in smokers, half of which are due to CVD.[12] Despite the known harmful effects of tobacco smoking and the various smoke-free campaigns and policies that have been implemented in different regions of the world, smoking remains prevalent. According to LA reports, the prevalence rates of smoking (defined as having smoked more than 100 cigarettes and currently smoking) range from 12.8% in Colombia[8] to 33.4% in Uruguay[9] and Argentina,[5] with even higher levels in Chile, i.e., 42%..[7] In all countries, smoking prevalence is higher among men than among women, a gap that has narrowed over the years. It is noteworthy that the risk associated with smoking in women is proportionally higher for those taking oral contraceptives.[12] A slight decrease in smoking rates over the years has been documented in the region as a consequence of anti-tobacco policy implementation.

## Cardiovascular diseases in Latin America

CVDs are the leading causes of death in LA, accounting for 33.7% of total mortality, with higher mortality levels in Guyana, Trinidad and Tobago and Venezuela; Puerto Rico and Chile exhibit the lowest values.[13] While LA faces an increased burden due to CHD and hypertension (HTN) and stroke, it still has significant numbers of individuals with