Trends and Heterogeneity of Cardiovascular Disease and Risk Factors Across Latin American and Caribbean Countries

Alvaro Rivera-Andrade a, Max A. Luna b,*

a INCAP Comprehensive Center for the Prevention of Chronic Diseases/Institute of Nutrition of Central America and Panama, Guatemala City, Guatemala
b Department of Medicine, University of Virginia, Charlottesville, VA

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ABSTRACT

Aging, globalization and urbanization in Latina America and the Caribbean (LAC) have made cardiovascular disease (CVD) the number one cause of death and disability, while communicable diseases have decreased. This epidemiological transition has been more heterogeneous than in other areas of the world. While countries like Argentina, Chile, Brazil and Colombia have seen a significant decrease in CVD mortality, the rest of the countries have seen an increase, particularly Central American and Caribbean countries. These latter countries have now coexisting high prevalence of communicable and non-communicable diseases, threatening the socioeconomic development. Recent multinational cross-sectional studies have provided a better perspective of the prevalence and distribution of cardiovascular risk factors in the region. While there has been a decrease in prevalence of smoking in the region, obesity, diabetes and physical inactivity continue to increase the CVD disease burden in LAC.

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Although Latina America is a region commonly described as a region that shares geographic, language and ethnic similarities, it also has significant environmental and genetic diversity between and within countries. The southern cone exhibits a predominant Caucasian background with consumption of a more western-type diet, whereas Central America displays a more Amerindian dietary culture, with high intake of grains and vegetables. Globalization has contributed significantly in the transition to more common epidemiological patterns of disease. Aging, urbanization, smoking, unhealthy diets and physical inactivity have contributed to the so called epidemiological transition coined by Moran in 1971 (Fig 1) where communities transition from more common communicable and diseases of starvation to non-communicable disease that include among the more important ones, CVD, cancer, diabetes mellitus (DM) and chronic lung diseases. This transition occurred in the higher income countries like the United States of America (USA) and Western Europe, in the first part of the 20th century, where CVD mortality peaked in the early 1970’s. In Latin America and the Caribbean (LAC) this transition began to happen in the second part of the 20th century in a faster and a more heterogeneous way, where you currently still find countries and communities in the stages of receding pandemics and degenerative and man-made diseases; and a few countries already in the stage of

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* Address reprint requests to Max A. Luna, MD, Associate Professor of Medicine, Division of Cardiovascular Medicine, University of Virginia, 57 Beam Lane, Suite 205, Fishersville, VA 22939.
E-mail address: maxluna@virginia.edu (M.A. Luna).
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delayed degenerative diseases. Countries like Argentina, Chile, Brazil and Cuba have seen up to 60% reduction in CVD mortality in the last 3 decades and the rest of the region has seen different trends from a slower reduction in mortality to an increase in CVD mortality in countries like Mexico and the Central American countries. What is particularly troubling in some countries of LAC is the coexistence of significant levels of communicable and NCD; this double burden of disease causes an unbearable toll to the health systems and society.

Diseases of the circulatory system are the leading cause of disability and death in LAC, responsible for 35% of all deaths and 68% of total burden of disease. From 1990 to 2010 mortality from ischemic heart disease (IHD) and stroke has increased 59% and 39%, respectively (Table 1). The highest CVD death rates are seen in Guyana, Trinidad and Tobago, Paraguay, Venezuela and Brazil and the lower rates are seen in Puerto Rico, Costa Rica, Chile and Peru. Risk of CVD death is higher in men than in women, from countries with biggest gap 36% in IHD, 8% in stroke and 82% in DM all among the top 10 leading causes (Fig 2).

The impact of vulnerable groups for CVD in the region provides a better picture of the human and socioeconomic burden of CVD, which among the non-communicable disease in low to middle income countries occur at earlier ages increasing DALY and affecting their contribution to society and their household at their prime of life. In terms of CVD, the first myocardial infarction occurs in people 5–10 years earlier in Latin America than in higher income countries like the USA.

Latin America has experienced rapid social and financial progress over the past decades; however, this has happened in an inequitable way, contributing to marked disparities in health and economic conditions among social classes and geographic regions. LAC is recognized as the region with the highest socioeconomic inequality in the world, based on the GINI index, which has remained virtually unchanged since the 1970’s. This inequality has been correlated with increase rates of CVD mortality (Fig 3).

### CVD risk factors in LAC

The prevalence of risk factors for death in the region has increased significantly over the past two decades; most of these risk factors are also risk factors for CVD as seen in Fig 4. The following section examines the CVD risk factors across different countries and geographic areas in LAC, and how they relate to increasing prevalence of CVD, particularly associated to atherosclerotic vascular disease (Table 2).

### Obesity

Across the globe, the epidemic of obesity is driving the burden of NCD. It is estimated that obesity will account for 57% of the disease burden worldwide by 2020. Based on regional LAC data, overweight and obesity affect more commonly women than men and individuals living in urban areas than in rural areas. Obesity has been independently associated with low socioeconomic status and low educational level. However, in communities in early epidemiological transition, obesity appears to penetrate first in households with higher income. In women from Mayan descent in a rural community from Guatemala, higher socioeconomic status has been associated with higher rates of obesity. Their increased buying power steers them to increase calorie and processed food intake but unfortunately without early access to cardiovascular health education.

The INTERHEART and other studies have confirmed the close correlation between obesity and central obesity with CVD in Latin America. In this large case control study of people with a first myocardial infarction, central obesity was the CVD risk factor with the highest attributable risk and significantly higher when compared to the other participating countries in this multinational study. The prevalence of obesity in the Latin American adult populations has high variability, ranging from 9.9% up to 35%. The Latin American Consortium of Studies in Obesity (LASO) published in 2013
compiled prevalence data from urban and non-urban community samples from 8 different countries with a total of 31,009 people in Latin America obtained from 2000 to 2008. The prevalence of obesity (body mass index or BMI >30 kg/m²) was reported to be 18.4% in women and 13.8% in men. BMI and WC increase with age peaking in the 5th decade of life to see a decrease in prevalence in the following decades.\textsuperscript{16,17} Schargrodsky et al reported in 2008 in the CARMELA study another set of figures based on their large urban only sample (\( N = 11,550 \)) study; the prevalence of obesity was 23% when averaging both genders varying among genders and countries between 14 and 27%.\textsuperscript{18} Data from Mexico report overweight and obesity up to 64.9% in men and 73% in women. The prevalence of obesity in Latinos living in the USA has risen to 37% in men and 42% in women.\textsuperscript{19} Central obesity is recognized as a measurement of adiposity with greater predictive power for CVD risk. The prevalence of central obesity based on waist circumference in women was 55.5\% (\( \geq 88 \) cm) and 15.4\% (\( \geq 102 \) cm) in the region based on the LASO study. The application of the WHO thresholds of central obesity in the Latino population is in debate. These data are evidence that as lifestyle in Latin America and in Latinos in the USA becomes more urbanized and westernized, this risk factor of obesity becomes more prevalent. By 2050, overweight and obesity are projected to increase up to 50% in males and 60% in females in LAC.\textsuperscript{20} This alarming estimate raises the need to come up with cost-effective interventions focused on preventing and reducing obesity that could lead to a decrease in rates of CVD, stroke, DM and other NCDs.

**Hypertension (HTN)**

Along with obesity and other risk factors, HTN is one of the major modifiable CVD risk factors. According to the Global Burden of Disease Study from 2010, the leading risk factor for global disease burden is high blood pressure (BP), accounting for 9.4 million of deaths and 7.0\% (6.2–7.7) of global DALYs.\textsuperscript{21} The CARMELA study reported in 2008 a prevalence of HTN of 18\% in the adult population in Latin America, varying from 9\% to 29\% between gender and countries.\textsuperscript{17} The Latin American Consortium of Studies in Obesity reported in 2013 different HTN prevalence that appears to correlate with different stages of epidemiological transitions between countries. For instance, HTN prevalence in adults in Santiago (Chile), Buenos Aires (Argentina), and Barquisimeto (Venezuela), ranged from 24\% to 29\%, whereas in Quito (Ecuador), Bogotá (Colombia), Mexico City (Mexico), and Lima (Peru) varied from 9\% to 13\%.\textsuperscript{17}

### Table 1 – Top 10 ranks and changes in cause of death in Latin America and the Caribbean in 1990 and 2010.

<table>
<thead>
<tr>
<th>Mean rank 1990 (95% CI)</th>
<th>Mean rank 2010 (95% CI)</th>
<th>Median % change (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ischemic heart disease</td>
<td>1.0 ( (1–2) )</td>
<td>59% (21 to 34)</td>
</tr>
<tr>
<td>2. Stroke</td>
<td>2.1 ( (2–3) )</td>
<td>39% (–48 to –39)</td>
</tr>
<tr>
<td>3. Lower respiratory infections</td>
<td>3.8 ( (3–6) )</td>
<td>–7% (5 to 26)</td>
</tr>
<tr>
<td>4. Obese diseases</td>
<td>3.9 ( (3–6) )</td>
<td>No estimates</td>
</tr>
<tr>
<td>5. Diabetes</td>
<td>4.7 ( (3–6) )</td>
<td>11% (99 to 126)</td>
</tr>
<tr>
<td>6. Interpersonal violence</td>
<td>5.6 ( (4–7) )</td>
<td>41% (28 to 56)</td>
</tr>
<tr>
<td>7. Diabetes</td>
<td>7.1 ( (6–8) )</td>
<td>61% (51 to 70)</td>
</tr>
<tr>
<td>8. Road injury</td>
<td>8.4 ( (7–10) )</td>
<td>245% (126 to 269)</td>
</tr>
<tr>
<td>9. COPD</td>
<td>8.8 ( (7–10) )</td>
<td>37% (21 to 45)</td>
</tr>
<tr>
<td>10. Chronic kidney disease</td>
<td>9.7 ( (8–11) )</td>
<td>75% (58 to 85)</td>
</tr>
<tr>
<td>11. Preterm birth complications</td>
<td>16.6 ( (14–19) )</td>
<td>–51% (–59 to –39)</td>
</tr>
<tr>
<td>12. Diarrheal diseases</td>
<td>20.1 ( (18–23) )</td>
<td>–77% (–79 to –75)</td>
</tr>
</tbody>
</table>
Individuals with high BP often have other risk factors for CVD that are for the most, causally related. In Uruguay, for example, 74% of people with high BP were obese (BMI >25 kg/m²). In Rio de Janeiro, 50% of patients with high BP were obese, and 51% of patients with DM also had high BP. Data from the INTERHEART study showed in Latin America that the prevalence of HTN among the controls with a mean age of 59 years of age was 29.1%, 40% higher than that of controls in the rest of the world (20.8%). Undiagnosed and uncontrolled HTN is an important problem; about a quarter to a half of the reported prevalence, ranging from 12% to 41%. Age-specific levels of systolic BP were slightly, but consistently higher in LAC than in USA men and women. It is estimated that mortality due to IHD and cerebrovascular disease will increase by approximately 145% among men and women from 1990 to 2020 in Latin America, compared with an increase of 28% for women and 50% for men during the same period in developed countries and most likely related to HTN. In countries where healthcare resources are limited, people generally receive care for acute illness and do not get BP screening and as a result have high rates of undetected HTN. As an example in the 2000 National Health Therapeutic Survey in Mexico, 61% of those in whom HTN was detected were unaware that they had high BP. Only 46% of people with high BP were receiving treatment, and 15% had their BP controlled. The management of the burden of this major risk factor for CVD represents a challenge due to the predominantly asymptomatic nature of this risk factor.

Fig 2 – Changes in leading causes of DALYs in Latin America and Caribbean, 1990–2010. The leading 20 causes of DALYs are ranked from top to bottom in order of the number of DALYs they contributed in 2010. Source: Global Burden of Disease 2010, Institute of Health Metrics and Evaluation.

Fig 3 – GINI index and CVD mortality by World Bank Income group, age standardized per 100,000. GINI index is a measure of inequality, 100 being highest inequality. Source: Global Atlas on Cardiovascular Diseases Prevention and Control. WHO.
limited systematic screening efforts, increasing prevalence of obesity, limited access to pharmacologic therapy and the need for a chronic management of this risk factor and disease.

**Diabetes**

CVD is globally the most common underlying cause of death in DM, accounting for up to 44% of deaths in people with type I (insulin-dependent) DM and 52% of deaths in people with type II DM not including death attributed to microvascular disease. DM is known to increase the risk of CVD 2–4 times when compared to non-diabetic people and is considered by many a vascular disorder with a metabolic origin. Data from the INTERHEART study showed that DM is an important risk factor for myocardial infarction (MI) with an OR of 2.6. The burden of diabetes is rising globally, driven principally by population growth, obesity and aging. The number of people with DM in the world has increased from 153 (127–182) million in 1980, to 347 (314–382) million in 2008. Eighty percent of deaths by DM occur in low to middle income countries and Latin America is not the exception. According to the GBD Study 2010, DM is now the fifth cause of death in the region after a 110% increase in death rate over the past two decades. The Caribbean countries have a particularly high prevalence of DM and high mortality rate due to DM. The adult prevalence ranges from 10.6% in Jamaican men to 20.7% in women in Dominican Republic and mortality is higher than 60/100,000 people, while the average in the rest of Latin America is 45/100,000. Prevalence of DM has been also associated with lower socioeconomic status. The multi-urban CARMELA study in Latin America reported significant variability in prevalence of DM in the adult population across countries, from 4.3 in men from Quito, Ecuador to 9.7 in women in Mexico City, with an average of 6.4% in men and 7% in women; and as expected, increasing prevalence with age. The LASO study reported in their large urban and rural study a lower overall prevalence of 5.0% without difference between genders. These rates are considerably lower when compared to Latinos living in the USA where age adjusted prevalence of DM is twofold higher and at 16.7% in men and 17.2% in women. Similar to HTN, DM is an under detected risk factor and disease. In the CARMELA study, 20% of diabetic subjects were not aware of having DM. By 2030 the prevalence of diabetes in the LAC region is expected to rise by 148%, meaning that there will be 30 million with DM living in the region. This calls for novel

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**Fig 4 – Prevalence of current tobacco use among adults. Latin America and the Caribbean. Source: WHO World Health Statistics 2009.**

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**Table 2 – Top 10 risk factors for death in Latin America and the Caribbean in 1990 and 2010.**

<table>
<thead>
<tr>
<th>Mean rank 1990 (95% CI)</th>
<th>Mean rank 2010 (95% CI)</th>
<th>Median % change (95 CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 (1–2) 1. Dietary risks</td>
<td>1.1 (1–2) 1. Dietary risks</td>
<td>55% (51 to 63)</td>
</tr>
<tr>
<td>2.0 (1–2) 2. High blood pressure</td>
<td>1.9 (1–2) 2. High blood pressure</td>
<td>55% (42 to 70)</td>
</tr>
<tr>
<td>3.0 (3–1) 3. Smoking</td>
<td>3.2 (3–5) 3. High fasting plasma glucose</td>
<td>150% (134 to 193)</td>
</tr>
<tr>
<td>4.8 (4–7) 4. High fasting plasma glucose</td>
<td>4.4 (3–5) 4. Smoking</td>
<td>23% (16 to 31)</td>
</tr>
<tr>
<td>6.0 (4–8) 5. High body mass index</td>
<td>4.4 (3–5) 5. High fasting plasma glucose</td>
<td>111% (81 to 145)</td>
</tr>
<tr>
<td>6.2 (4–9) 6. Household air pollution</td>
<td>6.5 (6–7) 6. Physical inactivity</td>
<td>No Estimates</td>
</tr>
<tr>
<td>7.0 (4–9) 7. Alcohol use</td>
<td>6.5 (6–7) 7. Alcohol use</td>
<td>62% (34 to 98)</td>
</tr>
<tr>
<td>7.7 (6–9) 8. Suboptimal breastfeeding</td>
<td>8.2 (6–19) 8. High total cholesterol</td>
<td>41% (9 to 84)</td>
</tr>
<tr>
<td>8.8 (8–9) 9. High total cholesterol</td>
<td>9.3 (8–12) 9. Household air pollution</td>
<td>−34% (−43 to −6)</td>
</tr>
<tr>
<td>10.0 (10–10) 10. Childhood underweight</td>
<td>9.8 (9–10) 10. Lead</td>
<td>243% (221 to 264)</td>
</tr>
<tr>
<td>15.0 (14–17) 19. Lead</td>
<td>13.3 (13–15) 16. Suboptimal breastfeeding</td>
<td>−84% (−87 to −80)</td>
</tr>
<tr>
<td>16.3 (15–18) 20. Childhood underweight</td>
<td>16.3 (15–18) 20. Childhood underweight</td>
<td>−82% (−85 to −79)</td>
</tr>
</tbody>
</table>
Dyslipidemia

Elevated total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), triglycerides and low levels of high-density lipoprotein cholesterol (HDL-C) and their combination are important risk factors for MI and other vascular diseases. Latin America has experienced a significant nutritional transition, likely affected by international trade agreements and globalization; increasing production and consumption of preprocessed food, soybean and palm oil. Several epidemiological studies of different sizes have shown that high triglycerides and low HDL-C are the more common lipid abnormalities in the region. The LASO study reported a prevalence of high cholesterol levels of 9%, increasing by age and peaking in the sixth decade of life at 20%. Low HDL-C levels were found in 76.9% of women and 32.8% of men; 25% with hypertriglyceridemia, with young men having the higher prevalence. The multicity urban CARME LA study reported a higher prevalence of hypercholesterolemia of 14%. Of interest, only 41% knew of their condition and the great majority of them were untreated (88%). If we compare the previous data with the one gathered from a recent study from Latinos in the USA, all with similar mean ages, we can note that the prevalence of hypercholesterolemia is considerably higher in Latinos who have migrated and likely modified their lifestyle in the USA (36.9%). In contrast, in a recently unpublished CVD risk factor survey in a semi-urban community of Mayan descent in Guatemala, the prevalence of hypercholesterolemia, defined as a TC above 240 mg/dl, was only 2%, but 67% had triglycerides above 150 mg/dl and 65% had an HDL less than 40 mg/dl. The difference in prevalence of hypercholesterolemia in Latin American subgroups highlights the heterogeneity of this region suggesting the need for different strategies for prevention. Returning to a regional view of the data, dyslipidemia, defined by elevated ApoB/ApoA ratio had the second highest population attributable risk (40.8%), for the first MI after central obesity (48.5%), higher than smoking, HTN and the other risk factors. A recent survey in Argentina revealed that many people did not know their lipid levels. The subgroup of people with higher socio-economic status (SES) who lived in urban areas and with access to pre-paid health services was more aware of their elevated TC having been tested before. However, screening for dyslipidemias for primary prevention in the adult population may be prohibitive considering the amount of money spent per capita for healthcare in some low and low to middle income countries in Latin America.

Tobacco use

According to the WHO nearly 80% of the world’s one billion smokers live in low- and middle-income countries and it is estimated that up to half of its users die of smoking related causes, killing up to 6 million people every year. Ever since the adoption of the WHO Framework Convention on Tobacco Control ten years ago, substantial progress has been made in global tobacco control and particularly in the Latin American Region, promoting legislation for smoke-free public places and workplaces, tobacco taxation and restrictions in advertising, as the most commonly established measure at the highest level of achievement. Although changes in public policy seem to be encouraging and many countries in Latin America have ratified this convention, there is still a considerably high prevalence of smokers in Latin America, higher in Mexico and South America than in the Central American and Caribbean sub regions. Mexico had one of the highest smoking rates in the region but is one of the 4 countries in the world that has achieved more than 50% reduction in smoking prevalence in the world over the past three decades. In more systematically collected data from the Global Tobacco Surveillance System
from 2008 to 2012 prevalence of smoking in men and women varied by country: in Argentina 29.4% and 15.6%, Uruguay 30.7% and 19.8%, Mexico 24.8% and 7.8% and Brazil 21.6% and 13.1% respectively.²⁰

The CARMELA study reported an urban prevalence of current adult smoking of 21.8% (32.2% in men and 14.9% in women), the highest in Santiago, Chile with 45.4%, numbers that are among the highest in the world. In all the participating cities fewer women than men smoked.¹⁸ Supporting these findings, the LASO study reported a prevalence of 32.2% for men and 19.5% for women. After adjustment for age, men were 1.6 times more likely to smoke than women.¹⁷ Prevalence reported among Latinos and Hispanics living in the USA is comparable to the Latinos in their home countries with 25.7%, the highest in Puerto Ricans (34.7%) and the lowest in Dominicans (11.1%).¹⁹

The somehow encouraging decrease in adult smoking prevalence in LAC has not yet been seen in the youth, where there has been an increase in smoking from 2008 to 2010, particularly in Brazil and Caribbean countries. The relationship between smoking and SES varies from country to country. According to the 2009 global Adult Tobacco Survey, among the poorest quartile population in LAC, 35% of adults smoke whereas only 19.6% of people smoke in the richest quartile. Smoking appears to be more prevalent among low-income men but not in women.²⁹ In Central American countries, smoking was more common in women from high SES and men from low SES; on the other hand, in more urbanized countries from the region high SES and high education level were associated with less use of tobacco products.¹²

Smoking certainly increases the risk for first myocardial infarction in Latin-Americans as it has been shown in the rest of the world, as evidenced by the INTERHEART study, where former smokers and current smokers had OR of 1.53 and 9.07, respectively.³⁰ There is evidence that a reduction in acute IHD events is noted following the implementation of comprehensive smoke-free legislation, with the effect increasing over time from implementation.⁴¹,⁴² Similar results were recently reported in Uruguay, where a 22% reduction of hospital admissions due to acute MI was reported two years after the implementation of a smoke-free policy was introduced into legislation.⁴¹ This exciting effect urges countries from the region to improve their efforts on tobacco control through any means possible.

Physical inactivity

As the burden of chronic diseases in developing countries is growing due to urbanization, more attention has been placed on physical activity (PA) as a significant cause of CVD. The particular significance of physical inactivity is that it is not only an independent risk factor for CVD itself, but it also contributes to the rising prevalence of other common risk factors like obesity, HTN and DM. Worldwide, it has been estimated that physical inactivity causes 6–10% of the major NCDs and it also has been identified as the fourth leading risk factor for global mortality.⁴⁴ According to a worldwide report, 31.1% of adults are physically inactive and about 43% in the Americas, more commonly seen in elderly and particularly in females than males from high SES.⁴⁵ In Latin America, physical inactivity is the 10th leading risk factor for disability-adjusted year loss.⁴ Of interest, the perceived neighborhood environment plays an important role in the prevalence of physical inactivity in Latin America,⁴⁶ particularly associated with perception of safety for leisure PA and street lighting for transport-related PA; this is consistent with findings in high income countries.⁴⁷ An interesting analysis published by Lee et al, suggested that more than 60,000 deaths due to CVD in Latin America could have been prevented in 2008 just by increasing the PA level.⁴⁸ In 2004 the WHO adopted the “Global Strategy on Diet, Physical Activity and Health”, which described the actions needed to increase PA worldwide and as a result many pilot programs and interventions have been developed across the region ever since. Some of them have been identified as promising for future research and implementation in Latin America.⁴⁹ However there is still a long road ahead for assessing and controlling the high prevalence of being physical inactive across the region.

The non-age adjusted comparison in Table 3 illustrates the increasing prevalence of risk factors from non-urban to urban settings within Latin America to urban lifestyles in the United States, particularly of diabetes, obesity and hypercholesterolemia.

Cardiovascular conditions

Ischemic heart disease

IHD is the most common cause of death among all the CVD deaths in the region, exhibiting an adjusted mortality rate of 66 per 100,000 people in Latin America and the Caribbean (PAHO 2012), representing 42.5% of all CVD deaths in 2007.⁵⁰ Recent publications from the GBD Group⁵¹,⁵² reported a 25% increasing rate of years of life lost due to IHD in LAC from 1990 to 2010, predominantly due to aging of the population in the region. However, the age standardized IHD mortality has decreased in all subregions of LAC by 23%, with the exception of some of the Caribbean countries where there continues to be an increasing trend at 9.5% increase in the last two decades. When GBD of IHD is quantified by DALYs lost, all regions have experienced a 23.3% decrease in that same period of time. The authors of this valuable report used sophisticated models to extrapolate from missing death and morbidity data. One wonders how accurate the data describe the CVD epidemiology of the lower income countries where the epidemiological transition has recently accelerated and has limited CVD preventive programs and where reporting of CVD morbidity/mortality is less systematic.

Risk of dying from IHD is higher in men from 2.4 times higher in Argentina to a more even risk in countries like Guyana where the men to women death ratio is only 1.1 times. An acute coronary syndrome (ACS) and its consequences demand resources to the individual and society, from pharmacological therapy, catheter related technology to other
hospital and outpatient resources. In the ACCESS registry of 12,068 consecutive patients admitted to a hospital with an ACS in the developing countries, 4936 cases were in Latin America. The mortality rate in Latin America was noted to be higher than in other regions of the world. When compared to patients from North Africa, South Africa and the Middle East, the 12 month mortality of ST-segment elevation MI (STEMI) patients was slightly higher in Latin America, 9.9% versus the average death of all regions including in this study, 8.4%. This mortality rate was also significantly higher when compared to the one year mortality rate of STEMI patients in the USA 8.4%. This mortality does not include the mortality of patients that did not reach the hospital for acute care. Regional studies defining predictors of survival are limited by the participation of only selected countries in large ACS registries. With this in mind, among the reported predictors have been the underuse of reperfusion therapies and delay in hospital arrival. In terms of disability as noted in Fig 2, IHD is already the number one cause of DALYs in the region, up from the 4th place in 1990.

Heart failure (HF)

There are limited regional epidemiological data on heart failure in Latina America. However, HF is already considered among the most common causes of hospital admissions in national registries like Brazil, where 39% of all hospital admissions were related to HF. The etiology of HF is not systematically reported but a combination of registries reveals a greater variety of etiologies than in higher income countries in Latin America. Idiopathic cardiomyopathy remains common comparable to the prevalence of ischemic cardiomyopathy, hypertensive cardiomyopathy, Chagas disease and valvular heart disease (VHD), particularly in outpatient registries. Ischemic cardiomyopathy appears to be more frequent in higher income groups and hypertensive heart disease more common in lower income groups. Chagas disease remains highly prevalent in this region and is the major cause of disability secondary to tropical diseases among young adults. Estimates by the Pan-American Health Organization state that there are between 8 and 10 million people infected with Trypanosome cruzi, 41,000 newly infected cases per year and 21,000 annual deaths in Latin America, particularly in Brazil, Chile, Argentina, Paraguay, Peru and Uruguay. Death rate has decreased from 45,000 in the 1980’s. Significant control of the vector and blood bank transmission has been achieved in Brazil, Uruguay, Argentina and Chile over the past two decades. Other countries in the region have had heterogeneous success. Chagas disease was previously known to be a disease of rural communities, however, with the significant urbanization and migration in the region, the disease has spread to the cities and to other regions of the world.

Conclusion

We have reported and discussed data from global, national and local CVD risk factors and disease surveys that have been carried out in a number of countries in LA over the past decade, assisting in defining the disease burden above described. This effort represents a significant step forward in understanding the epidemiological transition and burden of disease in LAC in order to assist health care policy making and program development. However, additional to these cross sectional data and some multinational surveillance efforts, longitudinal data will be required to further assess the impact of CVD prevention policies and programs. Population based averages do not always convey the data with clarity for targeted CVD prevention. CVD risk factors and disease are increasing in a heterogeneous pattern in the region based on socioeconomic, cultural and many other social variables as previously mentioned. The identification of particularly vulnerable regions, subgroups and individuals marginalized from the development of healthy behaviors and access to adequate CVD prevention and medical care will be critical. Subgroup epidemiological data would also assist to adequately identify the fundamental cause and distribution of disease and approach it in a more equitable manner in LAC.

Conflict of Interest Statement

None.

REFERENCES


