The role of demographic and epidemiologic transitions on growing health expenditures in Latin America and the Caribbean: a descriptive study

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Summary

Background Many countries in Latin America and the Caribbean (LAC) have undergone significant economic, demographic, and epidemiological changes. We examined the role of these factors on the growth of health expenditures in several LAC countries.

Methods Demographic data, disease prevalence, and proportion of current health expenditure (CHE) per capita, by expenditure type, were obtained for several LAC countries. Health expenditure matrices were created for the years 2018 or 2019, disaggregated by age group and ICD-10 Chapter, for seven index countries (Argentina, Brazil, Colombia, Costa Rica, Mexico, Peru, and Trinidad and Tobago).

Findings Uruguay has largest population over 70 years (11%, n = 378,501), while Honduras has lowest (2.3%, n = 236,783). Barbados and Chile have the greatest proportion of total DALYs due to chronic diseases (>80%), while Bolivia and Guatemala have the lowest (60%). Per capita CHE is lowest in Honduras (<$500) and highest in Panama ($2500). CHE is highest among the 85+ age group, and for circulatory, respiratory, and digestive diseases.

Interpretation Important differences were observed in health care spending by disease category and age group. Given the ongoing demographic and epidemiological transitions in LAC, health care spending in the area is expected to increase.

Funding This study was funded by the Inter-American Development Bank.

Keywords: Latin America and the Caribbean; Chronic disease; Health expenditures; Population aging

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Research in context

Evidence before this study

We searched PubMed and Google for English and Spanish language studies related to "demographic and epidemiologic transitions in Latin America and the Caribbean (LAC)" as well as "health expenditures" and "health spending" in LAC. We identified numerous recent studies published between 2018 and 2024, which describe how demographic and epidemiological transitions in many countries in LAC have increased life expectancy, population aging, and the prevalence of non-communicable diseases (NCDs). These changes along with sustained economic growth are contributing to increased health care spending in the LAC region.

Added value of this study

Our study builds on this prior work by examining how per capita current health expenditures (CHE) vary by age group and what proportion of CHE corresponds to specific ICD-10 Chapters in seven index LAC countries (Costa Rica, Peru, Mexico, Argentina, Colombia, Trinidad and Tobago, and Brazil). Our results showcase the critical importance of accounting for population aging and changes in disease burden to address increasing healthcare expenditures in LAC over time. We also discuss the implications of our findings in terms of specific strategies LAC countries can use to address the growing impact of these factors on national health expenditures.

Implications of all the available evidence

Understanding how key demographic and epidemiologic factors contribute to increasing health expenditures in LAC is vital to develop effective strategies to address future challenges in healthcare financing in the area. Health systems in LAC are experiencing major challenges due to the COVID-19 pandemic, health inequities, reduced health expenditure, high out-of-pocket spending, limited access to health services, and low quality of care. Other threats, like climate change and antimicrobial resistance, are also expected to increasingly affect the health systems of these countries. To achieve universal health care coverage and improve health conditions, countries in LAC must find innovative and sustainable solutions to address the growing financial burden of increasing health expenditures.

Introduction

Most countries in Latin America and the Caribbean (LAC) have undergone important changes that have affected the growth of health expenditures and their capacity to finance health care. Many LAC countries have experienced sustained economic growth, which is an important driver of national health expenditures. Demographic and epidemiological transitions in the region have resulted in increased life expectancy, rapid population aging, and a greater prevalence of chronic diseases throughout the region. These demographic and epidemiological changes also have implications for national health expenditures.

Economic growth has remained relatively stable in the area (6.1% annual GDP growth in 1961 to 6.7% in 2021) despite fluctuations over time due to increasing debt stress, inflation,[1] the escalation of violence in many countries,[2] as well as the COVID-19 pandemic.[1] Although healthcare spending is increasing in LAC, it is still considerably lower than in other Organization for Economic Cooperation and Development (OECD) countries, and relies more on private spending.[3] In LAC, an estimated 32.4% of health spending is paid out-of-pocket (OOP), compared to the OECD average of 20%.[4] Greater OOP spending in LAC is a reflection of weaker health systems in the area, a lack of universal health coverage (UHC) in most countries, and reduced health services coverage, compared to other OECD countries.[3] OOP spending is high in LAC countries like Guatemala (56%) and Honduras (52%), while Colombia (14%) and Uruguay (16%) have much lower OOP spending.[4] Per capita health expenditure has outpaced economic growth in LAC, with health spending growing 4.9% per year, while the gross domestic product (GDP) increased 3.1% per year, from 2010 to 2019.[4] Thus, increasing healthcare costs pose great challenges to the sustainability of the region's health systems.

Demographic and epidemiological transitions have contributed to a significantly increased life expectancy in LAC, from 59 years in 1970, to a high of 75 years in 2019.[5] Due to the COVID-19 pandemic, life expectancy in LAC decreased to 72 years in 2021,[5] making LAC the region with the greatest life expectancy loss in the world.[6] There are important differences in life expectancy at birth, ranging from 74 to 83 years in women and 63 to 77 years in men.[7] Chile, Costa Rica, and Panama have the highest life expectancy, while other countries such as Mexico, Brazil, and Peru have life expectancies that can vary by as much as 7–10 years, depending on the specific city or area.[7] Men in Haiti have the lowest life expectancy in LAC.[5]

The rapid aging process in LAC is due to a more accelerated demographic transition in the region, compared to other areas. In 2022, more than 88 million individuals were over age 60 in LAC, representing 13.4% of the population, a figure that is estimated to grow to 16.5% by 2030.[8] In 50 years, the LAC population experienced an aging process that was comparable to what has occurred in Europe over 200 years.[8] By 2060, an estimated 220 million individuals in LAC will be

aged 60 years and older, which will be close to the projected 248 million in Europe. However, by 2100, the population of older persons in LAC is expected to surpass the older population in Europe.[8] (Fig. 1, Supplementary Fig. S1).

As individuals in LAC live longer, there has been a corresponding increase in the presence of noncommunicable diseases (NCDs). Over 80% of all deaths in LAC are due to NCDs, and the four most common NCDs causing these deaths are cardiovascular diseases, cancer, diabetes, and chronic respiratory diseases.[9] NCDs are more costly to treat and represent the greatest disease burden in the area, especially because the COVID-19 pandemic obstructed NCD prevention efforts and caused significant services disruptions for persons with NCDs. COVID-19 has increased the disease burden in LAC and risk of death for people with NCDs.[9]

A better understanding of how the interplay between increasing life expectancy and population aging, as well as disease burden and the growing prevalence of chronic diseases, can lead to increasing health expenditures in LAC is vital to develop effective strategies to address future challenges in healthcare financing in the region. In order to achieve UHC and improve health conditions, countries in LAC must respond to the growing financial burden of increasing health expenditures. Thus, the objective of this paper is to describe these demographic and epidemiological trends, and explore how they relate to health expenditure and health policy initiatives in LAC countries, which will have implications for future health financing in the region. Our results showcase the critical importance of accounting for population aging, changes in disease burden, and other external factors in order to address increasing healthcare expenditures in LAC over time.

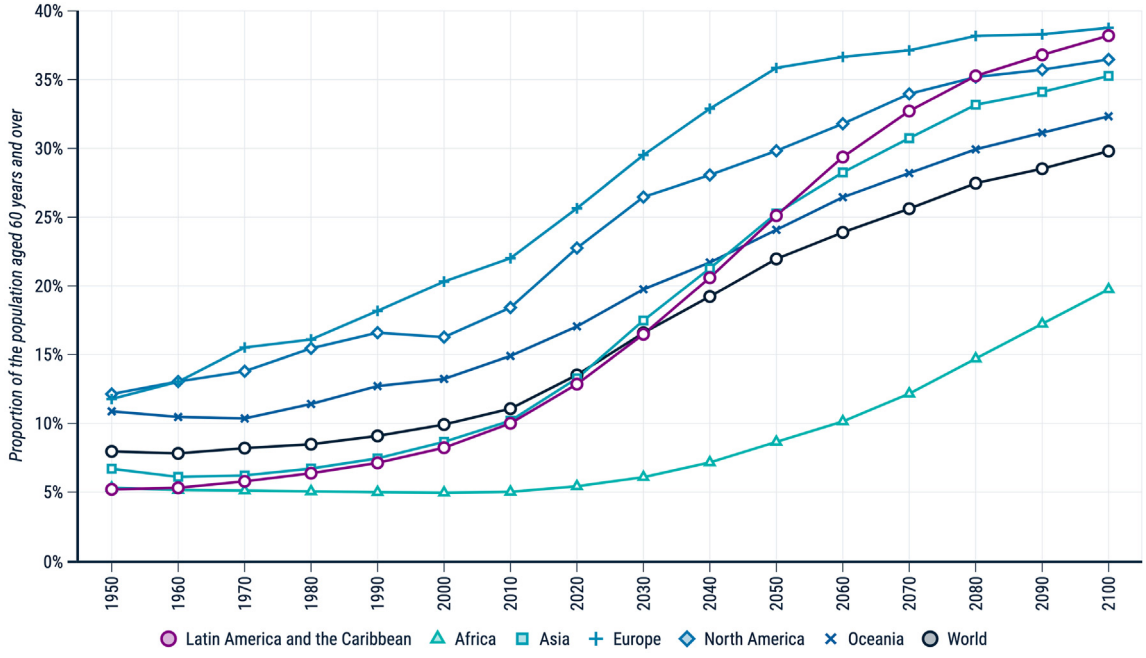
Methods

Data sources

The main data sources for this study were (1) current demographic data with a focus on population aging, (2) disease prevalence, (3) current health expenditure per capita, as share of government, out-of-pocket, private, or external health expenditures, and (4) health expenditures by age and disease groups for seven index countries (*Costa Rica, Peru, Mexico, Argentina, Colombia, Trinidad and Tobago, and Brazil*). These data sources are described below.

Population growth and aging

We obtained five-year estimates from the UN World Population Prospects (WPP) 2022 database.[10] The methodology for the generation of these population estimates is described in detail by the Population Division of the UN Department of Economic and Social Affairs.[11] For our analysis, we used the available trend estimates for each world region, and each LAC country, taking the five-year-age-category data, and the "medium-scenario", which represents the most likely scenario based on



Data from the United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects 2022. The "medium-scenario" trends are show; other high/low trends, with uncertainty bounds, are available from https://population.un.org/wpp/.

Fig. 1: Proportion of the population aged 60 years and over, by region, 1950–2100.

WPP's many simulated trajectories. For Fig. 1, we used the WPP's trends "as is", without manipulation. For Fig. 2, we used the data for each LAC country to calculate the proportion of the population over 70 and over 80 years of age, for the year 2020 compared to 2050. These calculations were performed in Microsoft Excel.

Disease prevalence

We obtained Global Burden of Disease (GBD) data, available from the Institute for Health Metrics and Evaluation (IHME) website,[12] for all International Classification of Diseases, Tenth Revision (ICD-10) chapters from 1990 to 2019. The GBD is a well-established model that has produced global estimates of health outcomes, including Disability-Adjusted Life Years (DALYs), for over 30 years.[13] The methods used in the GBD for estimating DALYs have been described by IHME.[14] We obtained data on DALYs from the GBD 2019 for each LAC country, for the three largest disease groupings (the Level 1 causes in the GBD): (1) communicable, maternal, neonatal, and nutritional diseases, (2) non-communicable diseases, and (3) injuries.

National health expenditures

Current health expenditures (CHE) per capita, as a share of government, out-of-pocket, private, or external health expenditures, were obtained from the World Bank's 'World Development Indicators'. According to the methods information provided by the World Bank, these estimates are prepared by the World Health Organization (WHO) under the framework of the System of Health Accounts 2011 (SHA 2011). The SHA 2011 tracks health spending in countries, generating consistent and comprehensive data on health spending, which is used for regional and global evidence-based policy-making. WHO converted the expenditure data using the PPP time series extracted from the World Development Indicators (based on ICP 2017) and OECD data.

Health expenditure by age and disease group

We estimated CHE by age and disease categories for seven index countries: Argentina, Brazil, Colombia, Costa Rica, Mexico, Peru, and Trinidad and Tobago. These index countries were selected based on their diverse geographical and health system contexts, as well as the availability of data, local research teams, and suitable partner institutions.[15] Age was classified in five-year groups and diseases were categorized based on the ICD-10 Chapters. For each country, baseline data for the years of 2018 (Argentina, Colombia, Costa Rica, Mexico) or 2019 (Brazil, Peru, and Trinidad and Tobago), were obtained from various sources, including household surveys, claims data from social insurance programs, Ministry of Health (MoH) data and other government sources.[15] Supplementary Table S1 provides additional details regarding the data sources for medical expenditures used within each index country classified by financing scheme. Supplementary Table S2 provides details of how the age-disease expenditures were estimated for each index country.

Although the process used to derive CHE estimates varied by country due to differences in data sources and availability of information, the following steps were generally followed. First, the different health financing schemes were identified in each index country, and second, the available information on health/medical expenditures by age and disease groups from these health financing schemes was obtained from the relevant institution (e.g. MoH, social insurance agency) or publicly available information (e.g. household survey). Typically, information was usually available for only a few financing schemes in each country. In some countries and financing schemes the age-disease distribution of expenditures was provided directly by the relevant institution. In countries/schemes where micro datasets were available, age-disease expenditures were estimated by mapping the primary diagnosis listed to ICD-10 groupings, and classifying observations into age groups (see Annex 1 for details). Information on the structure of health expenditures by age and disease groups from available health financing schemes in a country was used to extrapolate to the other schemes (where data was not available), and/or nationally keeping the overall expenditure envelope of the financing scheme (and country), as per the CHE reported in the National Health Accounts of the country (as reported in WHO Global Health Expenditure database).[16]

CHE can be expressed in various ways, including CHE per capita, which is how we present the results on Fig. 4, or as percentage of GDP, which can be found on Fig. 1.2 of a separate publication: "Future Health Spending in Latin America and the Caribbean: Health Expenditure Projections & Scenario Analysis."[17]

Data analysis

We used Microsoft Excel to create matrices for country populations, disease prevalence, and health expenditure, in different configurations of disaggregation, by year, age category, disease category, and health expenditure type. No statistical tests were performed. Rather, this paper presents summary statistics side-by-side, without manipulation, to support the discussion. The estimates we present are country-specific, and not the average of multiple country-specific estimates or averages representing the region as a whole. The use of these data for modelling purposes is described in a companion study.[15]

Role of funding source

This study was funded by the Inter-American Development Bank. Data collection, analysis, and interpretation of data, the writing of the report, and the decision to

submit for publication was independently conducted by the study team.

Results

Aging of the population in LAC

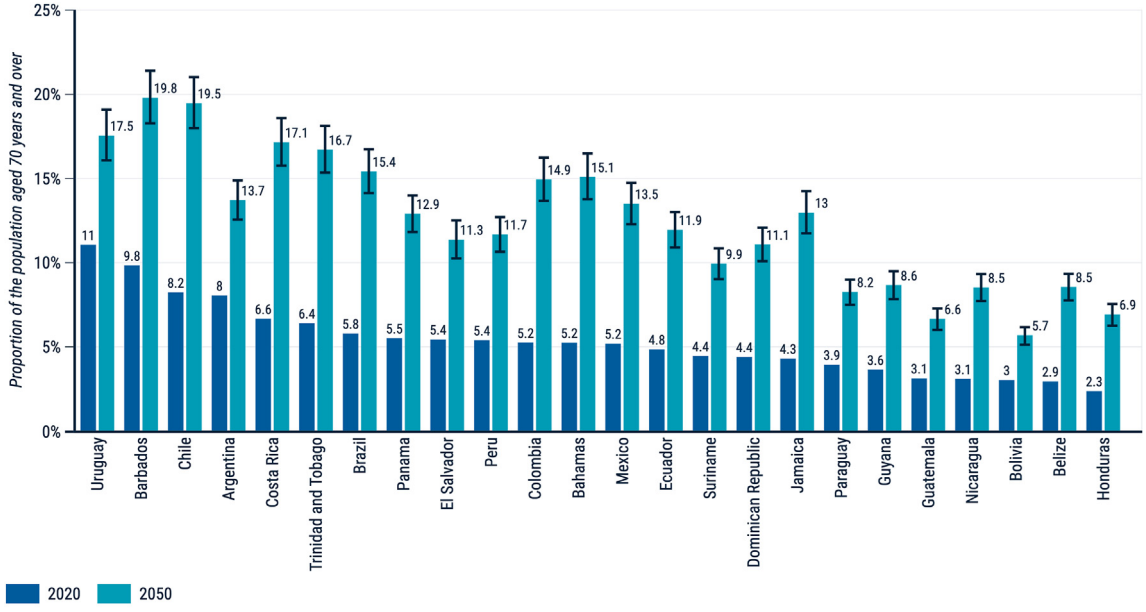
Fig. 2 presents the proportion of the population aged 70+ years, in 24 LAC countries. Countries, like Uruguay (11%, n = 378,501) and Barbados (9.8%, n = 27,551) are midway through their demographic transition and have the highest proportion of persons over 70 years. Other countries like Honduras (2.3%, n = 236,783) and Belize (2.9%, n = 11,507) are in the early stages of their demographic transition and have the lowest proportion of individuals 70+ years. All countries in LAC are expected to experience a large increase in the proportion of persons over 70 in the next 30 years. From 2020 until 2050, the proportion over 70 years will at least double in most LAC countries and in some cases, like Belize and Honduras, the population over 70 is estimated to triple during this time.

Of the seven index countries, Argentina and Costa Rica have the largest share of the population 70+ years (8%, n = 3,616,815 and 6.6%, n = 340,485, respectively). In Trinidad and Tobago and Brazil approximately 6% (n = 96,726 and n = 12,292,382, respectively) of the population is over 70 years, and in Peru, Columbia and Mexico, just over 5% of the population is 70+ (n = 1,786,745, n = 2,660,536 and n = 6,504,469, respectively). Over the next 30 years, the population 70+ years will more than double in Costa Rica, Trinidad and Tobago, Brazil, Peru and Mexico, and it will nearly triple in Colombia. By 2050, Costa Rica and Trinidad and Tobago are projected to have nearly 1 in 5 individuals over the age of 70 years (Fig. 2).

Growing burden of chronic disease in LAC

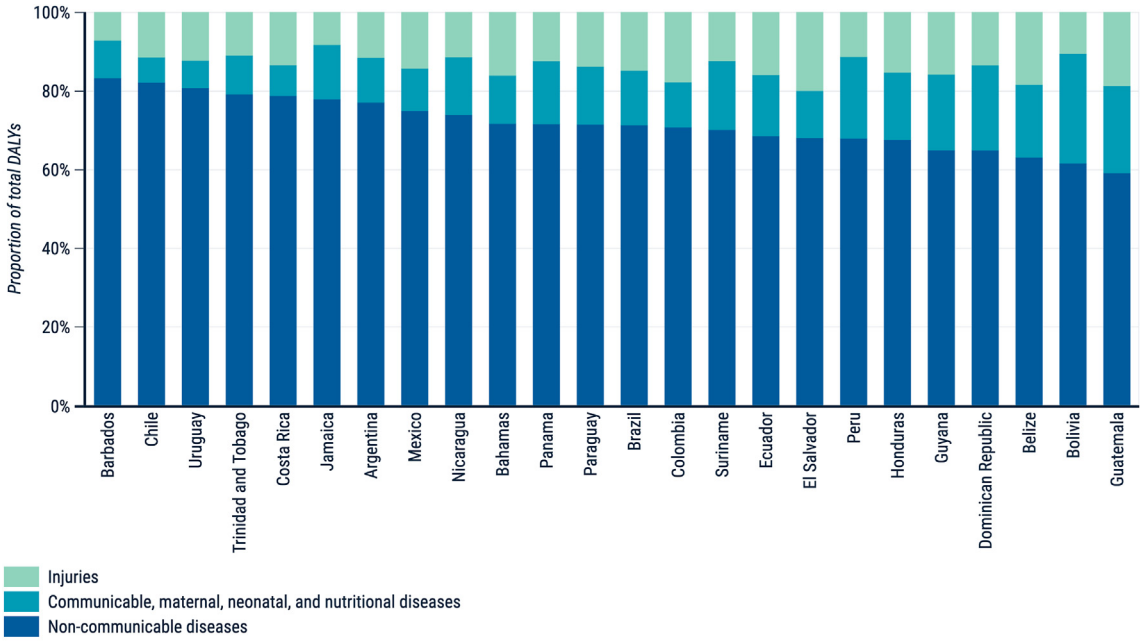
Fig. 3 shows the proportion of total Disability-Adjusted Life Years (DALYs) by Global Burden of Disease Level 1 Classification in 24 LAC countries, and indicates that the vast majority (~60–90%) of the disease burden in the area corresponds to non-communicable diseases (NCDs). All LAC countries are now dominated by NCDs, with the highest prevalence found in Barbados and Chile, while Bolivia and Guatemala have the largest share of communicable, maternal, neonatal, and nutritional diseases. El Salvador, Guatemala, and Belize have the highest prevalence of injuries in LAC. Countries like Barbados, Uruguay, and Chile, which also have the highest proportion of the population over 70 years, also have the highest proportion of DALYs that correspond to NCDs (>80%).

In the seven index countries, the highest proportion of total DALYs due to NCDs was observed in Trinidad and Tobago and Costa Rica at nearly 80%, followed by Argentina and Mexico with an estimated 75%. In Brazil, Columbia and Peru an estimated 70% of total DALYs correspond to NCDs. Peru and Brazil have highest proportion of total DALYs associated with communicable, maternal, neonatal and nutritional diseases (>10%) while the lowest (<10%) are observed in Costa Rica and Trinidad and Tobago. Argentina, Mexico and



Data from the United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects 2022. Additional estimates are available from https://population.un.org/wpp/.

Fig. 2: Proportion of the population aged 70 years and over, by country, in 2020 and 2050.



Data from the Global Burden of Disease Collaborative Network, Global Burden of Disease Study 2019. Additional estimates with uncertainty are available from https://vizhub.healthdata.org/gbd-results/.

Fig. 3: Proportion of total DALYs by GBD Level 1 classification and country.

Colombia have an estimated 10% of DALYs due to communicable, maternal, neonatal and nutritional diseases (Fig. 3, Supplementary Fig. S2).

Sources of health expenditures in LAC

Fig. 4 reports (a) the per capita current health expenditure (CHE) by expenditure type (domestic government, out-of-pocket, other private health expenditures, and external) and (b) the proportion of CHE by expenditure type in all LAC countries during 2018. Panama has the highest amount of per capita CHE ($2500), followed by Chile, while Honduras, Belize and Nicaragua have the lowest amount of per capita CHE (less than $500). Uruguay and Panama have the highest per capita CHE that correspond to domestic general government expenditures, nearly $1,500, while Guatemala and Honduras have the lowest, at less than $250. Bolivia, Costa Rica, and Colombia have the largest proportion of CHE from government health expenditures (over 70%), while Honduras and Guatemala have the lowest (less than 40%). The highest amount of per capita CHE due to OOP spending is observed in Panama and Chile (between $500 and $1000) and the lowest occurs in Belize and Jamaica (approximately $100). Guatemala and Honduras have the largest proportion of per capita CHE from OOP expenditures (approximately 50%), while Colombia, Uruguay and Jamaica have the lowest (less than 15%). Brazil and the Bahamas have the highest amount of per capita CHE due to other domestic private health expenditures, nearly $500, while Nicaragua, Bolivia and Guyana have the lowest. Nearly 35% of per capita CHE in Brazil are associated with other domestic private health expenditures, and in the Bahamas, over 20% of per capita CHE are from this source. The lowest proportion of per capita CHE from other domestic private health expenditures was observed in Nicaragua and Guyana, (less than 5%). These two countries also have the largest proportion of per capita CHE from external health expenditures, which are estimated to be between 3 and 4% (Fig. 4).

Among the seven index countries, Argentina (over $2000), Trinidad and Tobago, and Costa Rica (both over $1500) have the highest amount of per capita CHE, followed by Brazil, Colombia, and Mexico (over $1000). Peru has the lowest amount of per capita CHE (less than $750). Costa Rica and Colombia have the largest proportion of per capita CHE that are derived from government health expenditures (over 70%), followed by Argentina and Peru (over 60%), and Mexico and Trinidad and Tobago (approximately 50%), while Brazil has the lowest from this source (~40%). The highest amount of per capita CHE due to OOP spending is observed in Trinidad and Tobago and Argentina (over $500), followed by Mexico, Costa Rica, and Brazil (between $250 and $500), and the lowest amount of OPP spending occurs in Columbia and Peru (less than $500). Trinidad and Tobago and Mexico have the largest proportion of CHE from OOP expenditures (over 40%), followed by Peru, Argentina, Brazil and Costa Rica (20–30%), while Colombia has

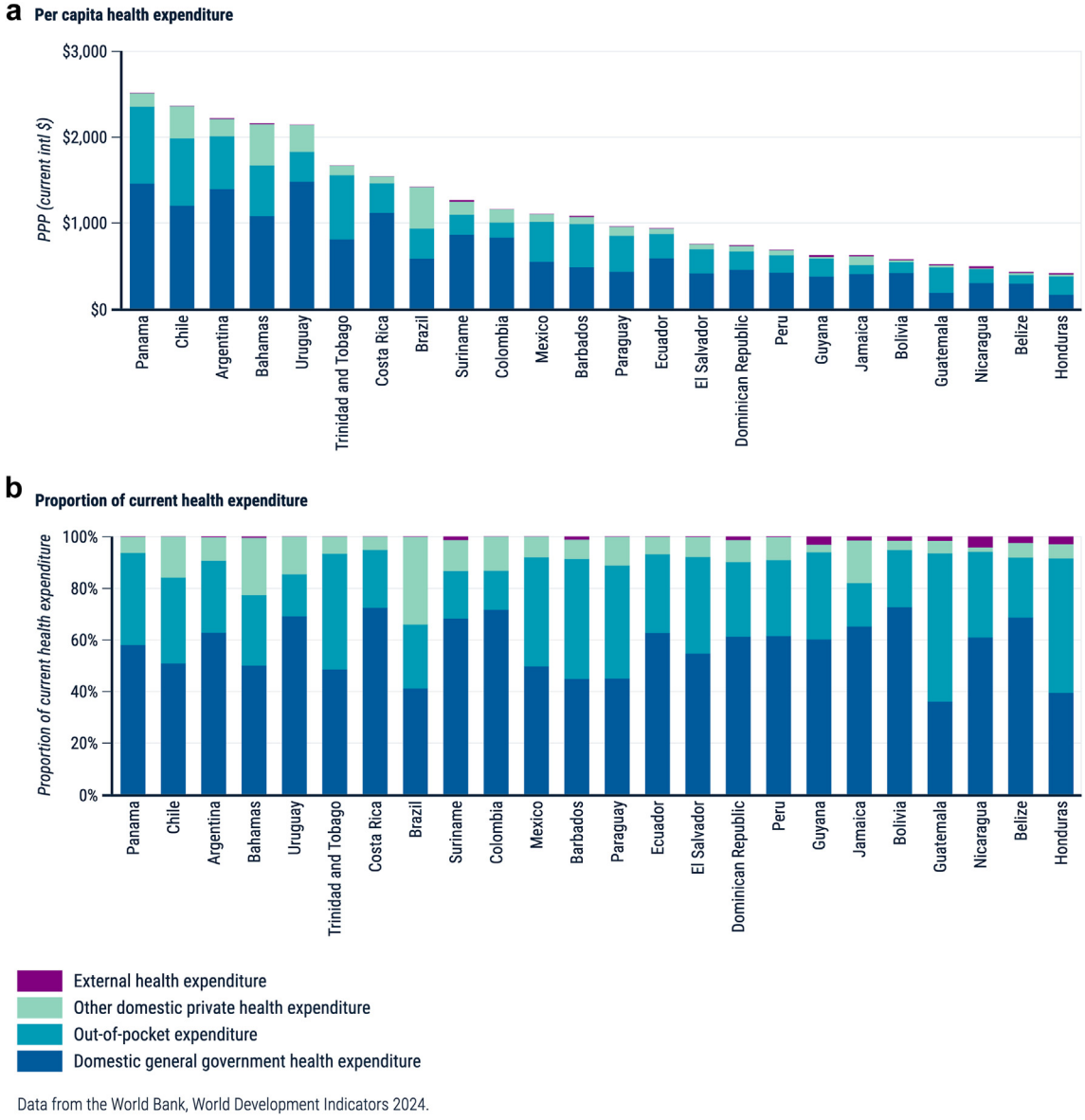


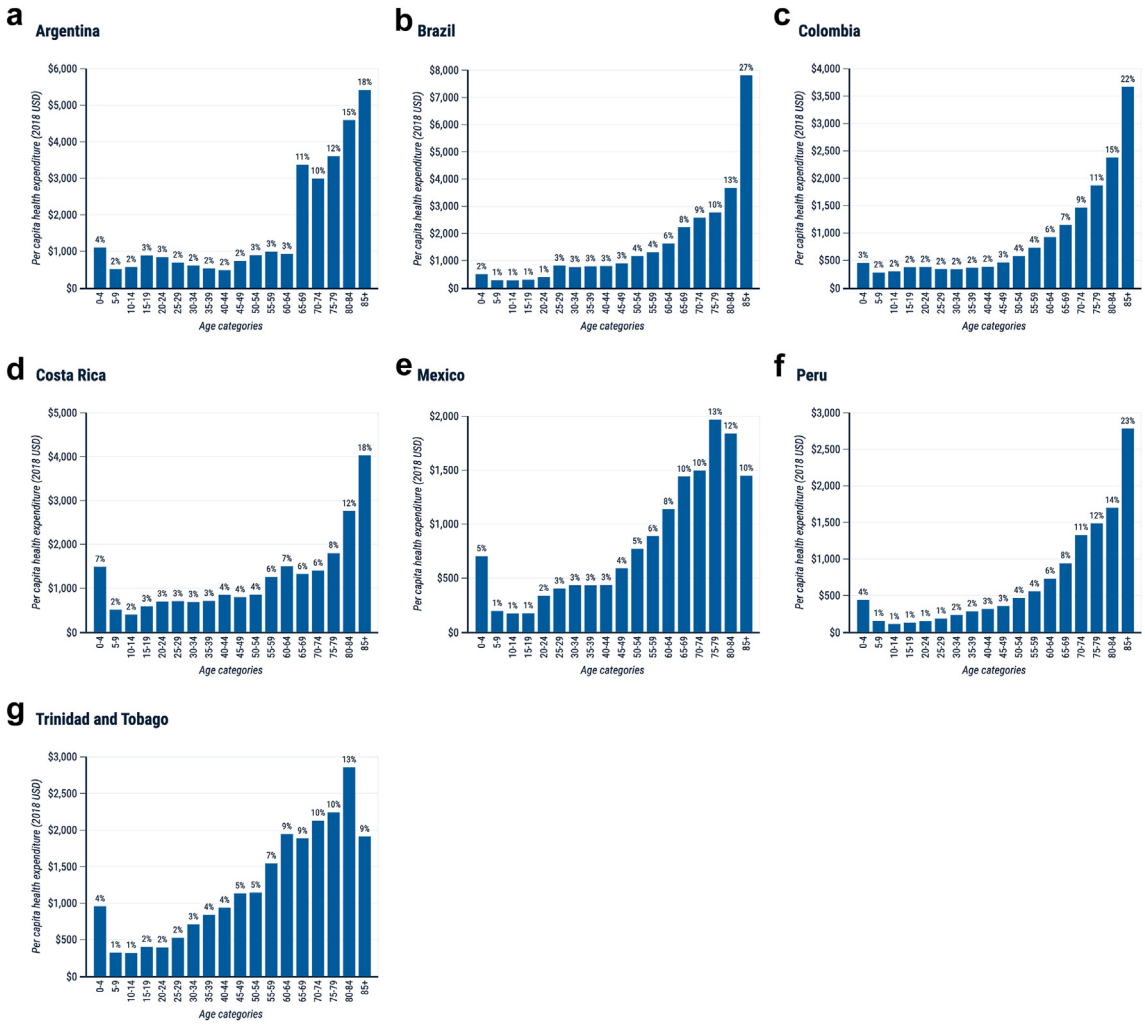
Fig. 4: Per capita health expenditure (a) and proportion of current health expenditure (b), PPP (current international $), by expenditure type and country, in 2018.

the lowest proportion from this source (less than 15%). Brazil has the highest amount of per capita CHE that corresponds to other domestic private health expenditures (nearly $500), followed by Argentina, Colombia, Trinidad and Tobago, Mexico, and Costa Rica ($100–$400) while Peru has the lowest from this source (~$100). A third of the CHE in Brazil are from other domestic private health expenditures, followed by Colombia, where over 10% of the CHE are from this source. In other index countries, the proportion of CHE from other domestic private health expenditures is less than 10%, with Costa Rica having the lowest at 5%. The proportion of per capita CHE from external health expenditures in the index countries is less than 1% (Fig. 4).

LAC countries vary in the levels of public spending on health as a share of GDP. Countries like Argentina, Brazil, Chile and Uruguay have government health expenditure levels close to the 10% benchmark. Yet most countries in the region are below this benchmark, and some like Venezuela, Grenada, Guatemala, Honduras, and Mexico have lower expenditure levels, around 3% of GDP.[14]

Per capita health expenditure by age group in LAC

Fig. 5 presents the per capita CHE by age group in the seven index countries, which all spend considerably



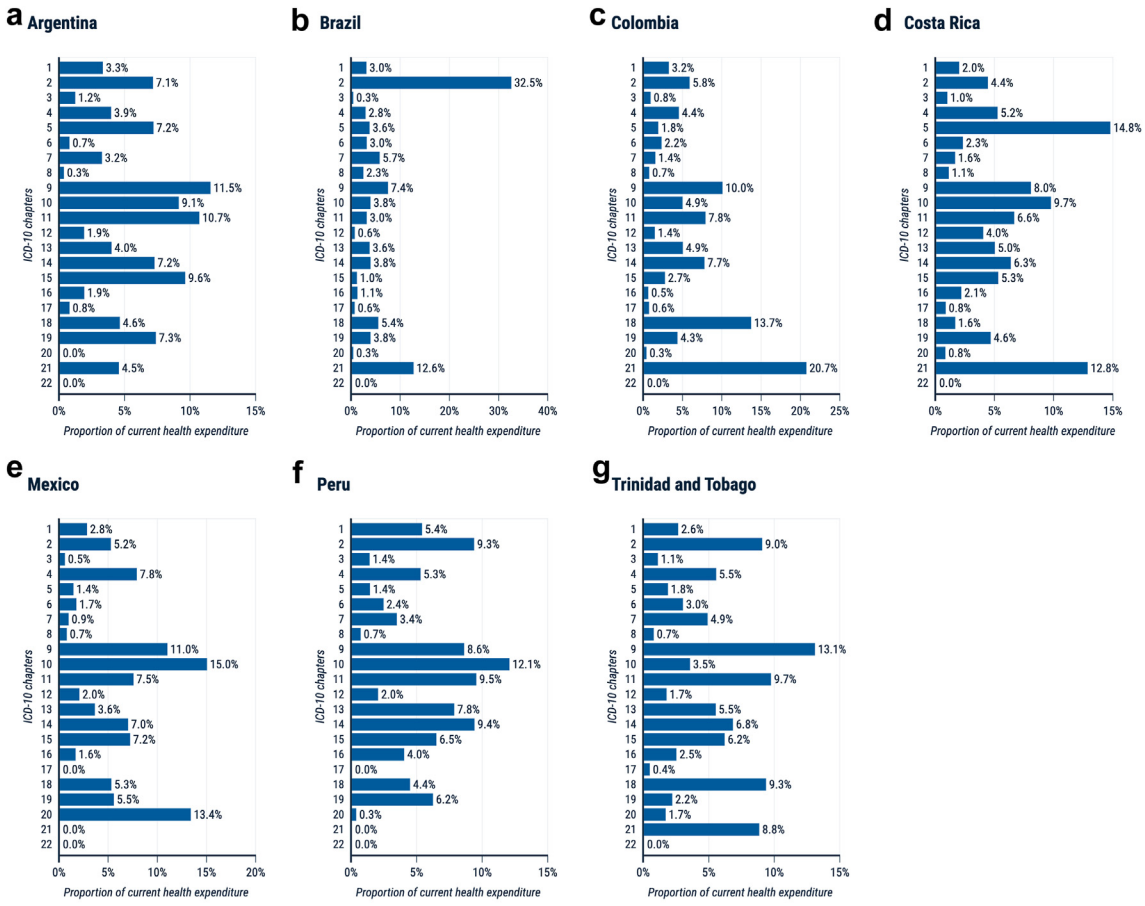
*Year is 2019 for Brazil, Peru, and Trinidad and Tobago, and 2018 for all other countries

Fig. 5: Per capita health expenditure (2018 USD), by age category and country, in 2018/2019*.

more on older individuals, especially those over 65 years. The highest per capita CHE is observed in the 85+ year category in Brazil (nearly $8000) and Argentina (over $5000). Mexico and Trinidad and Tobago have the lowest per capita CHE in the 85+ year category, with less than $2000 per capita CHE spent in this age group. Per capita CHE was highest in the 85+ year category in all countries except Mexico and Trinidad and Tobago. In Mexico, per capita CHE was highest in the 75–79 year age group ($2000), followed by the 80–84 year age group (nearly $2000). In Trinidad and Tobago, the highest per capita health expenditure was found in the 80–84 year age group (nearly $3000). (Fig. 5).

Proportion of CHE by ICD-10 chapter in LAC

The proportion of CHE that corresponds to specific ICD-10 Chapters for the seven index countries are presented in Fig. 6. There are several important similarities in most countries, including the predominance of CHE due to chronic diseases, including cancer (Chapter 2) and diseases of the circulatory (Chapter 9), respiratory (Chapter 10) and digestive (Chapter 11) systems. CHE spending for certain disease chapters, such as mental and behavioral disorders (Chapter 5), were higher in Costa Rica (14.8%, $671,234,586) and Argentina (7.2%, $3,411,064,309), compared to the other index countries, which had a CHE share closer to 1–2% for this ICD-10 Chapter. Mexico has the highest proportion of CHE spent on endocrine, nutritional and metabolic diseases (7.8%, $5,232,781,375), followed by Trinidad and Tobago (5.5%, $78,721,322), Peru (5.3%, $610,732,485), and Costa Rica (5.2%, $236,792,474). The lowest proportion of CHE due to this ICD-10 Chapter, was observed in Brazil (2.8%,



ICD-10 chapters are: 1. Infectious and parasitic diseases, 2. Neoplasms, 3. Diseases of the blood, 4. Endocrine, nutritional, and metabolic diseases, 5. Mental and behavioural disorders, 6. Nervous system, 7. Eye and adnexa, 8. Ear and mastoid process, 9. Circulatory system, 10. Respiratory system, 11. Digestive system, 12. Skin and subcutaneous tissue, 13. Musculoskeletal, 14. Genitourinary system, 15. Pregnancy, childbirth and the puerperium, 16. Perinatal period, 17. Congenital malformations, 18. Not elsewhere classified, 19. Injury, poisoning, and other, 20. External causes of morbidity and mortality, 21. Factors influencing health status, 22. Special. *Year is 2019 for Brazil, Peru, and Trinidad and Tobago, and 2018 for all other countries

Fig. 6: Proportion of current health expenditure (2018 USD), by ICD-10 chapter and country, in 2018/2019*.

$5,221,138,434). Peru had the greatest share of CHE due to infectious and parasitic diseases (5.4%, $623,542,725), followed by Argentina (3.3%, $1,569,201,836), and Colombia (3.2%, $806,494,144), while Costa Rica had the lowest (2%, $89,036,132).

In Argentina, the greatest share of CHE is spent on circulatory system diseases (11.5%, $5,490,894,671), digestive system (10.7%, $5,082,919,220), and pregnancy and childbirth (9.6%, $4,568,923,451). In Brazil, cancer represents most of CHE (32.5%, $61,002,812,969), followed by other factors influencing health status (12.6%, $23,604,868,889), and circulatory system diseases (7.4%, $13,792,109,644). The greatest share of CHE in Colombia is due to other factors influencing health status (20.7%, $5,274,514,773), diseases not elsewhere classified (13.7%%, $3,479,768,268), and circulatory system diseases (10%, $2,551,513,800). In Costa Rica, mental and behavioral disorders represent the greatest proportion of CHE (14.8%, $671,234,586), followed by other factors influencing health status (12.8%, $583,937,044) and respiratory diseases (9.7%, $442,572,179). The greatest share of CHE in Mexico is due to respiratory diseases (15%, $10,008,643,185), external causes of morbidity and mortality (13.4%, $8,904,310,472) and circulatory system diseases (11%, $7,313,524,725). In Peru, respiratory diseases represent the greatest proportion of CHE (12.1%, $1,401,027,471), followed by digestive diseases (9.5%, $1,105,653,088), and genitourinary diseases (9.4%, $1,089,326,970). The greatest share of CHE in Trinidad and Tobago is due to circulatory system diseases (13.1%, $186,620,927), followed by digestive diseases (9.7%, $138,595,407), and diseases not elsewhere classified (9.3%, $129,008,600) (Fig. 6).

Discussion

This study examined how specific demographic and epidemiologic factors, e.g. rapid population aging and changing disease burden, contribute to the growth of health expenditures in the LAC region. Our findings expand the published research that has explored and compared these factors in several LAC countries and provides important context for why these countries must consider the impact of these changes as they design strategies to address future challenges in healthcare financing. The recently published *Health at a Glance: Latin America and the Caribbean,* 2023 by the OECD and World Bank, provides a comprehensive and recent overview of various aspects of health systems in the LAC region.[4] This publication mirrors our findings regarding the per capita CHE by type of expenditure (government vs. OOP), in various LAC countries.[4]

Our results indicate that all seven index countries spend much more on older individuals, especially those 65 years and older, than on younger age groups. We found that all index countries, except Mexico and Trinidad and Tobago, had the highest per capita CHE in the 85 year and older category. Most index countries spend $1000 PPP or more per capita after the age of 50, but spend considerably less than that on the younger age groups. Our findings are consistent with the fact that health care costs increase gradually as individuals age, and rise exponentially in those over 50 years.[18] By 2030, there will be more people in LAC who are 60 years or older, than under 5 years.[19] The rapid speed at which the LAC population is aging requires more pressing planning for health systems to provide additional acute and long-term care for the elderly.

Another consequence of the demographic transition in LAC countries is the changing dependency ratio, which refers to the number of dependents (0–14 years and 65+ years), compared to the working-age population (15–64 years). LAC countries that are aging more rapidly, such as Barbados, Chile, Costa Rica, and Uruguay will experience increases in their dependency ratio sooner than countries like Bolivia, Guatemala and Honduras. Now is a critical time for countries in LAC to implement health, employment, and social security policies that will help the current population of working adults develop into a productive asset for the economy, and so they can have a better and healthier life as they age.[19] Health systems in LAC must prepare for the challenges of caring for a growing and diverse population of older adults, especially in the wake of the COVID-19 pandemic, which exposed major weaknesses in the provision of care, and pervasive ageism.[20] This will be especially important in countries like Brazil, Costa Rica, and Mexico, where the population 70+ years will more than double in the next 30 years, and in Belize, Colombia, and Honduras, where it will triple.

We observed that the prevalence of NCDs is considerably greater (60–80%) in most LAC countries, compared to injuries (8–20%), and communicable, maternal, neonatal, and nutritional diseases (5–30%). Not surprisingly, Uruguay, Barbados and Chile, which have the highest proportion of the population over 70 years (8–11%), also have the greatest prevalence of NCDs (over 80%), and one of the highest per capita health expenditures in the LAC region (over $2000 PPP). Conversely, Belize, Bolivia and Guatemala, which have a much lower proportion of the population who are 70 years or older (3%), have the lowest prevalence of NCDs in the LAC region (approximately 60%), and a much lower per capita health expenditure (less than $500 PPP). The same trend was found in the index LAC countries we examined. Argentina, Costa Rica, and Trinidad and Tobago have the highest proportion of the population over 70 years (6–8%), the greatest disease burden due to NCDs—nearly 80%, and a higher per capita health expenditure ($1500–$2250). While Colombia and Peru have a lower proportion of the population over 70 years (5%), a lower prevalence of chronic diseases (less than 70%), and a per capita health expenditure ranging between approximately $500 and $1000 PPP.

Between 2000 and 2019, there was a sharp decline in mortality rates due to NCDs in LAC, especially deaths from ischemic heart disease and stroke, which dropped from 44 to 18 deaths per 100,000, respectively. This decrease in mortality may be attributed in part to declines in smoking rates, advances in controlling high blood pressure and cholesterol, and improved access to effective care for those experiencing a heart attack or stroke.[21] Continuing to invest in preventive care for NCDs must be a priority for health systems in LAC. Some strategies include efforts to continue to reduce modifiable NCD risk factors, especially tobacco control and obesity prevention, as well as the social drivers of health. LAC countries need to prioritize a larger investment in primary care and expand their telemedicine and digital health capabilities to provide continuous and comprehensive care for people with NCDs.[22]

In terms of communicable, maternal, neonatal and nutritional diseases, Bolivia and Guatemala have the highest proportion (nearly 30% and over 20%, respectively), while Chile and Uruguay have the lowest (less than 10%). Although the cost to treat communicable diseases is currently lower than the growing cost of NCDs and health care services for the elderly, this may change with the looming global threat of antimicrobial resistance (AMR).[23] A recent study found that Bolivia and Guatemala are among the five LAC countries with the highest age-standardized mortality rate (ASMR) associated with AMR, while Colombia, Costa Rica, and Uruguay have a much lower ASMR due to AMR.[24] These results, which support our own findings, suggest that countries like Bolivia and Guatemala will

continue to be impacted by AMR unless they increase their access to antibiotics and basic healthcare services.[24] According to a report by the OCED, an investment of just $2 USD per person per year could help reduce 75% of the AMR burden.[25]

Our study has several limitations. We only obtained information on CHE by age and disease categories for seven index countries. Although this selected set of countries is not representive of the region per se, they span the range of per capita CHE seen in LAC countries and provide a reasonable representation of different contexts in the area. A second limitation is that for each index country, information was only available for a few health financing schemes (see Supplementary Table S2). Thus, extrapolations were made to the other financing schemes assuming that the structure of health expenditures by age-disease was similar. This assumption may not hold in cases where different population groups or people with specific diseases use specific financing schemes. Additionally, we did not consider the effect of other factors on CHE, such as climate change and AMR, which are likely to have a major impact on health determinants and expenditures in the near future.

In conclusion, our results indicate that a rapidly aging population and increase in NCDs are contributing to rising health expenditures in most LAC countries, which will have important implications for future health policy initiatives in the region.

Contributors

Conceptualisation, access to raw data, data curation and verification, writing—original draft, writing—review & editing, and final responsibility for the decision to submit for publication: YNF, TR, KDR, MTT, CJM, ALH, CAGM, DM, CMN, AMP, TAS, AIVO, AVL.

Formal analysis, funding acquisition, methodology, project administration: KDR, TR, AIVO, CMN, ALH.

Data sharing statement

Data from this study can be made available on request.

Declaration of interests

T. Alafia Samuels declares a contract from the Ministry of Health and Wellness Jamaica, she received honoraria from University of Cambridge and Healthy Caribbean Coalition, and received support for travel and meetings from NCD child, World Obesity, government of Germany, UK government (NIHR, UK, and UKRI), and the World Health Organization. Other authors declare no competing interests.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.lana.2025.101070.

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