

Visual and Hearing Health of Older People in the Region of the Americas



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Contents

ACKNOWLEDGMENTS	vi
ABBREVIATIONS	vii
INTRODUCTION	1
THE VISUAL HEALTH OF OLDER PEOPLE IN THE REGION OF THE AMERICAS	2
Morbidity	2
Refractive errors.....	2
Presbyopia.....	5
Cataracts	8
Glaucoma	11
Age-related macular degeneration.....	14
Estimating the burden of disease due to visual deficiency and impairment.....	17
Presbyopia	18
Cataracts	20
Glaucoma	22
Age-related macular degeneration.....	24
Challenges in visual health	29
Conclusions and recommendations	30
The Hearing Health of Older People in the Region of the Americas.....	31
Morbidity	31
Presbycusis.....	31
Otitis media.....	34
Estimating the disease burden due to hearing deficiency and impairment	37
Presbycusis.....	37
Otitis media	39
Analysis of factors related to hearing health services in the Region	42
Challenges in hearing health.....	46
Conclusions and recommendations	47
References	48

Figures

Figure 1. Region of the Americas: Percentage of total prevalent cases of refractive errors in people over 50 years of age, by sex, 2015–2019.....	3
Figure 2. Region of the Americas: Percentage of total prevalent cases of refractive errors in people over 50 years of age, by country, 2015–2019.....	4
Figure 3. Region of the Americas: Percentage of total prevalent cases of refractive errors in people over 50 years of age, by country and age group, 2019	5
Figure 4. Region of the Americas: Percentage of total prevalent cases of presbyopia in people over 50 years of age, by sex, 2015–2019	6
Figure 5. Region of the Americas: Percentage of total prevalent cases of presbyopia in people over 50 years of age, by country, 2015–2019	7
Figure 6. Region of the Americas: Percentage of total prevalent cases of presbyopia in people over 50 years of age, by country and age group, 2019.....	8
Figure 7. Region of the Americas: Percentage of total prevalent cases of cataracts in people over 50 years of age, by sex, 2015–2019	9
Figure 8. Region of the Americas: Percentage of total prevalent cases of cataracts in people over 50 years of age, by country, 2015–2019	10
Figure 9. Region of the Americas: Percentage of total prevalent cases of cataracts, by country and age group, 2019.....	11
Figure 10. Region of the Americas: Percentage of total prevalent cases of glaucoma in people over 50 years of age, by sex, 2015–2019	12
Figure 11. Region of the Americas: Percentage of total prevalent cases of glaucoma in people over 50 years of age, by country, 2015–2019	13
Figure 12. Region of the Americas: Percentage of total prevalent cases of glaucoma, by country and age group, 2019.....	14
Figure 13. Region of the Americas: Percentage of total prevalent cases of age-related macular degeneration in people over 50 years of age, by sex, 2015–2019.....	15
Figure 14. Region of the Americas: Percentage of total prevalent cases of age-related macular degeneration in people over 50 years of age, by country, 2015–2019.....	16
Figure 15. Region of the Americas: Percentage of total prevalent cases of age-related macular degeneration, by country and age group, 2019	17
Figure 16. Region of the Americas: Disability-adjusted life years due to presbyopia in people over 50 years of age, by sex, 2015–2019	18
Figure 17. Region of the Americas: Disability-adjusted life years due to cataracts, by sex, 2015–2019	20
Figure 18. Region of the Americas: Disability-adjusted life years due to glaucoma, by sex, 2015–2019	22
Figure 19. Region of the Americas: Disability-adjusted life years due to age-related macular degeneration, by sex, 2015–2019.....	24

Figure 20. Region of the Americas: Percentage of total prevalent cases of presbycusis in people over 50 years of age, by sex, 2015–2019	32
Figure 21. Region of the Americas: Percentage of total prevalent cases of presbycusis in people over 50 years of age, by country, 2015–2019	33
Figure 22. Region of the Americas: Percentage of total prevalent cases of presbycusis, by country and age group, 2019.....	34
Figure 23. Region of the Americas: Percentage of total prevalent cases of otitis media in people over 50 years of age, by sex, 2015–2019	35
Figure 24. Region of the Americas: Percentage of total prevalent cases of otitis media in people over 50 years of age, by country, 2015–2019	36
Figure 25. Region of the Americas: Percentage of total prevalent cases of otitis media, by country and age group, 2019.....	37
Figure 26. Region of the Americas: Disability-adjusted life years due to presbycusis, by sex, 2015–2019.....	38
Figure 27. Region of the Americas: Disability-adjusted life years due to otitis media, by sex, 2015–2019	40
Figure 28. Region of the Americas: Otorhinolaryngology medical personnel per million population	43
Figure 29. Region of the Americas: Expert audiology personnel per million population.....	44
Figure 30. Region of the Americas: Speech therapists and speech-language pathologists.....	45

Tables

Table 1. Region of the Americas: Disability-adjusted life years due to presbyopia, by country, 2015–2019.....	19
Table 2. Region of the Americas: Disability-adjusted life years due to cataracts, by country, 2015–2019	21
Table 3. Region of the Americas: Disability-adjusted life years due to glaucoma, by country, 2015–2019	23
Table 4. Region of the Americas: Disability-adjusted life years due to age-related macular degeneration, by country, 2015–2019.....	25
Table 5. Region of the Americas: Number of eye care professionals, by country.....	27
Table 6. Region of the Americas: Number of cataract surgeries, rate of surgeries per million population, and effective cataract-surgery coverage, by country.....	28
Table 7. Region of the Americas: Disability-adjusted life years due to presbycusis, by country, 2015–2019	39
Table 8. Region of the Americas: Disability-adjusted life years due to otitis media, by country, 2015–2019	41

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The purpose of the series is to provide regular updates on the different areas of action related to the Decade of Healthy Aging (2021–2030) in the Region, as well as on other related topics.

The collaboration of the experts from PAHO, the United Nations and the Inter-American System, and the academic world who participated in the initiative and formulated essential feedback and recommendations for the project to see the light is appreciated.

ABBREVIATIONS

DALYs: Disability-adjusted life years

WHO: World Health Organization

INTRODUCTION

The senses are essential to the development of every human being from birth to old age, and are a valuable resource over the course of a person's life. Hearing and vision contribute significantly to enhancing the trajectory of people's health and well-being (1). As countries improve their political, economic, and social conditions, people can be expected to live longer, with improvements in all of their living conditions; as a result, they will have better lives and maintain their functional capacities longer, including their visual and hearing capacities. This constitutes a challenge for public policy decision-makers, since they are responsible for ensuring that older people retain and maintain their vision and hearing under optimal conditions.

Vision is, without a doubt, one of the most dominant senses, and the one that we use most on a day-to-day basis. It is a sense that is fundamental for older people, since it largely determines their social and physical well-being, and affects their interactions with other people, their participation in individual and group sports, their mental health, and their independence. Hearing, meanwhile, allows humans to develop and enhance all of their functional capacities, create and experience healthy environments, and strengthen assertive communication in their cultural environments (2). These are some of the reasons vision and hearing are considered fundamental domains of intrinsic capacity, which, together with the environment, determine people's functional capacities, the basic prerequisite to healthy aging (3).

This publication is presented on the occasion of the United Nations Decade of Healthy Aging (2021–2030), and details the current state of visual and hearing health of older people in the Region of the Americas. Its purpose is to provide specific evidence on the needs of the Region's older population, and serve as a starting point for other work in the field, as well providing a tool for implementing strategic regional actions that promote ongoing improvement in the overall health of older people.

THE VISUAL HEALTH OF OLDER PEOPLE IN THE REGION OF THE AMERICAS

Morbidity

Given new advances in epidemiological modeling and health-care services, it is important that all governments in the Region be familiar with, update, and understand morbidity data on the most prevalent eye conditions, in order to gain an overall view of the visual health of older people.

These conditions need to be diagnosed and treated in time to avoid ocular complications that can cause high-order visual deficiencies and even blindness, a condition that can affect the quality of life and independence of older people. Although the United Nations designates people 60 years of age and above as older adults, this document uses age 50 and older, given the availability of data. This paper proposes an integrated set of actions covering the entire life course, with a focus on the aging process. According to the evidence (4), people over the age of 50 have a higher frequency of certain eye conditions, namely: refractive errors, presbyopia, cataracts, glaucoma, and age-related macular degeneration.

Refractive errors

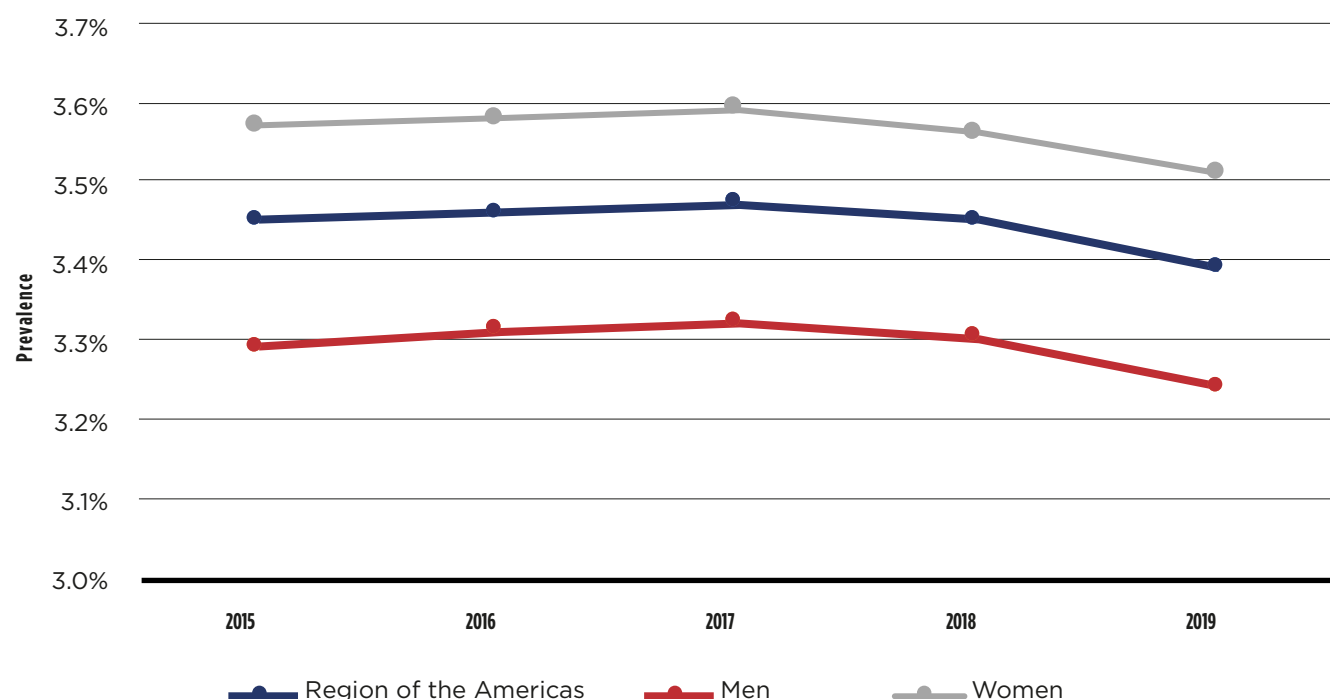
Undercorrected or uncorrected refractive errors (nearsightedness, farsightedness, and astigmatism) are important causes of loss of distance vision that can result in disability in older people, thereby affecting their functional abilities and independence. Worldwide, an estimated 123.7 million people have a visual impairment due to uncorrected refractive errors (5). Triggers for the increased prevalence of myopia in the older population include environmental factors such as nutrition, prolonged and excessive use of near vision, and lifestyle. In 2020, there were 2.6 billion people with this condition worldwide (5). Failure to detect and correct myopia in time can lead to conditions that cause severe vision impairment, such as myopic macular degeneration, cataracts, retinal detachment, and glaucoma, especially in older people (6). However, when detected early, refractive errors can be treated with glasses, contact lenses, or surgery (4).

In the Region of the Americas, the prevalence of refractive errors in people over age 50 have remained stable over time: from 3.5% in 2015 to 3.4% in 2019.

Refractive errors are more prevalent in women than in men (Figure 1). However, there is no scientific evidence that sex is a variable that predisposes people to this eye condition (in 2019, the prevalence was 3.5%

in women and 3.2% in men). The main causes of developing refractive errors are genetics and certain lifestyles or behaviors, in different decades of life, which cause alterations in the visual system.

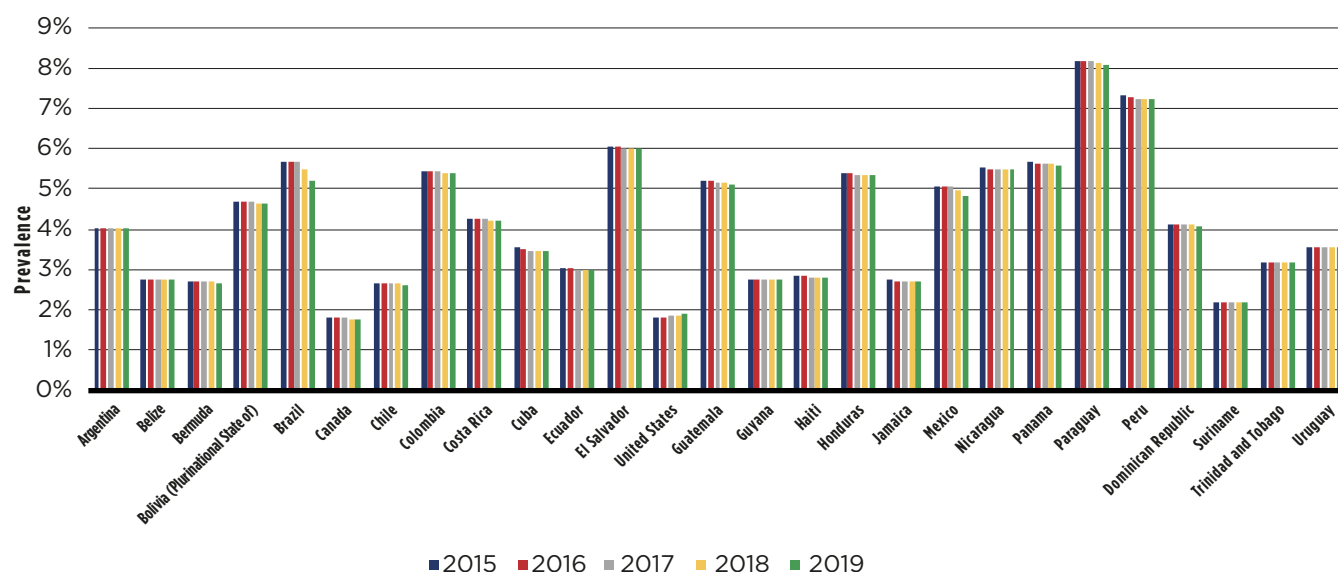
Figure 1. Region of the Americas: Percentage of total prevalent cases of refractive errors in people over 50 years of age, by sex, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

There is a clear difference in the prevalence of refractive errors among people over age 50 in the different countries that make up the Region of the Americas: low- and middle-income countries rank in the top tier, with prevalences above 6% for 2015–2019 in countries such as Paraguay (8.15%), Peru (7.27%), and El Salvador (6.03%). By contrast, in Canada, the United States, and Suriname, the prevalence is less than 2.18% for the same period (Figure 2). Eye conditions are multifactorial, and the degree of susceptibility to or progression of refractive errors in older people depends largely on the extent of care and the control of visual health during preceding decades, with a corresponding effect in old age.

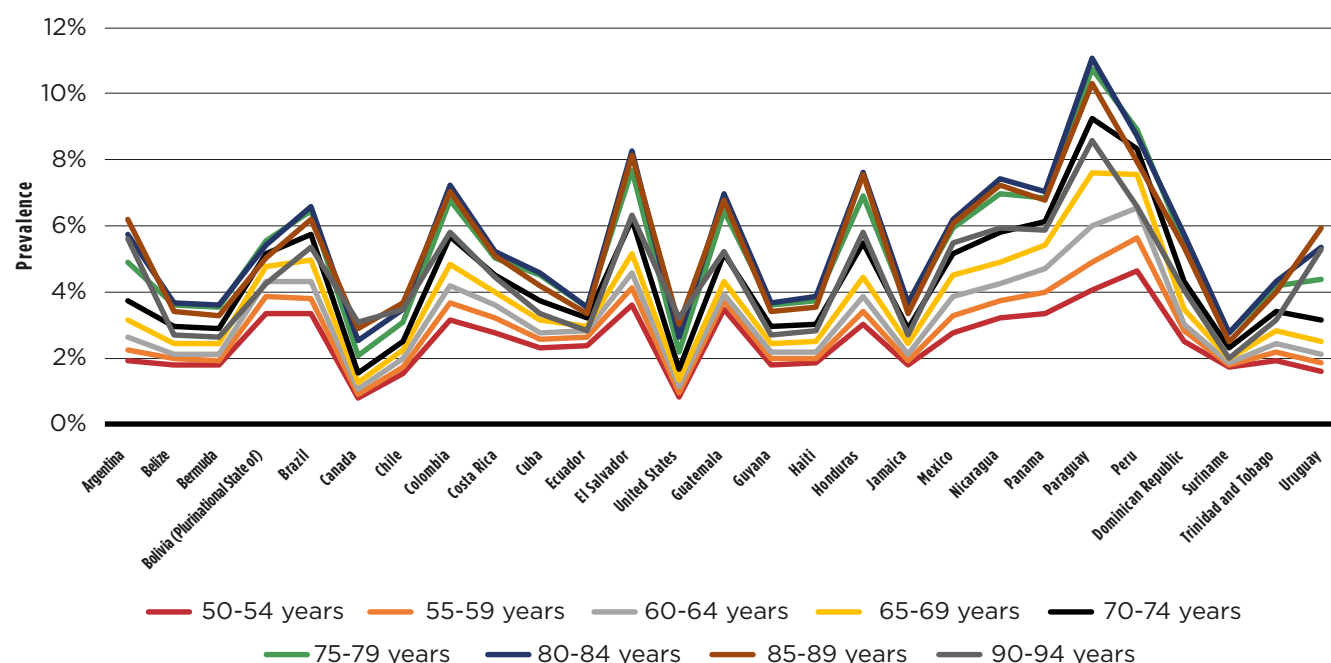
Figure 2. Region of the Americas: Percentage of total prevalent cases of refractive errors in people over 50 years of age, by country, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

With regard to the prevalence of specific refractive errors by age group, starting at age 50, the number and prevalence of cases in 2019 shows a general increase with age in all countries of the Region. The populations of countries such as Paraguay, Peru, and El Salvador have the highest prevalence of refractive errors in each five-year age group analyzed, with the highest figures among 80- to 84-year-olds ($\geq 10\%$). In contrast, countries such as Canada, the United States, and Suriname have the lowest prevalence in these age groups, with the highest prevalence in the 90- to 94-year-old age group ($\geq 3.0\%$) (Figure 3).

Figure 3. Region of the Americas: Percentage of total prevalent cases of refractive errors in people over 50 years of age, by country and age group, 2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Presbyopia

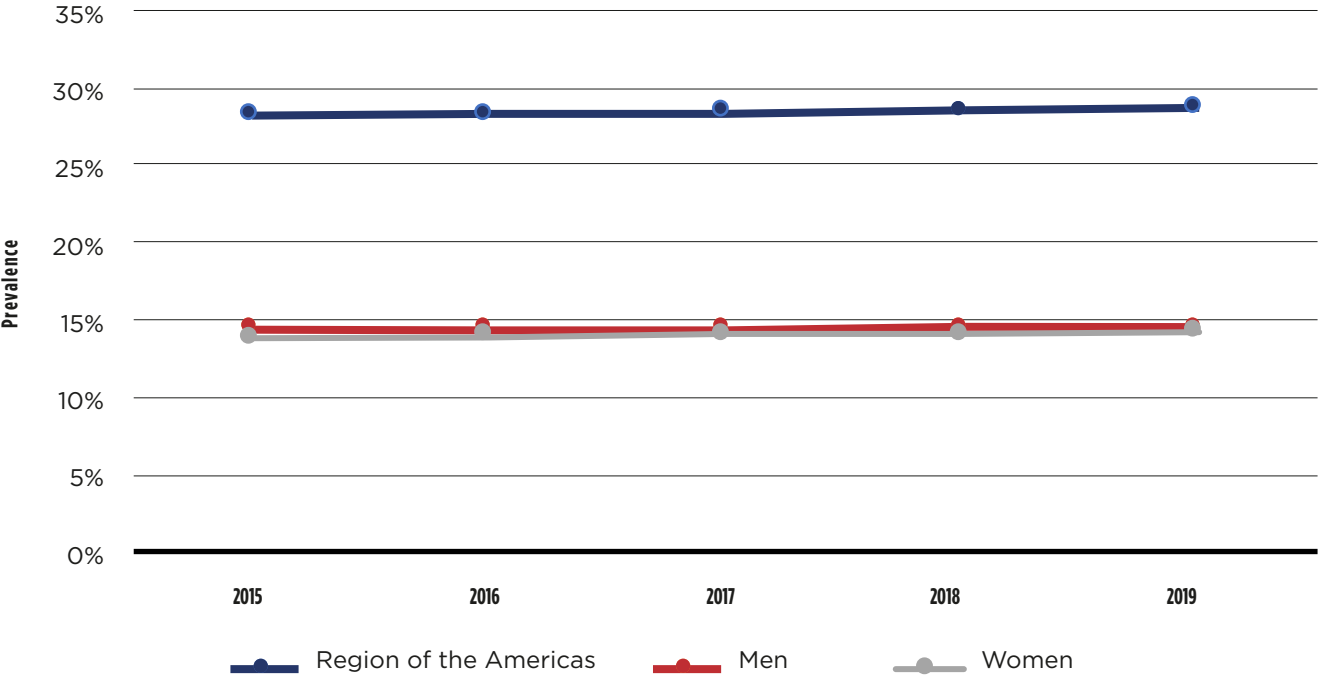
Presbyopia is an age-related condition in which there is a loss of elasticity and flexibility of the lens and of the capsule that covers it (7). This loss is gradual and progressive, which means that older people begin to experience visual strain in their near vision (for example, when reading). This condition occurs with greater frequency after the age of 40. However, due to the excessive use of screens and near vision, the number of people with myopia has increased. People with presbyopia begin to need visual correction in their fifties.

One important aspect of great interest for older people is the visual impairment that occurs when presbyopia is not corrected, hindering daily activities and autonomy. This occurs mainly in countries with fewer resources and among people living in rural areas, due to the lack of timely and quality access to visual health services.

It is estimated that, in 2015, there were 1.8 billion people with presbyopia in the world (a prevalence of 25%; with a 95% confidence interval [CI], 1.7-2.0 billion [23% to 27%]); of these, 826 million (95% CI, 686-960 million) had inadequate or no vision correction (8). It was estimated that in the Region of the Americas, in 2019, there were approximately

108 million people with presbyopia, or 28.7% of the population (9). Compared to 2015 figures (28.2%), there is evidence of an increase in the number of prevalent cases of presbyopia in the Region, attributable to the increase in the older population in all of the countries. In terms of prevalent cases by sex, there are no significant differences (Figure 4).

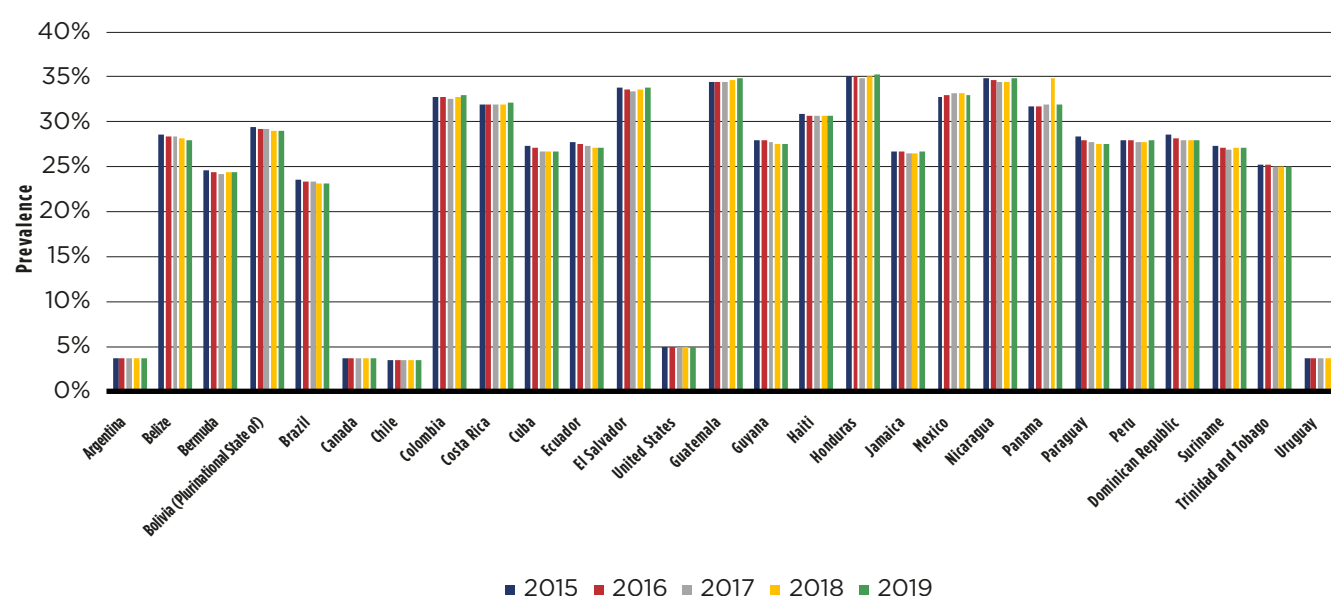
Figure 4. Region of the Americas: Percentage of total prevalent cases of presbyopia in people over 50 years of age, by sex, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Figure 5 shows the prevalence of presbyopia by country in the Region of the Americas, from 2015 to 2019, for people 50 years of age and older. As can be seen, countries such as Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, and Panama have the highest number of prevalent cases of presbyopia, with a proportion of more than 30% in the five years studied. Countries such as Argentina, Canada, Chile, the United States, and Uruguay have the lowest prevalence, close to 5%, in the period under review.

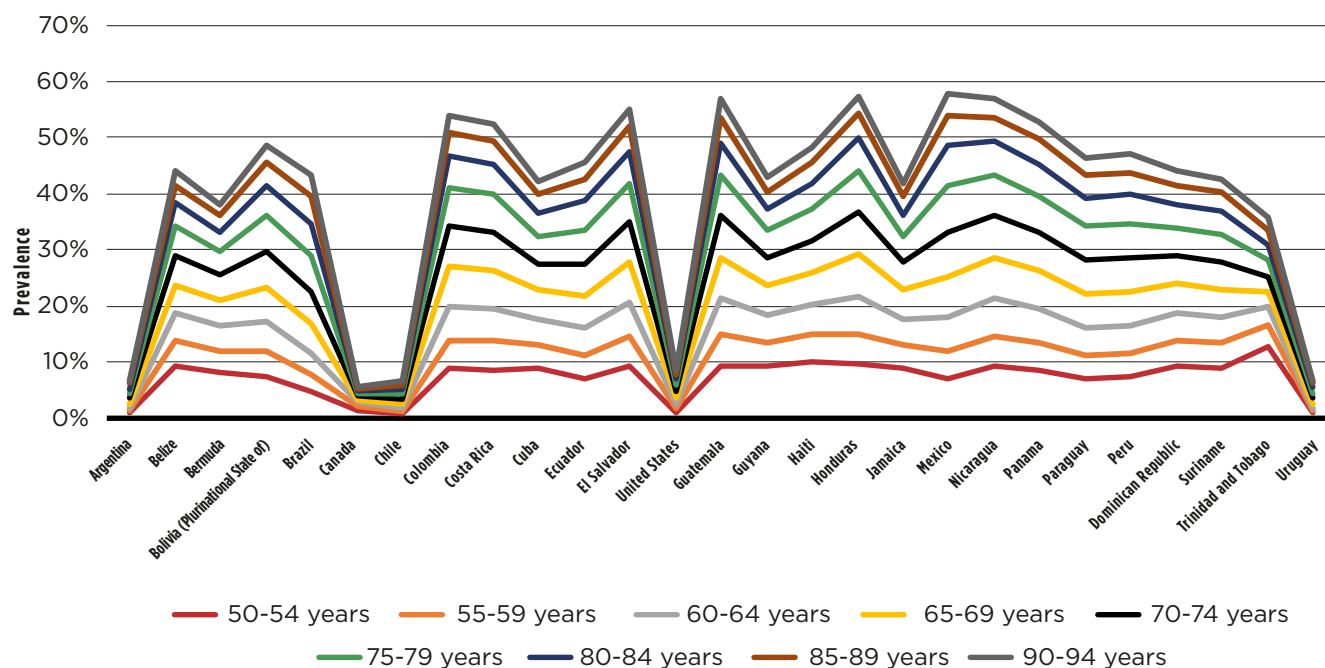
Figure 5. Region of the Americas: Percentage of total prevalent cases of presbyopia in people over 50 years of age, by country, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Figure 6 shows the specific prevalence of presbyopia per five-year age group, starting at the age of 50, in 2019. The general trend is that the older the age of the population, the greater is the number of prevalent cases of presbyopia. Differences between countries and between age groups are due to multiple factors, including the increase in the number of older people in each country, the behavioral and cultural characteristics of each nation, and individual lifestyles. The 50- to 54-year-old age group has a weighted prevalence of 7.20%, which increases to 11% in the 55- to 59-year-old age group, with similar increases of approximately 5% in successive age groups.

Figure 6. Region of the Americas: Percentage of total prevalent cases of presbyopia in people over 50 years of age, by country and age group, 2019



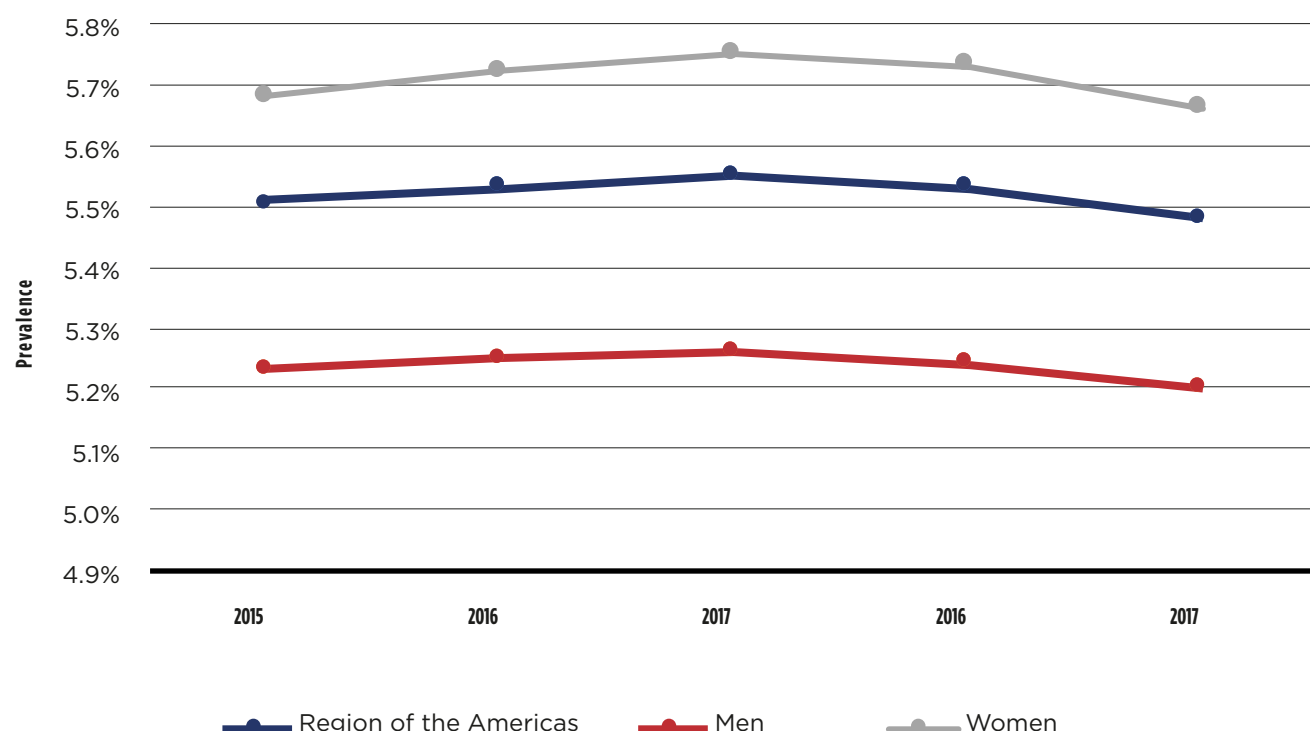
Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Cataracts

This visual disease is the leading cause of avoidable blindness and disability worldwide, and the risk of contracting it increases with age (4). It presents as cloudiness in the lens of the eye, causing increasingly blurred vision, for which surgery is the indicated treatment. It is estimated that the number of people worldwide who are blind due to cataracts has been increasing, from 12.3 million in 1990 to 20 million in 2010 (10). Some studies indicate that this visual condition can affect the quality of life, independence, and autonomy in older people, and is even correlated with increased mental health problems and, in certain severe cases, with increased mortality rates among older people (11, 12).

In the Region of the Americas, the prevalence of cases of cataracts has remained stable, from 5.5% in 2015 to 5.48% in 2019. If the data are disaggregated by sex, it can be seen that in the last five years this condition occurs, on average, more frequently in women (5.71%) than in men (5.24%), and more frequently in low- and middle-income countries (Figure 7). This difference between women and men is due to the fact that women live longer than men; also, in some countries women have less access to eye health services, with the result that they live a greater number of years with the disease.

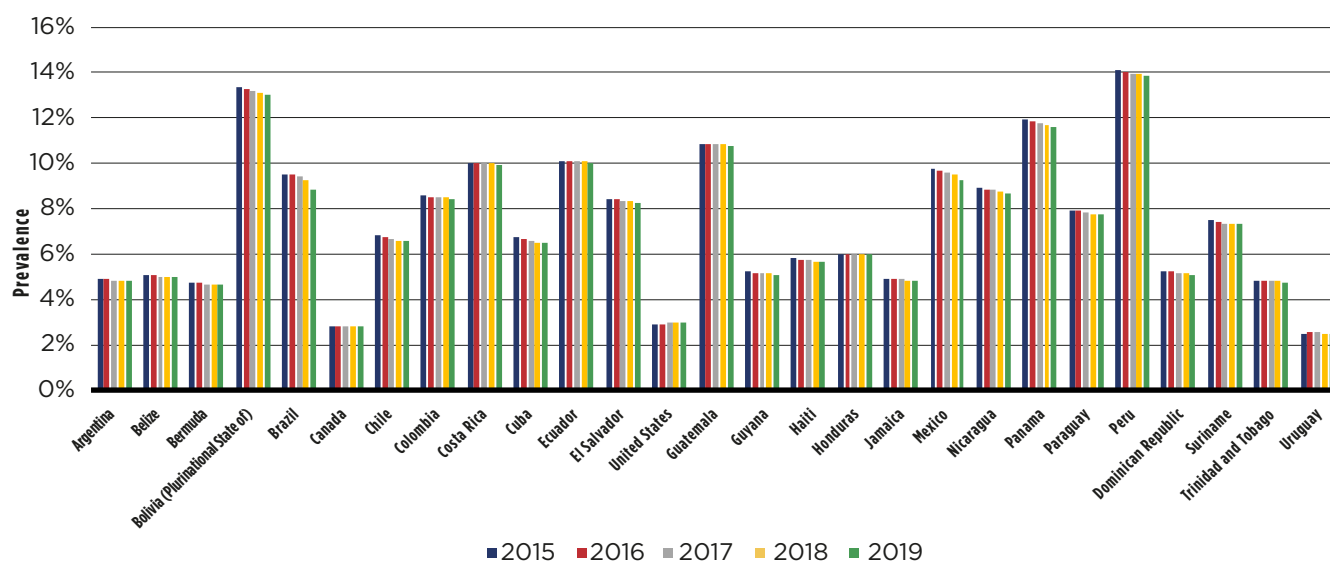
Figure 7. Region of the Americas: Percentage of total prevalent cases of cataracts in people over 50 years of age, by sex, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

With regard to the percentage of the total prevalent cases of cataracts in people 50 and older, by country, estimates indicate that the Plurinational State of Bolivia, Guatemala, Panama, and Peru had the highest number of cases (>10%) between 2015 and 2019. In contrast, Canada (2.78%), the United States (2.96%), and Uruguay (2.48%) had the lowest number of prevalent cases (Figure 8). There are several risk factors that lead to this disease in older people, of which the most important is the aging process of the population; however, there are also other factors, such as smoking. People who smoke are more likely to develop cataracts in their old age (13). Other modifiable risk factors include alcohol consumption, exposure to sunlight without adequate protection, and prolonged use of medications such as steroids, leading to an increased prevalence of this disease, mainly in older people (14).

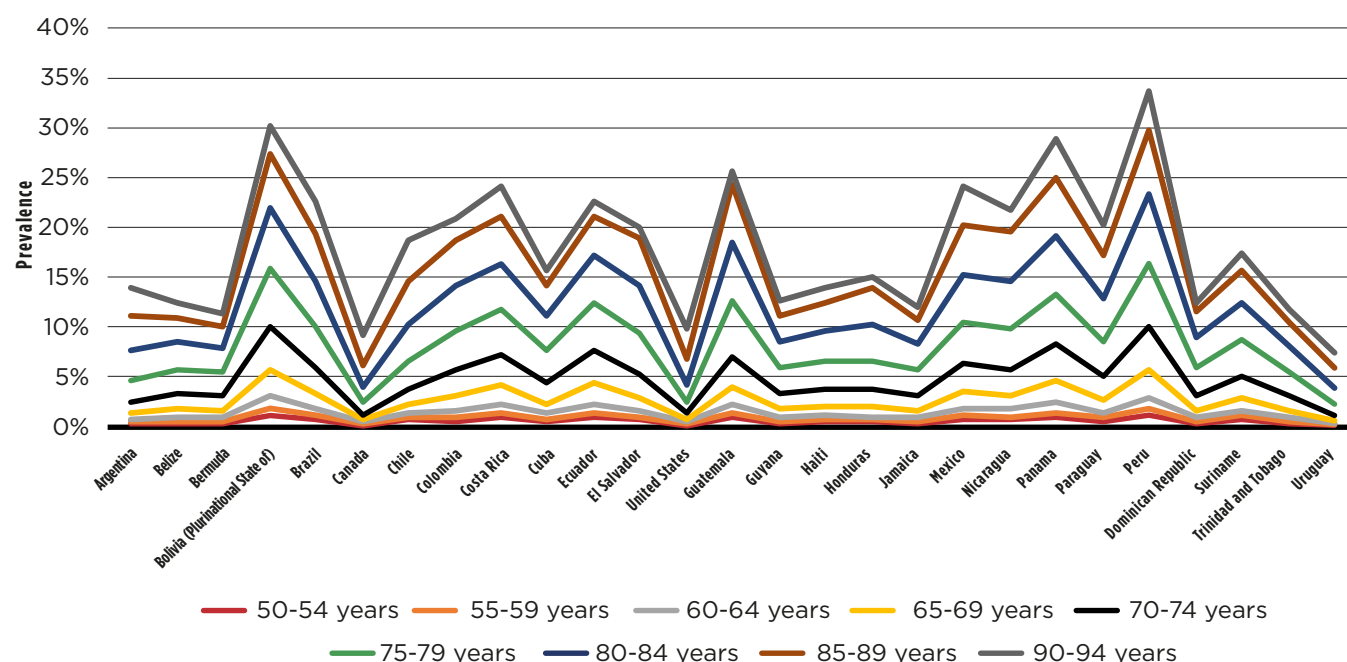
Figure 8. Region of the Americas: Percentage of total prevalent cases of cataracts in people over 50 years of age, by country, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Figure 9 shows the specific prevalence of cataracts by age group, from ages 50 to 94, in 2019. In general, a gradual increase in the number of cases occurs between the different decades of life, due to the long latency period of the disease, which, on average, occurs more often in the eighties. Countries such as the Plurinational State of Bolivia and Peru have the highest number of prevalent cases in the various age groups, with a weighted average of 13.05% and 13.87%, respectively. In contrast, there are countries such as Argentina, Canada, and Uruguay with weighted prevalences of less than 3% for the same age groups (ages 50 to 94). Although some risk factors are not modifiable, most are, making it possible to delay the onset of cataracts. In order to do this, people need ongoing visual health services. Treatment is surgical and, if not performed in time, this can lead to increasingly serious visual impairment in older people, potentially leading to blindness and significant limitations in general functioning.

Figure 9. Region of the Americas: Percentage of total prevalent cases of cataracts, by country and age group, 2019



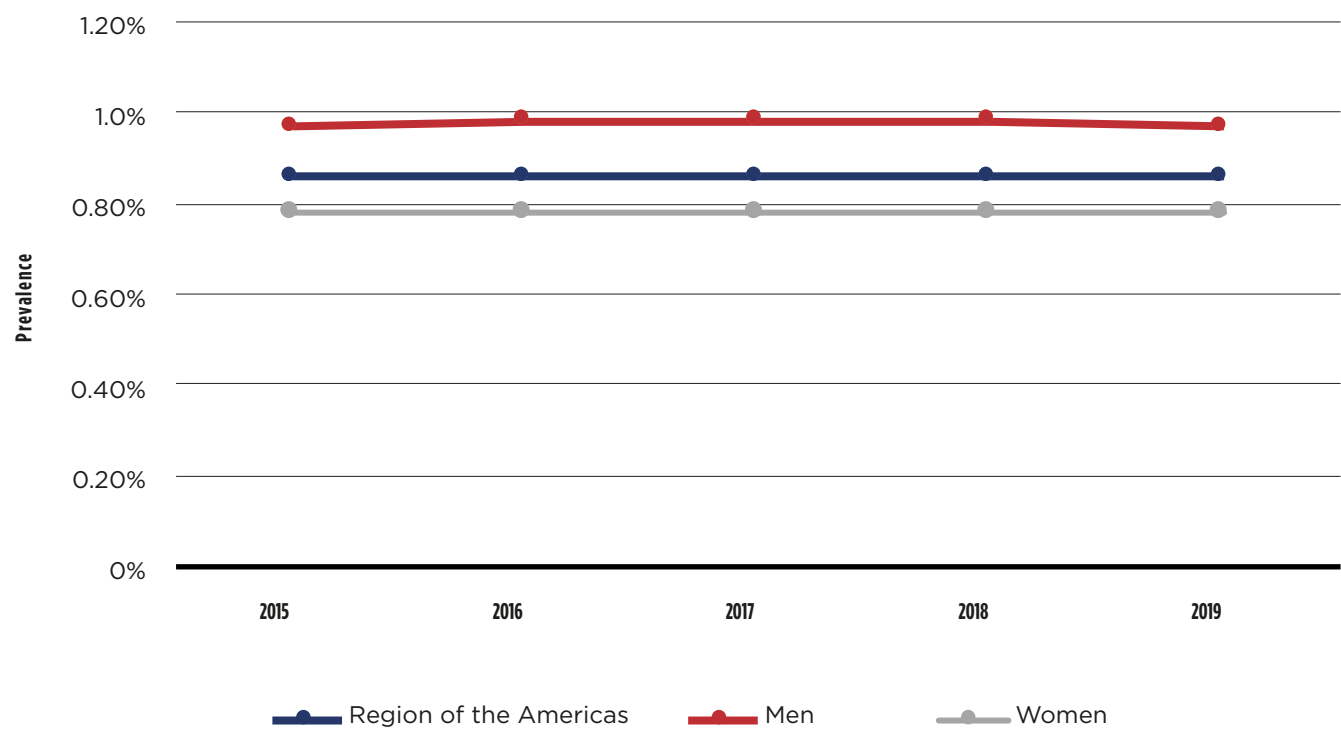
Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Glaucoma

Glaucoma is the leading cause of irreversible blindness worldwide. The disease causes progressive damage to the optic nerve. Initially, this results in the loss of peripheral vision, and can progress to severe visual impairment, known as open-angle glaucoma, the most common type of glaucoma (5, 15). In 2010 an estimated 60.5 million people worldwide were affected by primary open-angle glaucoma and primary angle closure glaucoma. Projections relying on population-based studies put the number of people with glaucoma at 76 million in 2020, and 111.8 million in 2040, of which the most prevalent form is primary open-angle glaucoma (13).

Figure 10 shows the prevalence of glaucoma in the Region of the Americas in people over 50 years of age for the 2015–2019 period, by year. As can be seen, the prevalence has been stable, remaining at 0.86%. This disease occurs more often in men than in women, with a weighted prevalence in the study period of 0.98% versus 0.78% in women. Like other visual diseases that affect older people, the main risk factor for glaucoma is aging, followed by genetics (5). While this type of disease is not preventable, by detecting and treating it early, the risk of visual impairment can be reduced.

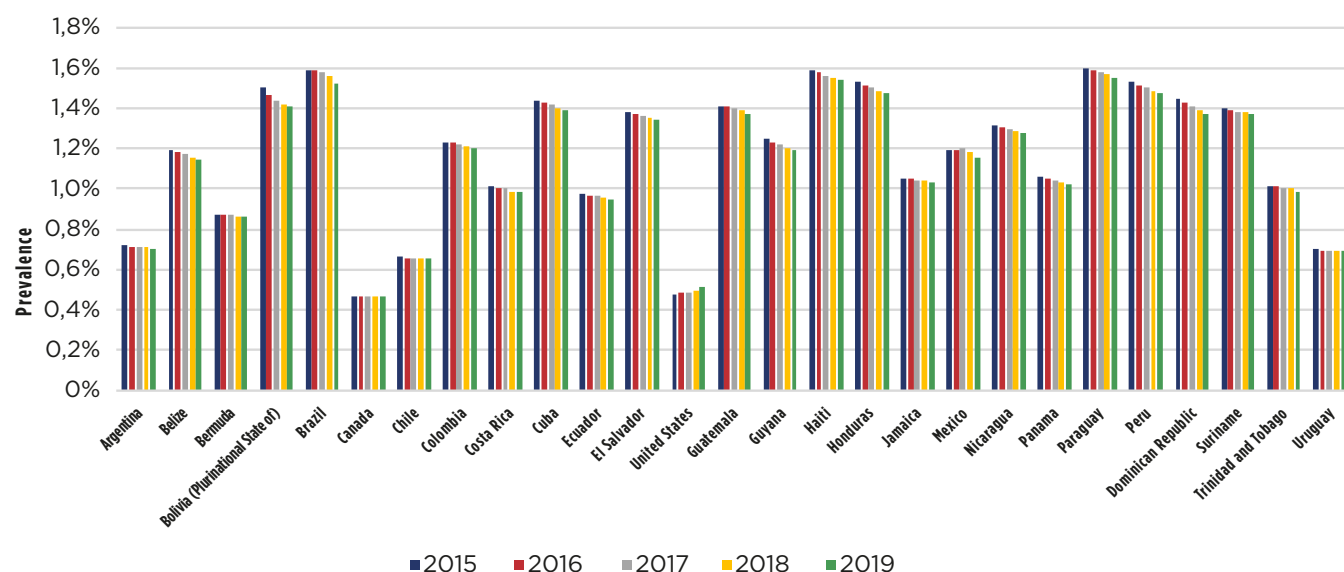
Figure 10. Region of the Americas: Percentage of total prevalent cases of glaucoma in people over 50 years of age, by sex, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Regarding the prevalence of cases of glaucoma among the different countries that make up the Region of the Americas, the highest prevalence is found in Brazil, Haiti, Honduras, Paraguay, and Peru, above 1.40% between 2015 and 2019. By contrast, in Canada, the United States, Chile, and Uruguay, the prevalence was less than 0.69% (Figure 11). The risk and subtypes of glaucoma vary between races and countries. The highest prevalence of primary open-angle glaucoma has been found to occur in people of advanced age who are Afrodescendant, of Hispanic descent, male, with a family history of glaucoma and diabetes mellitus. In the case of primary-angle closure glaucoma, on the other hand, risk factors include being of advanced age, of Asian ancestry, and female (17).

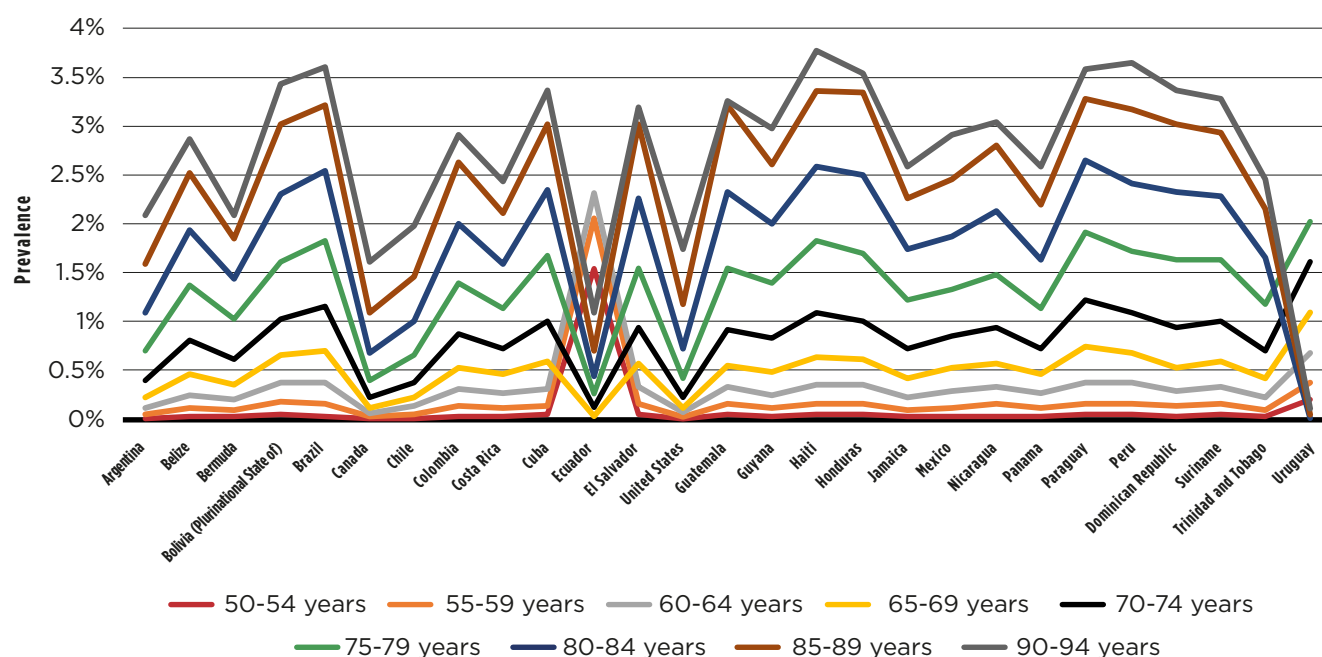
Figure 11. Region of the Americas: Percentage of total prevalent cases of glaucoma in people over 50 years of age, by country, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Figure 12 shows the prevalence of glaucoma in 2019 by age group, from ages 50 to 94. As with the previous conditions, glaucoma occurs more frequently among those age 80 and older (2.38%), reaching its maximum prevalence in the 90 to 94 age group (2.72%). Analyzing the information by country, it can be seen that Brazil, Haiti, Paraguay, and Peru have weighted prevalences above 1.35% in the age groups studied; Canada, Uruguay, and the United States have the lowest weighted prevalence (<0.60%). These data are consistent with the study of global glaucoma prevalence and the projections of glaucoma burden through 2040, since glaucoma prevalence increases with age and is higher in Afrodescendant and Latino populations, and lower in Caucasian populations (16).

Figure 12. Region of the Americas: Percentage of total prevalent cases of glaucoma, by country and age group, 2019



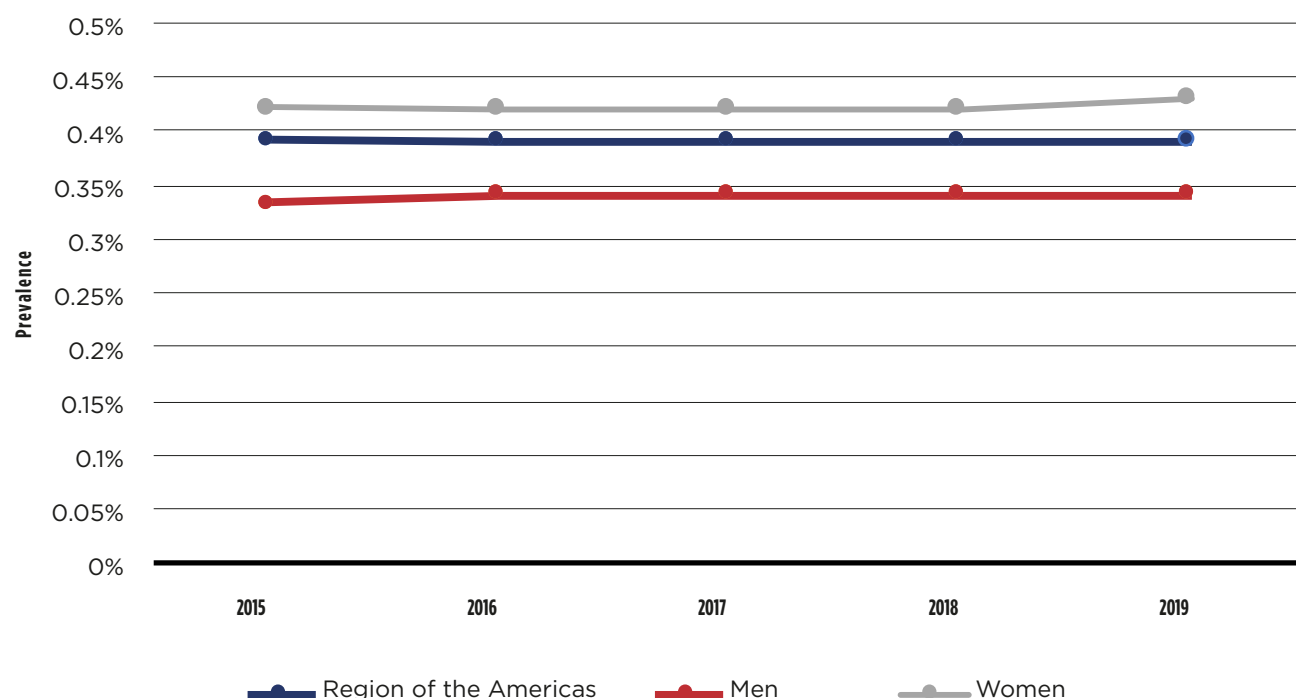
Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Age-related macular degeneration

Age-related macular degeneration accounts for 8.7% of all causes of blindness worldwide, and is the most common cause of blindness in developed countries, particularly in people over 60 years of age (18). Its prevalence is likely to increase as a result of the aging population. Globally, the projected number of people with age-related macular degeneration in 2020 is 196 million (95% CI, 140-261 million), and is expected to increase to 288 million by 2040 (95% CI, 205-399 million) (19).

Figure 13 shows the estimated prevalence for the Region of the Americas, by sex, for 2015–2019. The prevalence in the Region has been stable and constant in the period under study (0.39%). This disease is more prevalent in women (0.42%) than in men (0.34%). Among the risk factors are aging, smoking, and certain lifestyles that can lead to early development of the disease. In addition, this disease is more common in older people of European descent, compared to the Hispanic and African American population (19).

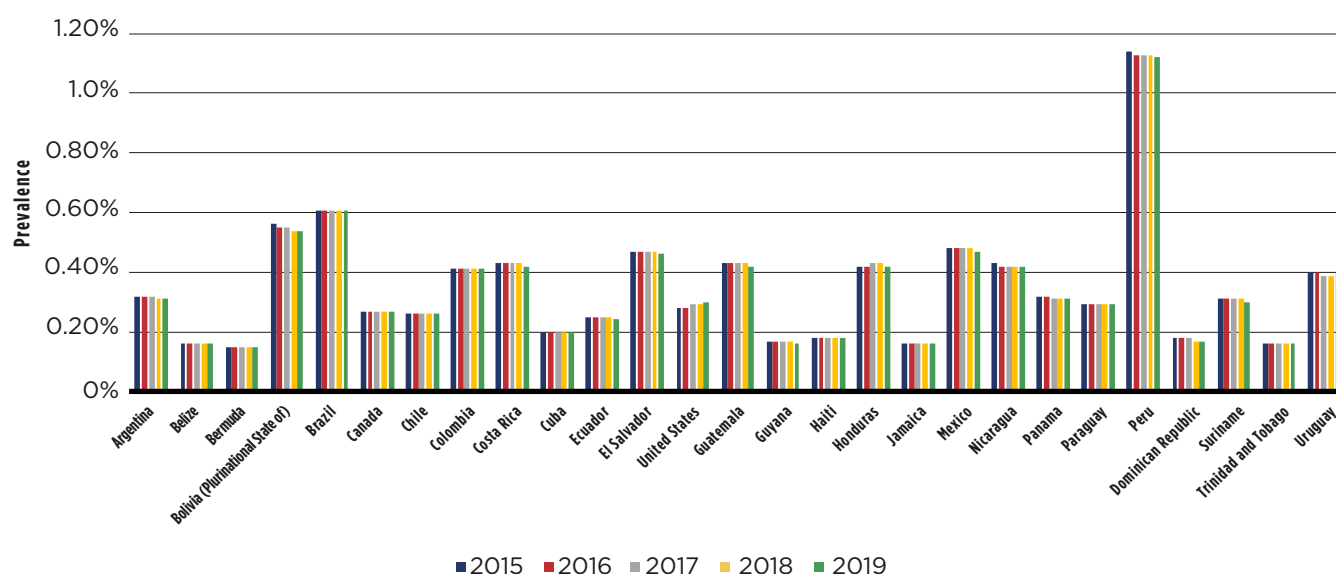
Figure 13. Region of the Americas: Percentage of total prevalent cases of age-related macular degeneration in people over 50 years of age, by sex, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Recent studies estimate that by 2040 (95% CI, 15-82 million) there will be 39 million cases of age-related macular degeneration in Latin America and the Caribbean, and 25 million cases (95% CI, 15-38 million) in North America (19). In the countries of the Americas, there is a strikingly high weighted prevalence of age-related macular degeneration in Peru (1.13%) between 2015 and 2019 (possibly linked to smoking, hereditary factors, and the increase in the older population); following Peru are the Plurinational State of Bolivia and Brazil, with a prevalence of 0.55% and 0.61%, respectively. Belize, Bermuda, Guyana, Jamaica, and Trinidad and Tobago have the lowest prevalences (<0.20%) for the same time period (Figure 14).

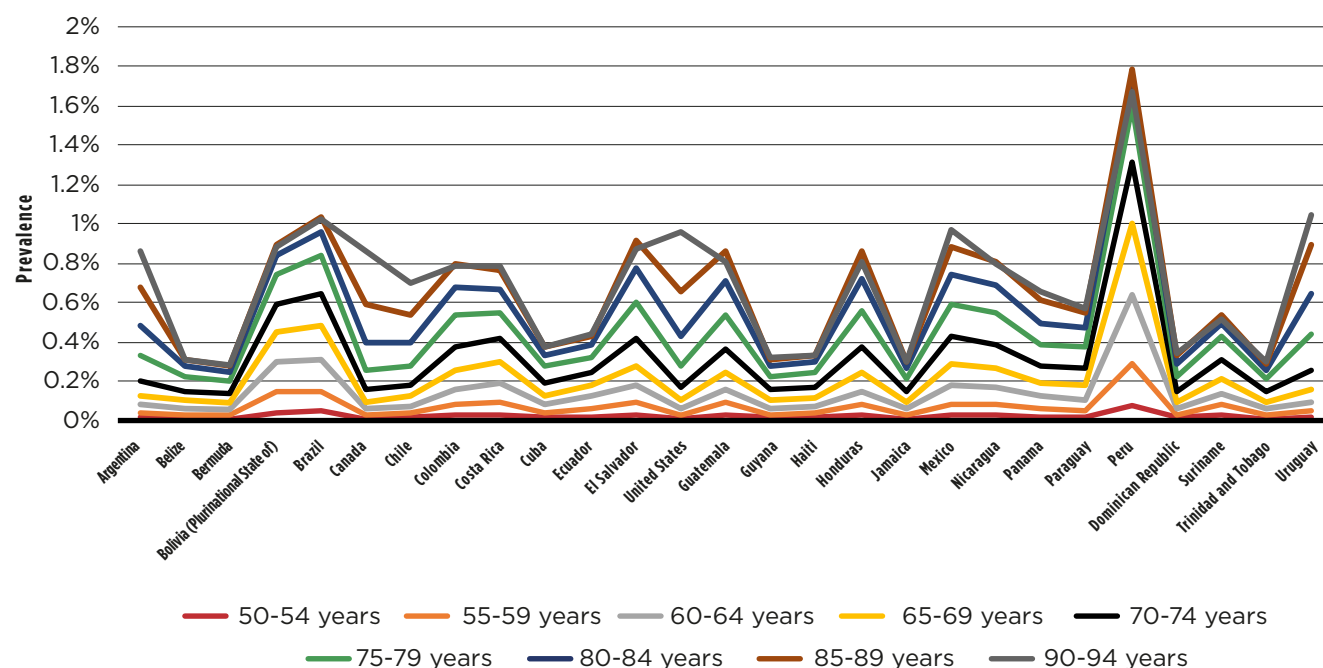
Figure 14. Region of the Americas: Percentage of total prevalent cases of age-related macular degeneration in people over 50 years of age, by country, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Figure 15 shows the prevalence of age-related macular degeneration by country and specific age group, ages 50 to 94. Peru's high age-group-weighted prevalence remains at 1.12%, followed by Brazil, with a weighted prevalence of 0.61%, and the Plurinational State of Bolivia, at 0.54%. Countries such as Belize (0.16%), Bermuda (0.15%), and Canada (0.27%) have the lowest prevalence in the Region. According to recent studies, the highest prevalence of the disease occurs in people over 75 years of age (19). It follows that periodic evaluations need to be carried out, starting at age 50, to detect the disease early and prevent the progressive decline in vision.

Figure 15. Region of the Americas: Percentage of total prevalent cases of age-related macular degeneration, by country and age group, 2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Estimating the burden of disease due to visual deficiency and impairment

Visual deficiency occurs when an eye disease affects one or more of the visual system's functions. People who wear glasses or contact lenses to compensate for their visual deficiency still have that deficiency, but can manage it through different actions or visual devices. Managing losses in the intrinsic capacity to maintain proper functioning is critical to healthy aging. Disability refers to the deficiencies, limitations, and restrictions faced by a person who has an eye disease when interacting with his or her physical, social, or attitudinal environment (5).

World Health Assembly resolution WHA66.4, on the Global Action Plan 2014–2019 for Universal Eye Health, gives new impetus to Member States' ideals and strategies to intensify efforts to prevent visual impairment and promote low- vision rehabilitation in their populations (20). Listed below are disability-adjusted life years (DALYs) for the different eye diseases that occur in people over 50 years of age in the Region of the Americas.¹

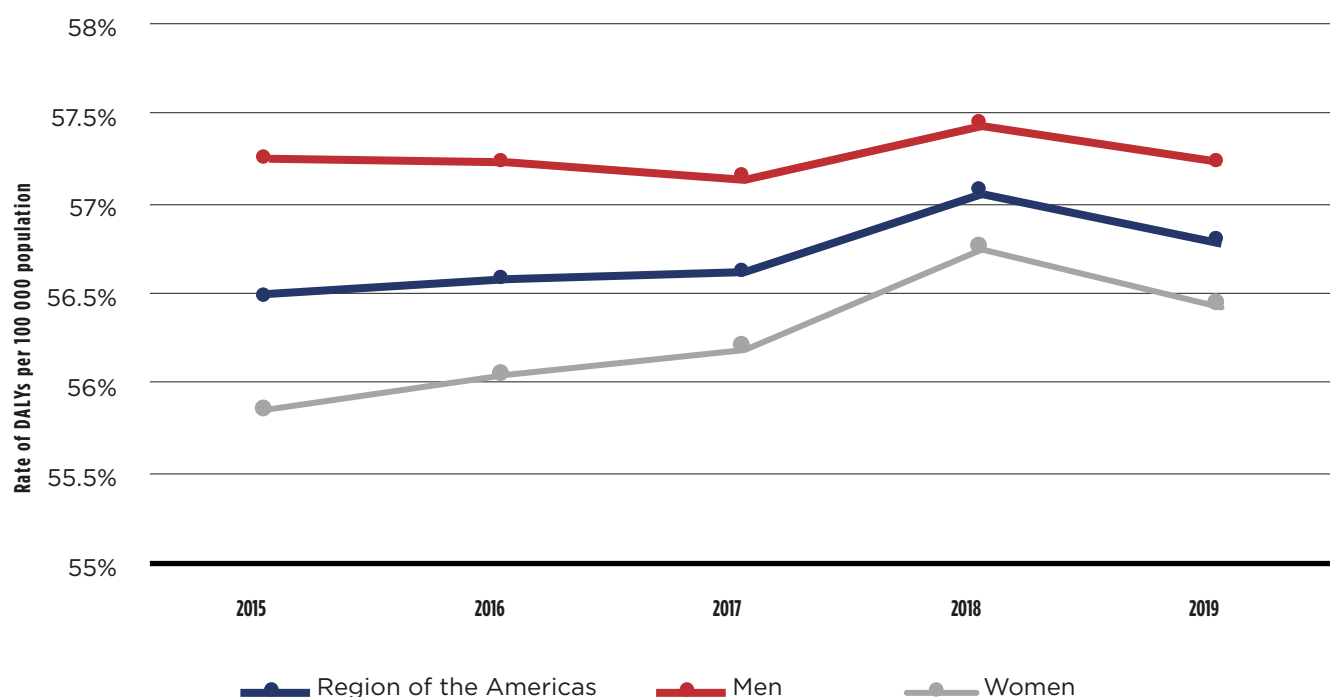
¹ Number of years of good health lost due to illness or disability in people over age 50.

Presbyopia

It is estimated that, in the Region of the Americas, the rate of DALYs due to presbyopia per 100 000 people in 2015 was 56.5 years. This figure increased to 56.8 years in 2019. With regard to sex, estimates show that men lose more years of good health than do women, registering rates of 57.2 years per 100 000 in 2015 and 2019. Women, on the other hand, had rates of 55.8 years in 2015 and 56.4 years in 2019 (Figure 16).

This disease burden translates into a loss of years of healthy life of older people; as a result, their quality of life and independence are significantly affected. The main consequences of not correcting presbyopia include limited mobility, the risk of falls or accidents, difficulty accessing and reading information through digital media, and danger when driving (21).

Figure 16. Region of the Americas: Disability-adjusted life years due to presbyopia in people over 50 years of age, by sex, 2015–2019



Note: DALYs: Disability-adjusted life years

Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Table 1 presents DALY rates per 100 000 population in different countries that make up the Region of the Americas. Guatemala, Honduras, and Nicaragua have the highest rates of years of good health lost due to presbyopia, while Argentina, Canada, Chile, the United States, and Uruguay have the lowest rates (<18.4). These data highlight

the importance of analyzing DALY by country, given that the gap between countries is wide and depends on numerous factors, including timely access to visual health services, information and prevention campaigns in the different decades of life, and individual behavior aimed at mitigating the effects of possible environmental and behavioral risk factors (5). Low-income countries or countries with poorer social, economic, and political conditions have the highest number of years of life lost due to uncorrected presbyopia; thus, their older population is vulnerable in many common aspects of daily life, such as interacting with others, playing sports, going for a walk, or reading a book.

Table 1. Region of the Americas: Disability-adjusted life years due to presbyopia, by country, 2015–2019

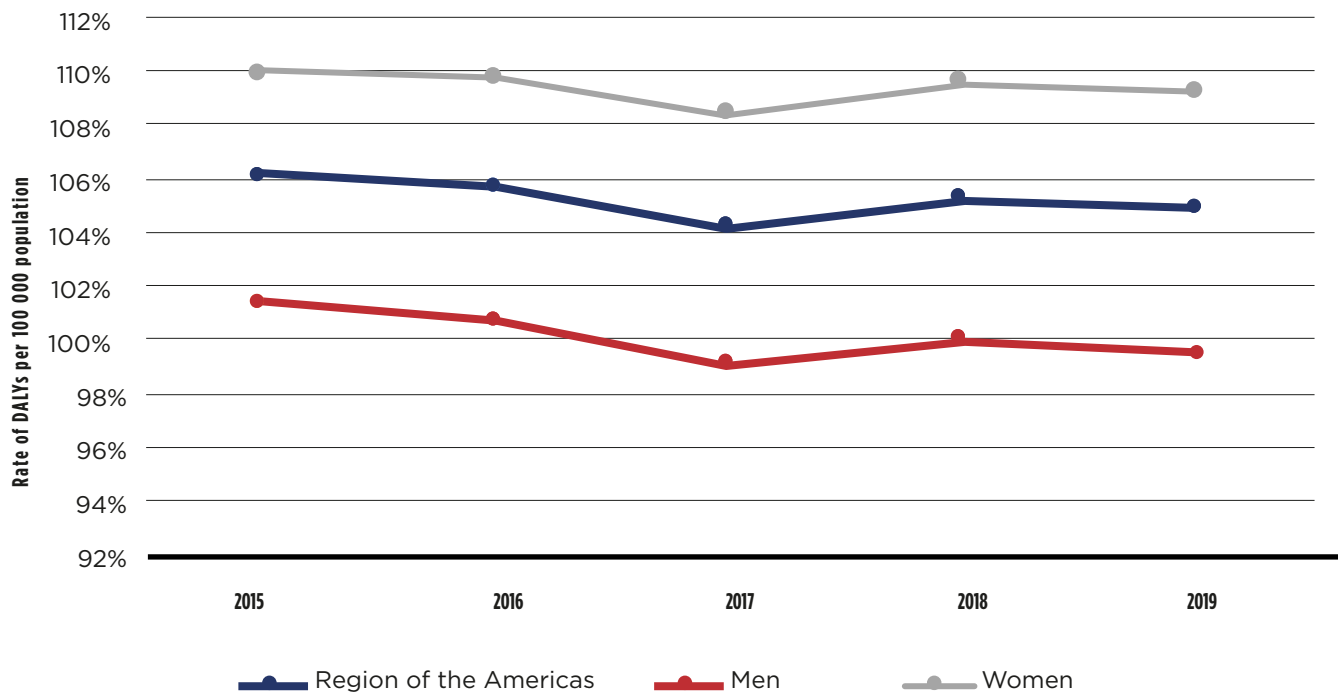
COUNTRY	RATE OF DISABILITY-ADJUSTED LIFE YEARS PER 100 000 POPULATION				
	2015	2016	2017	2018	2019
Argentina	13.9	14.0	14.0	13.9	13.6
Belize	123.0	122.5	121.7	121.4	121.0
Bermuda	103.1	102.3	101.5	101.5	102.0
Bolivia (Plurinational State of)	119.0	118.2	117.3	117.1	116.9
Brazil	87.8	87.1	86.4	86.3	86.4
Canada	16.0	16.0	16.0	15.8	15.9
Chile	13.3	13.3	13.3	13.3	13.2
Colombia	133.2	132.8	132.5	133.0	134.2
Costa Rica	129.8	129.8	129.8	130.2	130.9
Cuba	112.0	110.8	109.6	109.4	109.8
Dominican Republic	120.9	119.5	118.4	118.8	118.4
Ecuador	110.3	109.6	109.0	108.8	108.7
El Salvador	134.9	134.6	134.4	134.8	135.5
Guatemala	139.3	139.1	139.1	139.2	139.6
Guyana	121.8	121.0	120.4	119.5	120.0
Haiti	134.0	133.5	133.0	132.8	132.6
Honduras	143.7	143.6	143.5	143.9	144.9
Jamaica	111.8	111.0	110.4	110.8	111.8
Mexico	125.9	126.5	127.2	127.2	126.9
Nicaragua	143.4	142.6	141.8	142.1	142.9
Panama	128.1	128.3	128.5	128.7	129.0
Paraguay	114.3	113.2	112.1	111.7	111.4
Peru	111.8	111.6	111.4	112.3	111.7
Suriname	115.6	114.9	114.3	114.5	115.2
Trinidad and Tobago	115.6	115.1	114.6	114.3	114.0
United States	18.4	18.4	18.4	18.3	18.4
Uruguay	13.9	13.9	13.9	13.8	13.8

Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Cataracts

In 2020, cataracts remained the leading or second leading cause of blindness in all regions of the world, despite the fact that trained surgeons can correct them in a health system with the capacity for surgery and management of postoperative complications (4). This eye disease represented a DALY rate of 106 per 100 000 population in the Region of the Americas in 2015, and 104.9 per 100 000 in 2019. Women have higher DALY rates than men: 109.2 per 100 000 women in 2019, versus 99.5 per 100 000 men) (Figure 17). The progression of the disease varies greatly from person to person, depending on genetic factors, environmental risks, and whether the condition affects central or peripheral vision.

Figure 17. Region of the Americas: Disability-adjusted life years due to cataracts, by sex, 2015–2019



Note: DALYs: Disability-adjusted life years

Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Analyzing DALYs by country, it can be seen that Peru, Panama, and the Plurinational State of Bolivia have the highest rates, nearly 205 DALYs in 2015–2019. By contrast, countries such as Canada, the United States, and Uruguay have DALYs below 47 per 100 000 population (Table 2). As with other eye diseases, low- and middle-income countries have a higher number of years of good health lost due to this visual condition. This is one of the diseases that generates the most visual impairment,

since, if not treated in time, the progression of cataracts significantly affects vision. This has serious consequences for older people, as their autonomy, independence, and intrinsic and functional capacities are affected, and in some cases this can lead to depression resulting from social isolation (2, 11).

Table 2. Region of the Americas: Disability-adjusted life years due to cataracts, by country, 2015–2019

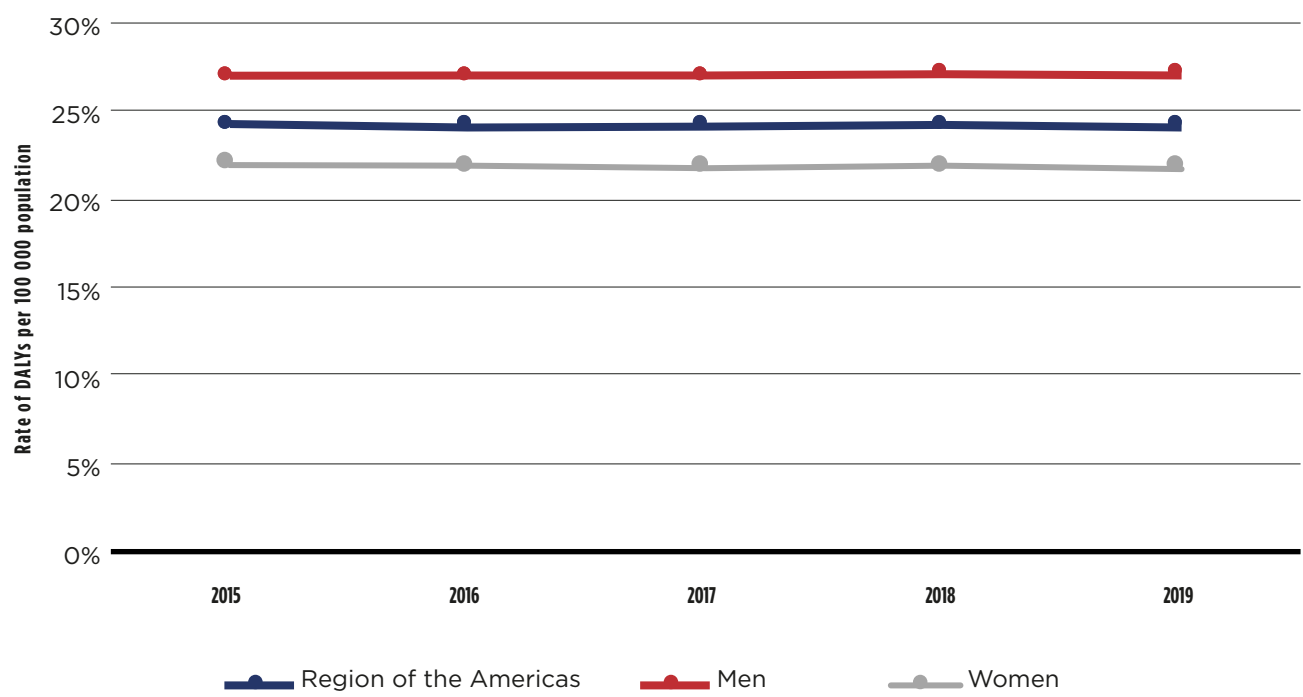
COUNTRY	RATE OF DISABILITY-ADJUSTED LIFE YEARS PER 100 000 POPULATION				
	2015	2016	2017	2018	2019
Argentina	82.2	81.4	80.6	80.1	79.4
Belize	94.5	95.5	93.3	92.2	90.7
Bermuda	81.1	81.0	80.8	80.6	80.2
Bolivia (Plurinational State of)	263.3	257.9	251.9	246.8	249.0
Brazil	186.7	185.4	183.8	179.6	182.2
Canada	45.8	46.0	46.3	46.0	45.3
Chile	105.2	103.3	101.6	101.4	101.4
Colombia	164.8	164.2	163.0	161.9	163.7
Costa Rica	175.7	174.4	170.6	171.9	173.2
Cuba	144.5	146.2	142.5	140.5	138.3
Dominican Republic	95.1	93.4	91.7	89.8	90.6
Ecuador	170.1	169.6	168.6	165.9	167.2
El Salvador	168.3	167.0	165.8	164.2	162.3
Guatemala	187.7	187.3	187.2	186.2	186.9
Guyana	93.9	92.2	86.8	90.3	88.6
Haiti	120.9	119.3	116.4	114.8	117.8
Honduras	101.5	100.5	99.6	98.7	97.8
Jamaica	96.4	93.6	95.0	92.3	90.9
Mexico	184.8	180.9	177.1	175.7	174.6
Nicaragua	162.0	164.0	160.2	158.5	156.7
Panama	270.0	266.8	263.3	258.2	260.5
Paraguay	178.7	175.5	172.4	169.8	167.3
Peru	299.2	296.0	293.5	290.0	291.7
Suriname	152.4	150.4	148.2	147.1	146.5
Trinidad and Tobago	79.2	79.9	78.6	77.4	78.0
United States	45.8	46.1	46.4	46.1	46.4
Uruguay	35.8	35.9	36.0	35.3	35.8

Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Glaucoma

Figure 18 shows the rates of DALYs per 100 000 population of the Region of the Americas due to glaucoma; these rates remained constant at 24.2 DALYs for the entire period under analysis. Glaucoma affects men more than women, as evidenced by the 2019 rate of 27.1 DALYs for men versus 21.8 DALYs for women. Older people who have this disease, depending on how much it has progressed, may have difficulty moving on their own, preparing food, or shopping at the supermarket. The key to managing this eye condition is timely diagnosis and treatment, which prevents the rapid progression of the disease and, thus, significant loss of vision.

Figure 18. Region of the Americas: Disability-adjusted life years due to glaucoma, by sex, 2015–2019



Note: DALYs: Disability-adjusted life years

Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

The rate of DALYs due to glaucoma is highest in Cuba, Haiti, and Peru (>48 DALYs), which coincides with the higher number of cases in these countries. In contrast, higher-income countries in the Region, such as Canada, the United States, and Uruguay have lower DALYs (<18 DALYs). These figures are consistent with several studies that cite, as important risk factors for the development of glaucoma, being Afrodescendant, male, and of advanced age. In countries such as Cuba and Haiti, these factors account for the higher prevalence of the disease, since most of the population meet these risk conditions (16, 17).

Table 3. Region of the Americas: Disability-adjusted life years due to glaucoma, by country, 2015–2019

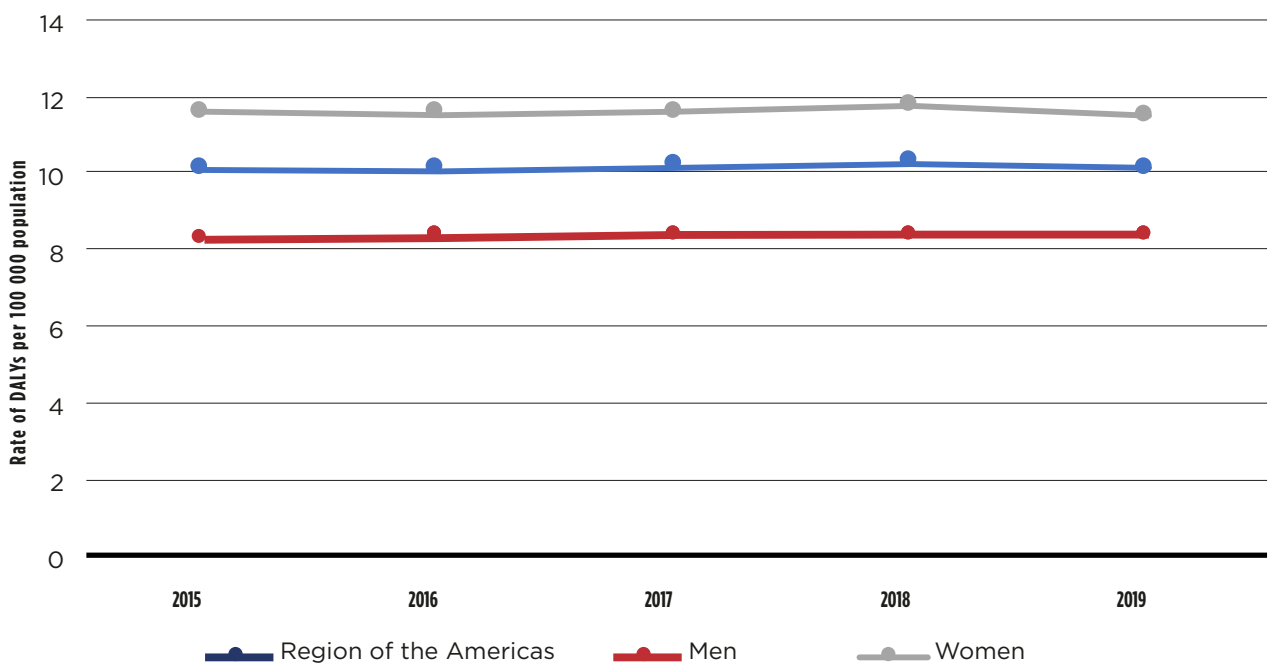
Country	Rate of disability-adjusted life years per 100 000 population				
	2015	2016	2017	2018	2019
Argentina	20.3	19.9	19.7	19.5	19.4
Belize	36.9	36.5	36.1	35.7	34.9
Bermuda	26.0	25.9	25.9	25.9	25.8
Bolivia (Plurinational State of)	47.5	46.1	44.7	43.9	43.4
Brazil	41.5	41.3	40.9	41.0	40.9
Canada	13.2	13.3	13.2	13.2	13.2
Chile	17.2	17.0	17.0	17.0	17.1
Colombia	34.5	34.4	34.0	33.6	34.2
Costa Rica	28.3	28.0	27.4	27.3	27.6
Cuba	48.3	48.4	48.2	46.6	47.6
Dominican Republic	42.2	43.9	43.1	41.0	41.6
Ecuador	29.8	29.1	29.5	28.4	28.7
El Salvador	40.5	40.0	39.0	39.5	38.6
Guatemala	41.2	41.1	40.9	41.2	40.2
Guyana	36.5	35.8	35.1	33.6	34.4
Haiti	50.5	49.8	49.2	48.6	48.1
Honduras	39.0	38.5	38.0	37.5	37.0
Jamaica	34.9	34.5	33.6	34.1	33.1
Mexico	31.3	31.1	30.9	30.6	30.2
Nicaragua	35.0	34.2	34.5	33.8	33.3
Panama	34.1	33.3	33.7	32.8	32.4
Paraguay	43.1	42.6	42.0	41.5	40.9
Peru	49.9	49.3	48.8	47.9	48.3
Suriname	44.9	44.4	43.9	43.5	43.1
Trinidad and Tobago	29.2	29.1	28.9	28.7	28.4
United States	13.0	13.1	13.6	13.4	13.2
Uruguay	18.2	18.5	18.4	18.1	18.1

Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Age-related macular degeneration

With the increase in the older population in the Region of the Americas, the prevalence of age-related diseases such as age-related macular degeneration is increasing. Between 2015 and 2019, the DALY rate was 10.1 per 100 000 population. Men have lower rates (8.4 DALYs, for the same period), while women have higher rates (close to 12 DALYs per 100 000 population) (Figure 19). This disease is difficult to diagnose and treat at an early stage, since doing so requires a health system with the appropriate conditions and medical professionals. Older people with this eye condition have problems with mobility and loss of independence. This limits their social interactions, as well as their central vision, making detailed reading and vision difficult (2, 5).

Figure 19. Region of the Americas: Disability-adjusted life years due to age-related macular degeneration, by sex, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Table 4 presents DALY rates due to age-related macular degeneration by country in the Region of the Americas. Notably, Peru has a much higher rate (around 33 DALYs) than other countries, followed by the Plurinational State of Bolivia (15.7 DALYs). The Caribbean area, including Belize, Bermuda, Guyana, Jamaica, and Trinidad and Tobago, have low DALY rates (<5.0). In light of these data, it is clear that this disease has a greater presence in high-income countries with

populations of European descent, while the prevalence is low in Latino and Afrodescendant populations. However, the factors at play in Peru must be examined in order to determine why so many years of healthy life are lost to this disease.

Table 4. Region of the Americas: Disability-adjusted life years due to age-related macular degeneration, by country, 2015–2019

Country	RATE OF DISABILITY-ADJUSTED LIFE YEARS PER 100 000 POPULATION				
	2015	2016	2017	2018	2019
Argentina	8.8	8.7	8.6	8.6	8.5
Belize	4.2	4.2	4.1	4.1	4.1
Bermuda	3.7	3.6	3.7	3.6	3.6
Bolivia (Plurinational State of)	16.3	16.1	15.8	15.6	15.7
Brazil	13.5	13.5	13.5	13.5	13.7
Canada	7.7	7.6	7.6	7.6	7.6
Chile	6.6	6.5	6.5	6.5	6.6
Colombia	11.1	11.0	10.9	11.1	11.0
Costa Rica	10.2	10.0	9.9	10.1	10.0
Cuba	5.3	5.4	5.1	5.3	5.4
Dominican Republic	5.6	5.5	5.4	5.4	5.4
Ecuador	6.7	6.7	6.6	6.6	6.6
El Salvador	12.9	12.9	12.8	12.7	12.4
Guatemala	12.4	12.6	12.5	12.5	12.2
Guyana	4.3	4.2	4.2	4.1	4.2
Haiti	5.1	5.0	4.9	4.9	5.0
Honduras	9.8	9.8	9.8	9.7	9.8
Jamaica	4.0	4.0	3.9	3.9	4.0
Mexico	13.5	13.4	13.4	13.3	13.1
Nicaragua	11.1	11.1	11.0	10.9	10.8
Panama	10.8	10.7	10.6	10.5	10.4
Paraguay	7.6	7.5	7.5	7.4	7.4
Peru	33.6	33.3	33.1	32.9	32.8
Suriname	8.6	8.6	8.5	8.5	8.5
Trinidad and Tobago	3.8	3.8	3.8	3.8	3.8
United States	7.7	7.8	7.8	7.9	8.1
Uruguay	10.0	10.0	9.9	9.8	9.8

Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Analysis of factors related to visual health services in the Region

The Latin American and Caribbean subregion is aging at an accelerated pace. It is expected that by 2030 the population over 60 years of age will represent 17% of the total (21). This means that the governments of these countries must prepare and strengthen all of their social, economic, and health and well-being measures for this population, including measures related to visual health services, in order to provide older people with comprehensive care. Table 5 shows statistics on visual health professionals in the Region, while Table 6 presents the rate of cataract surgeries, an indicator of the quality of health systems in terms of their accessibility and proper functioning.

There is a persistent and significant gap between the different countries of the Region in terms of the absolute number of eye health professionals and the rate per million population. According to the World Health Organization (WHO), the ratio of ophthalmology medical specialists per person should be, on average, one per 20 000 population (5,22), a ratio that is found in higher-income countries. However, more up-to-date data are needed in order to provide a clearer picture of the situation in the Region.

In all countries, optometry professionals are very important for primary care, since they provide people a gateway to specialized visual health services. The Region has been increasing the number and rate of optometry professionals. However, optometry is not a professional career in all of the countries, where it is limited to basic services that do not have optimal impact on health promotion and disease prevention.

Table 5. Region of the Americas: Number of eye care professionals, by country

COUNTRY	NO. OF OPHTHALMOLOGISTS	OPHTHALMOLOGISTS PER MILLION POPULATION	NO. OF OPTOMETRISTS	OPTOMETRISTS PER MILLION POPULATION
Argentina	4500 (2015)	103.6 (2015)	350 (2018)	7.7 (2018)
Belize	5 (2013)	13.9 (2013)	11 (2019)	27.7 (2019)
Bermuda	No data	No data	No data	No data
Bolivia (Plurinational State of)	300 (2015)	28 (2015)	80 (2018)	6.9 (2018)
Brazil	14 000 (2015)	67.4 (2015)	3500 (2019)	16.5 (2019)
Canada	1221 (2015)	34 (2015)	5400 (2018)	143.1 (2018)
Chile	893 (2015)	49.8 (2015)	800 (2020)	41.8 (2020)
Colombia	1500 (2015)	31.1 (2015)	6491 (2020)	127.6 (2020)
Costa Rica	150 (2015)	31.2 (2015)	600 (2018)	117.8 (2018)
Cuba	1879 (2015)	165 (2015)	No data	No data
Dominican Republic	432 (2015)	41 (2015)	31 (2020)	2.9 (2020)
Ecuador	400 (2015)	24.8 (2015)	10 (2019)	0.6 (2019)
Guatemala	325 (2015)	19.9 (2015)	800 (2019)	44.7 (2019)
Guyana	10 (2013)	13 (2013)	49 (2019)	62.3 (2019)
Haiti	58 (2015)	5.4 (2015)	7 (2020)	0.6 (2020)
Honduras	95 (2015)	11.8 (2015)	No data	No data
Jamaica	50 (2013)	17.9 (2013)	31 (2020)	10.5 (2020)
Mexico	5400 (2015)	42.5 (2015)	7257 (2019)	56.3 (2019)
Nicaragua	120 (2015)	19.7 (2015)	78 (2020)	11.8 (2020)
Panama	117 (2015)	29.8 (2015)	16 (2014)	3.7 (2014)
Paraguay	216 (2019)	34.6 (2019)	No data	No data
Peru	1012 (2019)	39.6 (2019)	3000 (2019)	91 (2019)
Perú	1012 (2019)	39.6 (2019)	3000 (2019)	91 (2019)
Suriname	12 (2015)	22.1 (2015)	5 (2013)	8.5 (2013)
Trinidad and Tobago	35 (2015)	25.7 (2015)	189 (2019)	135 (2019)
United States	17 600 (2015)	54.7 (2015)	37 200 (2019)	112.4 (2019)
Uruguay	220 (2015)	64.1 (2015)	65 (2019)	18.7 (2019)

Note: The year to which the data refer is indicated in parentheses.

Source: Based on the International Agency for the Prevention of Blindness. Vision Atlas [Internet]. England and Wales: IAPB; [c2023] [accessed on 22 November 2021]. Available from: <https://www.iapb.org/learn/vision-atlas/>.

Regarding the number of cataract surgeries performed per year, and the rate of surgeries per inhabitant, WHO has established that the ideal is to have rates close to 3000 surgeries per million population per year (23). This indicator makes it possible to monitor progress in countries' visual health services. Table 6 presents estimated figures for countries in the Region that show the wide-ranging nature of this indicator, given that there are countries with rates above the ideal figure, while others remain well below, signaling the poor accessibility to visual services.

Table 6. Region of the Americas: Number of cataract surgeries, rate of surgeries per million population, and effective cataract-surgery coverage, by country

COUNTRY	ANNUAL NUMBER OF CATARACT SURGERIES	RATE OF CATARACT SURGERIES PER MILLION POPULATION	EFFECTIVE CATARACT-SURGERY COVERAGE
Argentina	284.61 (2013)	6748 (2013)	75.3% (2017)
Belize	215 (2013)	639 (2013)	No data
Bermuda	No data	No data	No data
Bolivia (Plurinational State of)	5995 (2013)	586 (2013)	No data
Brazil	640 654 (2014)	3165 (2014)	No data
Canada	No data	6000 (2016)	No data
Chile	42 322 (2013)	2434 (2013)	53.8% (2006)
Colombia	93 984 (2013)	2005 (2013)	No data
Costa Rica	13 729 (2013)	2950 (2013)	No data
Cuba	35 335 (2013)	3115 (2013)	No data
Dominican Republic	22 001 (2013)	2167 (2013)	30.2% (2017)
Ecuador	14 994 (2013)	972 (2013)	43.3% (2017)
Guatemala	11 997 (2013)	781 (2013)	No data
Guyana	1830 (2013)	2413 (2013)	No data
Haiti	5579 (2013)	542 (2013)	No data
Honduras	5590 (2013)	723 (2013)	45.7% (2013)
Jamaica	730 (2013)	264 (2013)	No data
Mexico	180 046 (2013)	1475 (2013)	No data
Nicaragua	10 278 (2013)	1749 (2013)	No data
Panama	5850 (2013)	1563 (2013)	No data
Paraguay	13 378 (2019)	1899 (2019)	No data
Peru	68 902 (2019)	2119 (2019)	36.9% (2011)
Perú	68 902 (2019)	2119 (2019)	36.9% (2011)
Suriname	No data	9103 (2019)	No data
Trinidad and Tobago	No data	2600 (2016)	No data
United States	No data	11 000 (2011)	No data
Uruguay	7341 (2013)	2161 (2013)	64% (2017)

Note: The year to which the data refer is indicated in parentheses.

Source: Based on the International Agency for the Prevention of Blindness. Vision Atlas [Internet]. England and Wales: IAPB; [c2023] [accessed on 22 November 2021]. Available from: <https://www.iapb.org/learn/vision-atlas/>.

Challenges in visual health

The countries of the Region have clearly made important efforts to maintain the visual health of their populations under optimal conditions. However, they will face major challenges in meeting the visual needs of older people, since, as this population increases, the prevalence of visual diseases is expected to increase, with a consequent increase in the demand for eye health care at all levels of complexity.

Worldwide population data and epidemiological research on visual health issues are scarce, and are even more so for the Region of the Americas. This is partly because visual health is not among countries' priorities, as reflected in their respective strategic health plans. The resources they allocate are insufficient, thus limiting the possibilities for strengthening visual health systems through ongoing, people-centered, comprehensive actions to promote universal health coverage.

In light of this, specific open-access information systems for visual health need to be created, allowing for better traceability regarding all health-system quality indicators that reflect the reality of each country, in order to improve the decisions of key actors involved in these processes.

There needs to be greater access to technologies in visual health, specifically, with the aim of continuing to promote timely access to cataract, refractive-error, and presbyopia surgery, in order to reduce the incidence of visual deficiencies, improve people's quality of life, and promote healthy aging.

Conclusions and recommendations

By improving the implementation of early detection strategies, based on the best available evidence, in primary health care and at the community level, it is possible to mitigate the negative effects of a variety of visual conditions, thereby helping to maintain people's capacities and promote healthy aging. Health systems need to incorporate a visual health component, with universal access and equity.

Although there are standardized population surveys to determine the prevalence of visual impairment and disability associated with eye conditions, more than half of the countries in the Region do not implement them or have data that have not been updated. A fundamental part of public policy is to have the highest-quality evidence available for making sound decisions, an area in which the governments of the Region's countries must intensify their focus. To do this, they will need to allocate the necessary resources, in order to secure more up-to-date, standardized data. Countries should also take into account the need to specifically monitor older people, according to each age group.

Human resources in visual health have increased. However, in countries with lower incomes there is a significant gap in this regard, one that must be overcome through comprehensive strategies aimed at creating programs for visual health professionals, and training for other professionals in areas such as public health, education, and early detection, especially in primary care. At the same time, there needs to be a balanced distribution of eye health professionals among the countries that make up the Region of the Americas.

Visual health must be universal and easily accessible to those who require it. It is therefore essential that interventions or actions in this area be incorporated in the health systems of the Region's countries.

The hearing health of older people in the Region of the Americas

Morbidity

The hearing health of the population in the Region of the Americas has undergone constant changes, due mainly to the demographics of a growing older population, thus making it essential to offer adequate health services to meet the needs of this community. There needs to be valid, reliable, and timely information on hearing health that allows for ongoing follow-up and monitoring of the most prevalent diseases, in order to plan strategies that promote healthy aging of the Region's older adults.

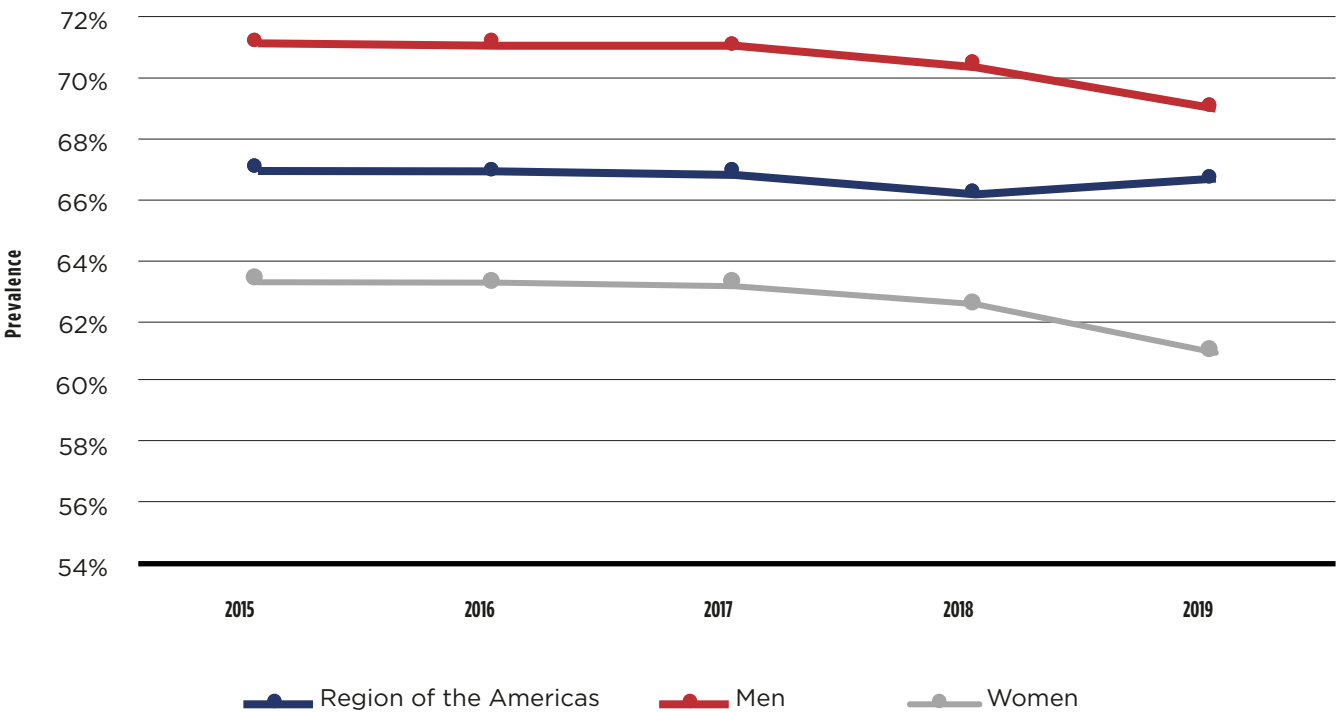
Hearing loss can be caused by damage to any part of the peripheral and central hearing systems. The main causes of sensorineural hearing loss are degenerative processes associated with aging, genetic mutations, noise exposure, exposure to therapeutic drugs with ototoxic side effects, and chronic diseases (24). The prevalence of age-related hearing loss and other causes in the over-50 population is described below, presented by country, age group, and sex.

Presbycusis

One of the effects of aging on the auditory system is progressive age-related hearing loss, a condition called presbycusis, which is usually bilateral, symmetrical, and more pronounced at higher frequencies (>2000 Hz). There are two types of presbycusis: sensory and metabolic (24, 25). Sensory presbycusis occurs when cochlear sensory hair cells die or are damaged. Metabolic presbycusis refers to decreased functioning of the vascular streak, due to age-related changes, but its causes have not yet been fully determined (26).

When estimating the prevalence of presbycusis in the Region of the Americas, a stable trend can be seen from 2015 to 2019, with a weighted prevalence of 66.68%. There is a higher prevalence in men than in women: 70.51% and 62.61%, respectively, in the same period (Figure 20).

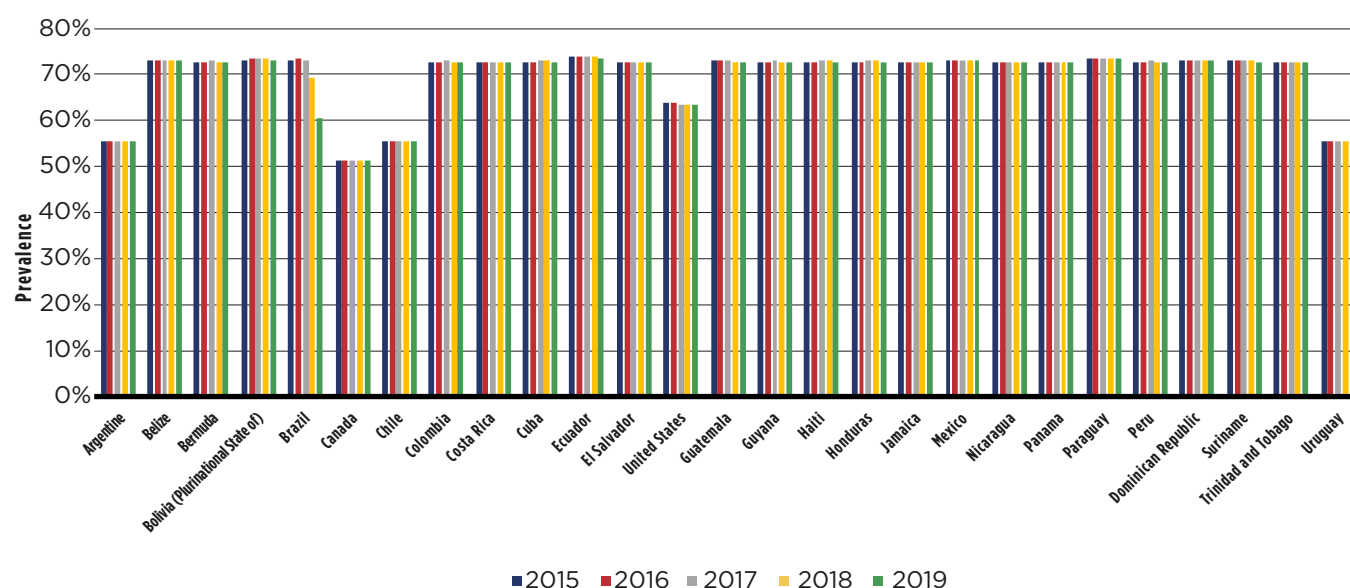
Figure 20. Region of the Americas: Percentage of total prevalent cases of presbycusis in people over 50 years of age, by sex, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Figure 21 shows the prevalence of presbycusis by country in the Region of the Americas, from 2015 to 2019. It can be seen that in most countries the prevalence is close to 70%, with the exception of Argentina, Canada, Chile, the United States, and Uruguay, where the prevalence of cases does not exceed 55%. The causes of this disease are cochlear aging, certain environmental factors (such as noise), genetic predisposition, and increased vulnerability to physiological stressors and modifiable habits (27).

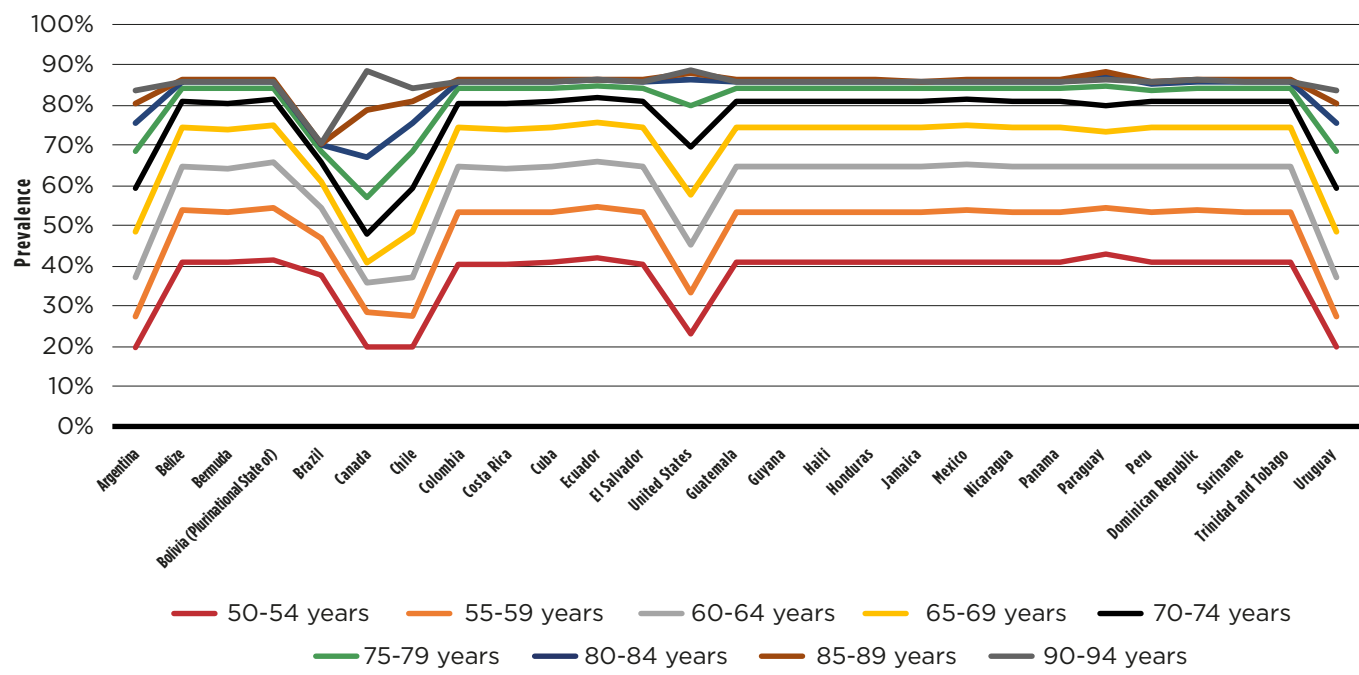
Figure 21. Region of the Americas: Percentage of total prevalent cases of presbycusis in people over 50 years of age, by country, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Figure 22 shows the prevalence of presbycusis in 2019 by age group, starting at age 50. According to the data, a major change in prevalence begins at age 60: in the 60- to 64-year-old age group, the weighted prevalence is close to 59%, and in each successive age group the prevalence increases by nearly 10%. This is consistent with the evidence that, the older the age, the more hearing decreases, due to a variety of factors. This means that an older person who is not treated in time will have difficulty socializing and understanding what he or she is being told; this is accompanied by a loss of autonomy, which in some cases can lead to depression and anxiety (28).

Figure 22. Region of the Americas: Percentage of total prevalent cases of presbycusis, by country and age group, 2019



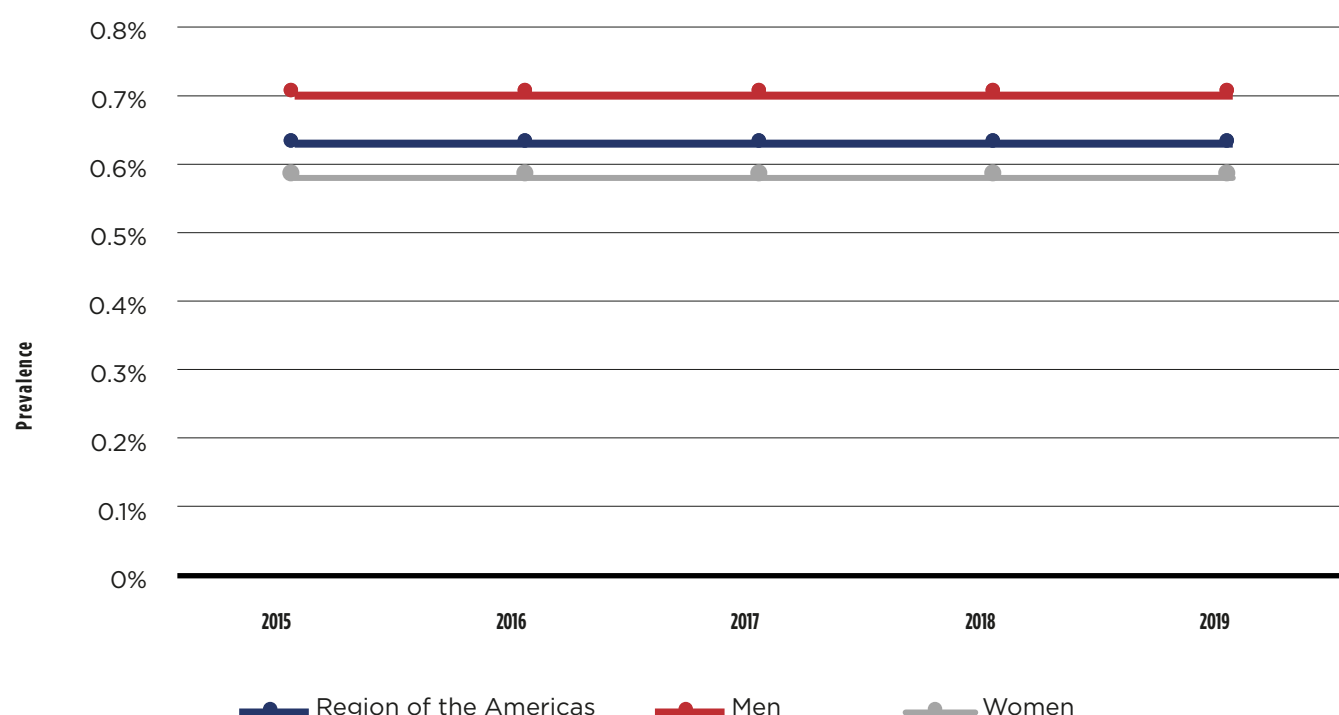
Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Otitis media

Ear infections are most common in childhood, but they can occur at any stage of life and can have serious complications, including hearing loss or even death. Otitis media, or inflammation of the middle ear, can be of bacterial or viral origin; it covers a spectrum of diseases, including acute otitis media, otitis media with effusion, and chronic suppurative otitis media. In developing countries, chronic suppurative otitis media is a leading cause of hearing loss, and occurs at a higher rate in older people (29). A systematic review on the global burden of otitis media estimated the mean incidence rate of acute otitis media at 10.8 new episodes per 100 people per year (30). WHO estimated that 28 000 deaths each year are attributable to complications of otitis media, mainly from mastoiditis, meningitis and cerebral abscesses. It has been shown that mortality is higher in the first five years of life and in people over 75 years of age. In addition, WHO estimated that between 65 million and 330 million people suffer from chronic suppurative otitis media (i.e., show signs of it); of these, 50% have hearing impairment (31).

Figure 23 shows the prevalence of otitis media in the Region of the Americas in people ages 50 and older, by sex, in 2015–2019. A stable trend in prevalence (0.63%) can be seen. Men have a higher prevalence than women, with a weighted prevalence of 0.70%, compared to 0.58% in women. Otitis media, if not treated in time, can cause hearing impairment and can affect the intrinsic and functional capacity of older people, thus limiting their social life and autonomy, degrading their quality of life, and increasing mental health problems.

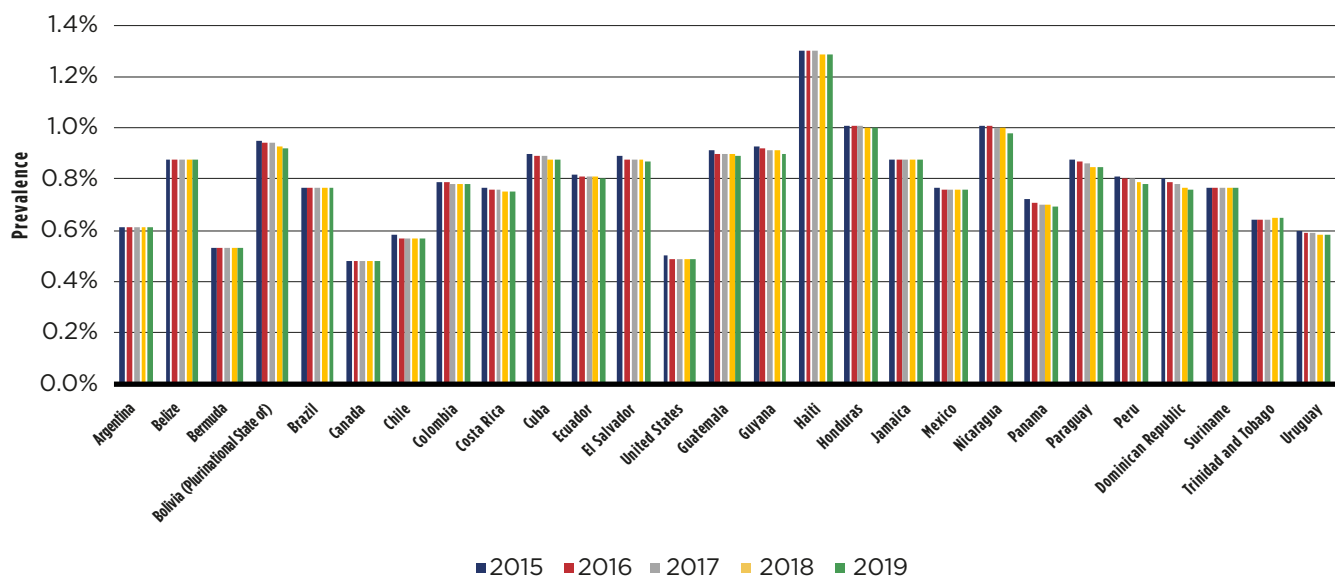
Figure 23. Region of the Americas: Percentage of total prevalent cases of otitis media in people over 50 years of age, by sex, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

In terms of the percentage of total prevalent cases of otitis media in people over 50 years of age, it is estimated that Haiti (1.29%), Honduras (1.01%), and Nicaragua (1.0%) show the highest weighted prevalences in 2015–2019. In contrast, Canada (0.48%), the United States (0.49%), and Uruguay (0.59%) have the lowest number of prevalent cases for the same period (Figure 24). The common denominator among countries with the highest prevalence of this disease is that they are low- and middle-income countries whose health systems are not people-centered, and there is therefore greater difficulty in early detection of these hearing conditions.

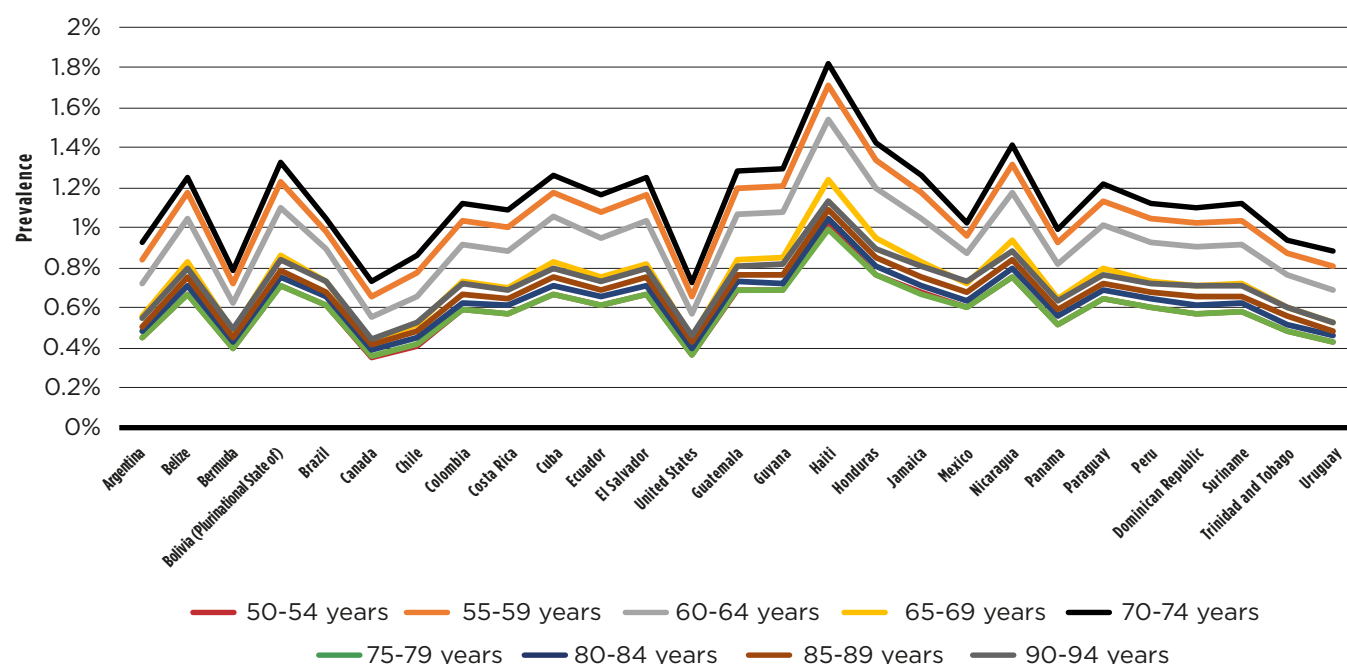
Figure 24. Region of the Americas: Percentage of total prevalent cases of otitis media in people over 50 years of age, by country, 2015–2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Figure 25 shows the prevalence of otitis media in 2019 by age group, starting at age 50. In general, the prevalence decreases with increasing age, with the prevalence of this disease in children being higher than in adults. Haiti, Honduras, and Nicaragua have the highest prevalence in each age group. For example, in the 50- to 54-year-old age group, the highest prevalence is found in Haiti, with 1.83%, followed by Honduras, with 1.43%, and Nicaragua, with 1.41%. For the 90- to 94-year-old age group, Haiti, Honduras, and Nicaragua have a prevalence of 1.13%, 0.90%, and 0.88%, respectively.

Figure 25. Region of the Americas: Percentage of total prevalent cases of otitis media, by country and age group, 2019



Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Estimating the disease burden due to hearing deficiency and impairment

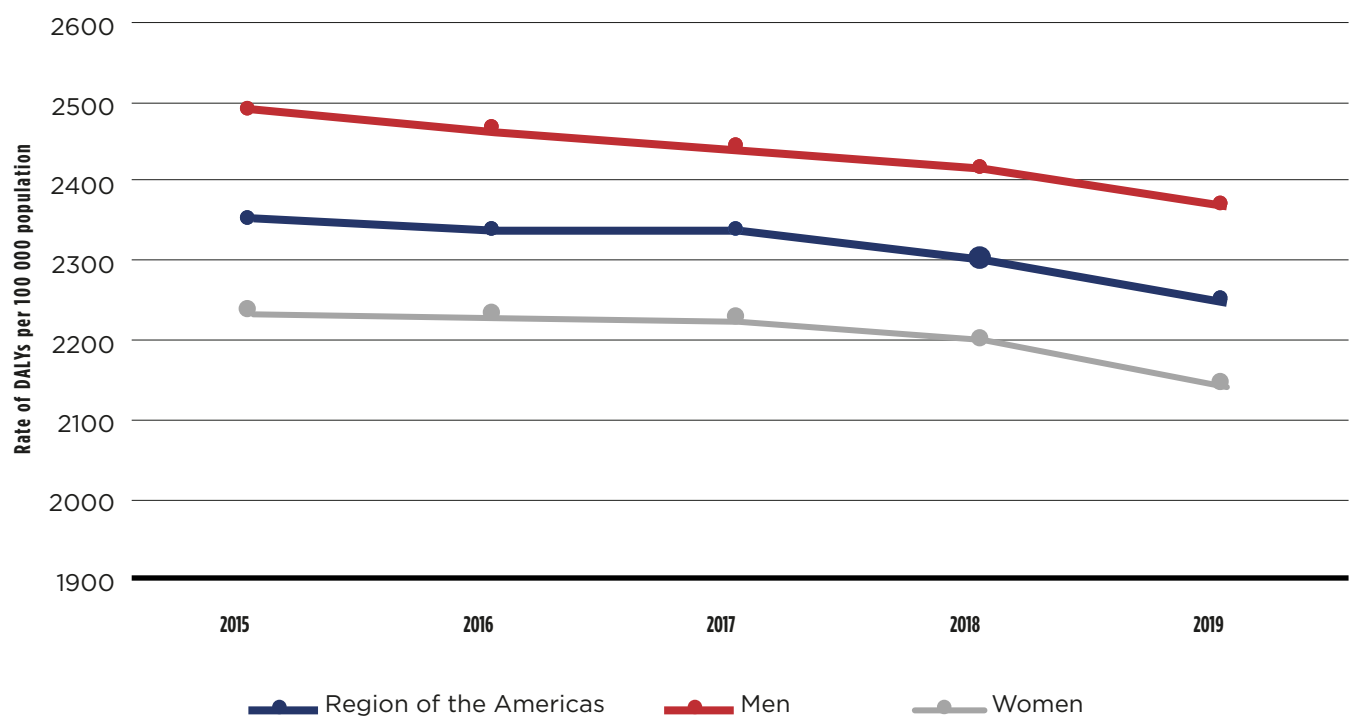
Presbycusis

Hearing loss has often been called an “invisible disability,” not only because of the lack of visible manifestations, but also because it has long been stigmatized by communities and ignored by public policymakers (32). It is estimated that, worldwide, more than 1.5 billion people have some degree of hearing loss; of these, an estimated 430 million have moderate or severe hearing loss in the ear that hears best (32). These figures show that hearing health needs to be a priority in all countries of the Region of the Americas, and that all of the WHO strategies aimed at mitigating the undesirable consequences of moderate or severe hearing loss need to be implemented.

Figure 26 shows DALY rates per 100 000 population due to presbycusis in the Region of the Americas. The weighted rate is close to 2313 DALYs. This disease affects men more than women, as evidenced by the 2019 DALY rates of 2368 for men and 2140 for women. Overall, age-related and other types of hearing

loss constituted the third-leading cause of years of life with disability worldwide in 2019, after low back pain and migraine, and ranked first among sensory disorders in people over 70 (33).

Figure 26. Region of the Americas: Disability-adjusted life years due to presbycusis, by sex, 2015–2019



Note: DALYs: Disability-adjusted life years

Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Table 7 shows rates of DALYs for countries in the Region of the Americas. Overall, the DALY rate in 2015 was 2371 per 100 000 population, decreasing to 2336 in 2019. The countries with the highest rate are the Plurinational State of Bolivia and Ecuador, with rates close to 2500 DALYs per 100 000 population. In contrast, Canada and Uruguay have DALY rates below 2100. Evidence corroborates the fact that low- and middle-income countries have higher DALYs than wealthy or high-income countries, probably because the former have less access to health care, low hearing aid coverage, and are less likely to provide the care people need.

Table 7. Region of the Americas: Disability-adjusted life years due to presbycusis, by country, 2015–2019

COUNTRY	RATE OF DISABILITY-ADJUSTED LIFE YEARS PER 100 000 POPULATION				
	2015	2016	2017	2018	2019
Argentina	2119.4	2107.9	2097.2	2094.4	2094.8
Belize	2461.6	2461.2	2460.8	2455.9	2445.2
Bermuda	2352.1	2354.2	2356.5	2350.4	2337.7
Bolivia (Plurinational State of)	2528.0	2520.0	2510.8	2505.5	2500.3
Brazil	2432.8	2440.1	2442.7	2303.6	2004.3
Canada	1894.7	1890.8	1887.0	1892.9	1907.1
Chile	2183.4	2177.6	2172.7	2169.5	2167.0
Colombia	2375.8	2376.7	2377.0	2371.0	2359.3
Costa Rica	2336.2	2335.2	2333.4	2328.0	2318.1
Cuba	2417.9	2417.6	2416.7	2410.2	2397.8
Dominican Republic	2471.0	2469.2	2467.7	2461.4	2449.9
Ecuador	2598.5	2566.7	2537.5	2528.1	2519.2
Guatemala	2402.6	2400.7	2398.9	2394.4	2386.5
Guyana	2421.1	2420.7	2419.4	2413.4	2401.5
Haiti	2502.4	2504.0	2506.3	2500.8	2490.1
Honduras	2429.0	2430.4	2432.5	2428.0	2418.9
Jamaica	2410.7	2409.4	2408.3	2405.2	2399.4
Mexico	2430.4	2425.2	2419.8	2413.2	2401.7
Nicaragua	2419.1	2419.4	2419.5	2415.3	2406.9
Panama	2345.9	2344.6	2341.8	2335.2	2323.6
Paraguay	2439.0	2435.5	2432.9	2427.8	2419.5
Peru	2381.0	2382.1	2383.6	2381.2	2375.4
Suriname	2413.1	2414.8	2415.7	2409.8	2396.7
Trinidad and Tobago	2365.2	2364.3	2363.4	2359.7	2351.6
United States	2357.4	2331.7	2306.0	2300.7	2296.9
Uruguay	2162.4	2149.4	2138.0	2135.8	2139.0

Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

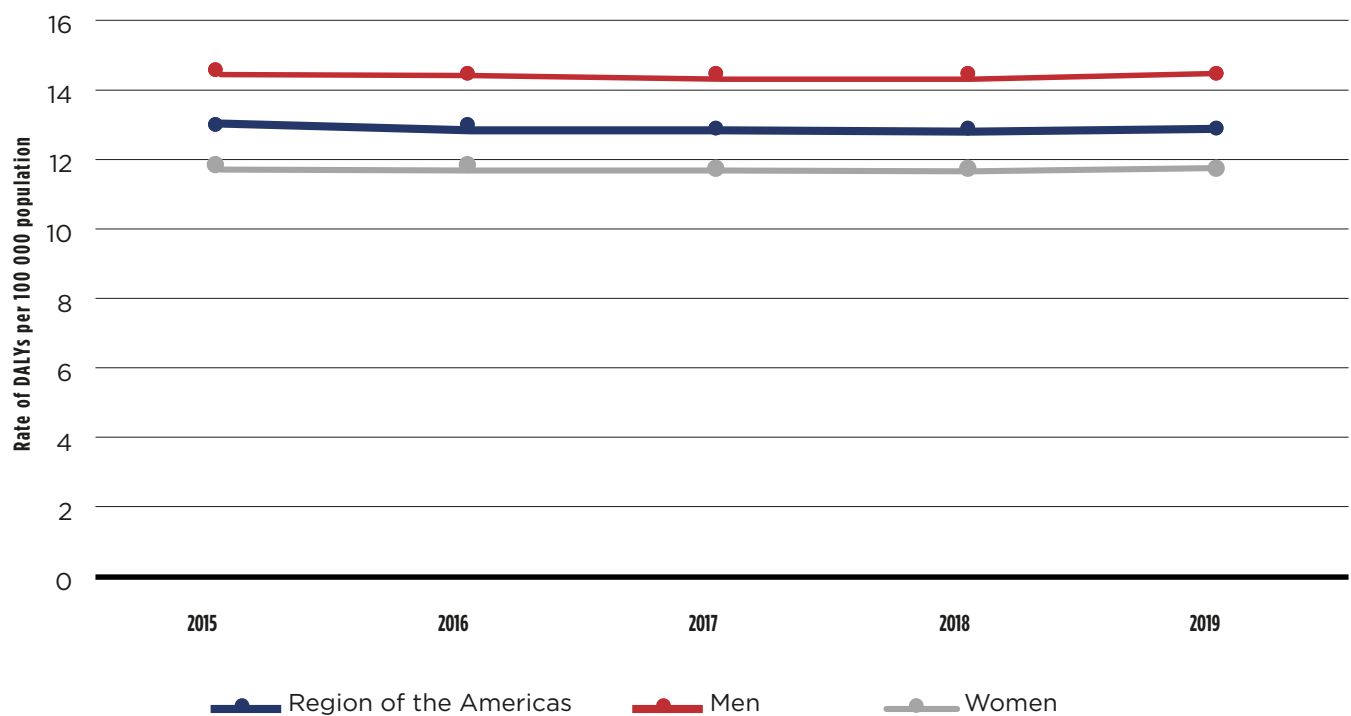
Otitis media

According to studies conducted in 2012, the total annual number of new episodes of acute otitis media is estimated at 709 million worldwide, with 51% occurring in the population under 5 years of age. The average global incidence rate of chronic suppurative otitis media is estimated at 4.8 new episodes per 1000 people (of all ages) per year. The total annual number of new episodes of chronic suppurative otitis media is estimated at 31 million (30). Information on this disease relating to

the adult population, including older people, is scarce, with few major studies on the subject. However, the available information on DALYs for this disease is presented below.

Figure 27 shows the rate of DALYs per 100 000 population in the Region of the Americas due to otitis media for people over 50 years of age. The weighted overall rate for 2015–2019 is 12.8 DALYs. This disease affects men the most, with a DALY rate of 14.4 in 2015 and more than 14.3 DALYs in 2019. Women, for their part, registered a DALY rate of 11.7 in 2015 and 2019.

Figure 27. Region of the Americas: Disability-adjusted life years due to otitis media, by sex, 2015–2019



Note: DALYs: Disability-adjusted life years

Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

Regarding DALY rates in the countries of the Region of the Americas, for 2015, Haiti, Honduras, and the Plurinational State of Bolivia had the highest rates: 26.5, 20.3, and 19.1 DALYs, respectively. This is related to the difficulty of accessing hearing health services in lower-income or developing countries, and to the low level of control of risk factors for this disease. For 2019, the same countries (Haiti, Honduras, and the Plurinational State of Bolivia) show the highest DALYs, with rates above 18.5 (Table 8).

Table 8. Region of the Americas: Disability-adjusted life years due to otitis media, by country, 2015–2019

COUNTRY	RATE OF DISABILITY-ADJUSTED LIFE YEARS PER 100 000 POPULATION				
	2015	2016	2017	2018	2019
Argentina	12.4	12.3	12.3	12.3	12.2
Belize	17.7	17.6	17.6	17.6	17.6
Bermuda	10.6	10.6	10.6	10.6	10.6
Bolivia (Plurinational State of)	19.1	18.9	18.7	18.6	18.5
Brazil	16.2	16.1	16.1	16.0	16.0
Canada	10.2	10.1	10.1	10.0	9.99
Chile	11.9	11.8	11.7	11.6	11.6
Colombia	16.2	16.1	16.0	15.9	15.8
Costa Rica	15.4	15.3	15.2	15.1	15.0
Cuba	18.3	18.1	18.0	17.9	17.8
Dominican Republic	16.1	15.9	15.7	15.5	15.3
Ecuador	16.4	16.3	16.2	16.1	16.1
El Salvador	17.7	17.6	17.5	17.4	17.3
Guatemala	18.0	17.9	17.9	17.8	17.8
Guyana	18.6	18.5	18.3	18.2	18.0
Haiti	26.5	26.4	26.3	26.2	26.1
Honduras	20.3	20.2	20.2	20.1	19.9
Jamaica	17.7	17.7	17.6	17.6	17.6
Mexico	15.5	15.4	15.4	15.3	15.3
Nicaragua	15.5	15.4	15.4	15.3	15.3
Panama	14.3	14.1	14.0	13.9	13.7
Paraguay	17.6	17.4	17.2	17.1	17.0
Peru	16.2	16.1	16.0	15.9	15.7
Suriname	15.4	15.4	15.3	15.4	15.4
Trinidad and Tobago	12.8	12.8	12.8	12.9	12.9
United States	10.0	10.0	9.9	9.9	9.9
Uruguay	12.0	11.9	11.8	11.7	11.6

Source: Prepared based on the Institute for Health Metrics and Evaluation. GBD Results. Seattle: University of Washington; [c2022] [accessed on 15 November 2021]. Available from: <http://ghdx.healthdata.org/gbd-results-tool>.

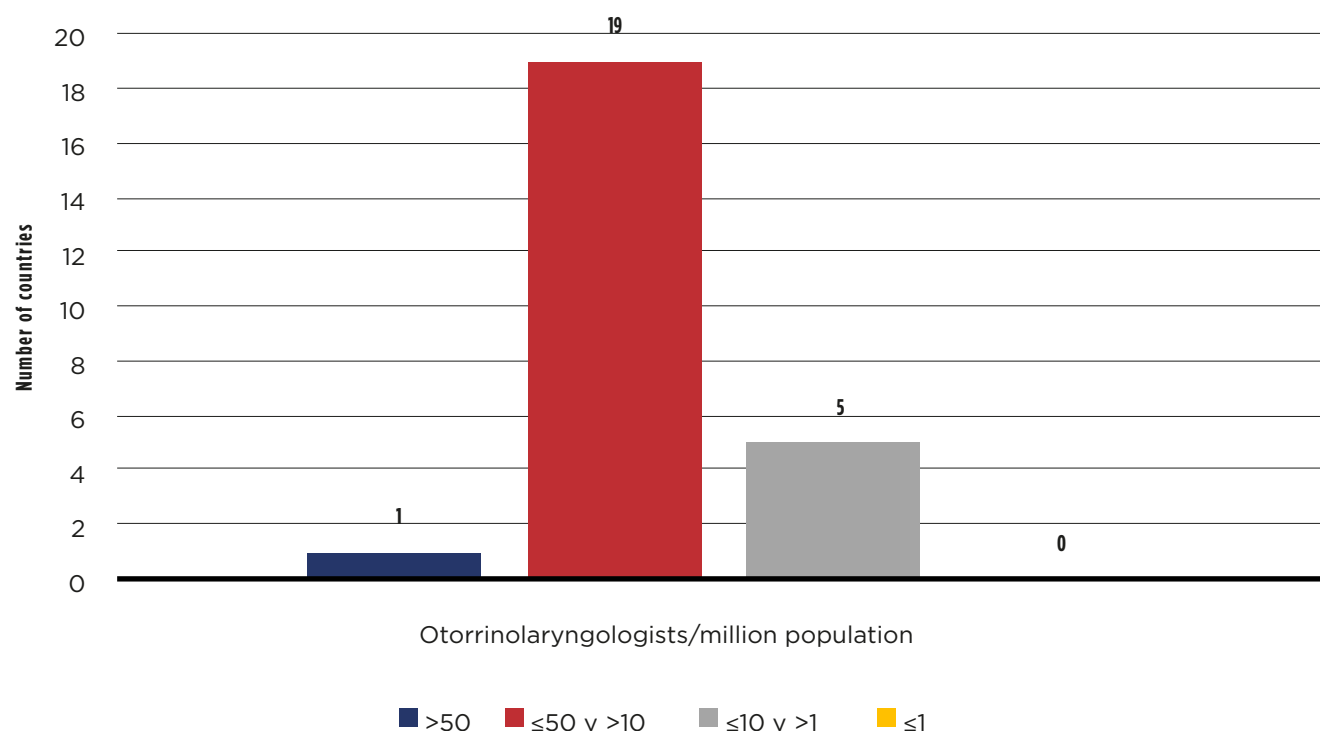
Analysis of factors related to hearing health services in the Region

Undoubtedly, one of the main challenges for WHO and for the countries of the Region of the Americas is to make ear and hearing care accessible to all. In addition, it is important to strengthen research on the most important hearing diseases in older people through population studies that examine prevalence, and longitudinal studies that provide incidence data from all of the Region's countries. The main difference between countries is attributable to the economic, social, and public health strategies that they have implemented. Hearing health services strategies need to be adapted in order to strengthen health promotion, disease prevention and detection, treatment, and rehabilitation for anyone who requires these, without generating high additional costs.

A key aspect of these changes is securing the appropriate health care personnel to cover the entire gamut of comprehensive care involved in hearing health services. This section will examine that issue in depth and present available, accessible figures on hearing health professionals in the Region of the Americas.

According to current data, most low- and middle-income countries have few technical and professional staff. This includes a lack of specialists in otolaryngology – specialized medical personnel who have received training in the treatment of diseases of the ear, nose, and throat (ENT) through a postgraduate course or diploma recognized by a higher education institution, qualifying them to provide the range of appropriate, quality hearing care services needed by the population over 70 years of age (34).

The Region of the Americas does not have enough qualified otorhinolaryngology medical personnel; only one country (Argentina) has more than 50 such professionals per million population, which is the ideal figure for providing quality hearing health service (34). In the Region, 19 countries have between 10 and 50 ENT professionals per million population, while five countries have between one and ten per million population (Figure 28) (34). These figures serve as a warning sign to key government officials, since they highlight the fact that the current shortage of skilled labor will make it impossible to provide adequate universal care to the Region's population of older adults.

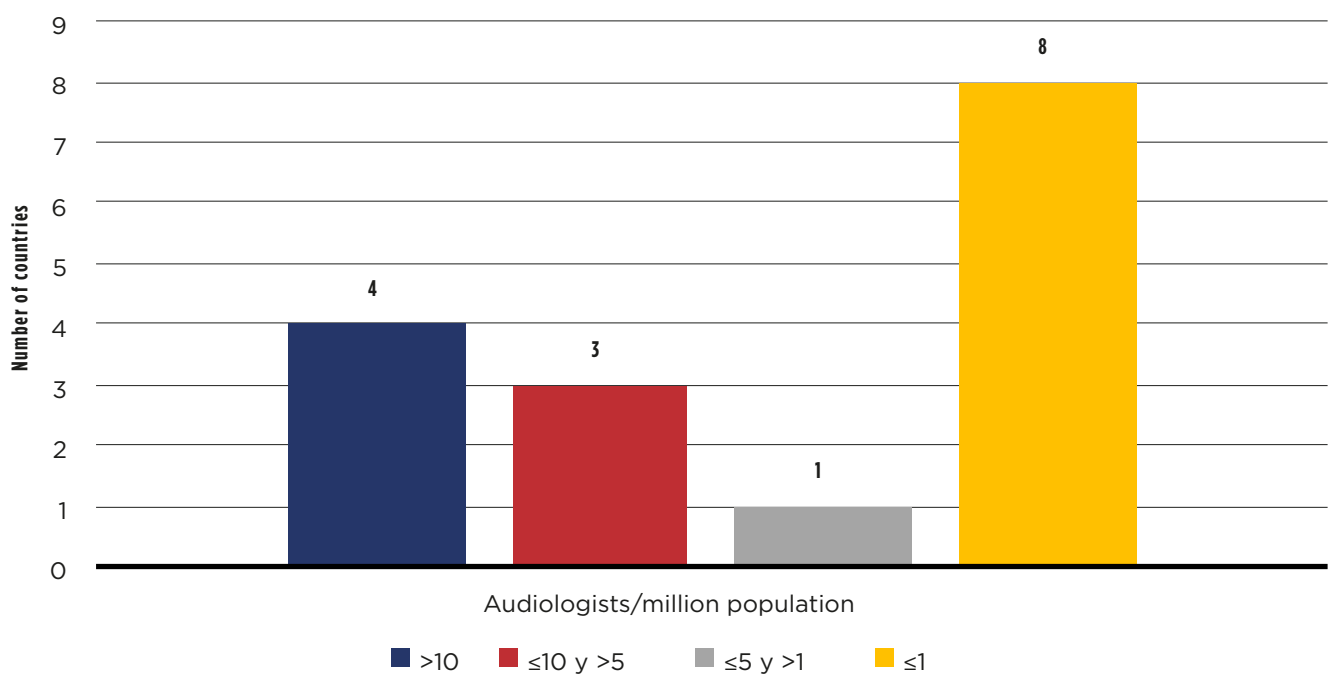
Figure 28. Region of the Americas: Otorhinolaryngology medical personnel per million population

Source: Based on Kamenov K, Martinez R, Kunjumen T, Chadha S. Ear and Hearing Care Workforce: Current Status and its Implications. *Ear Hear.* 2021;42(2):249–257. Available from: <https://doi.org/10.1097/aud.0000000000001007>.

Audiology professionals, who are also in short supply in the Region, are another key source of expertise in all hearing health strategies (34). Expert audiology staff provide specialized expertise in diagnosing and treating hearing loss, and in using hearing assistive technology (32). In the Region of the Americas, four countries (Canada, United States, Costa Rica, and Chile) have a density of audiology professionals greater than 10 per million population; three countries have between 5 and 10 per million ; one country has between one and five per million; while eight countries have one or fewer audiology professional per million (Figure 29). These figures represent a significant obstacle to the primary care strategy in regard to hearing health, since, in most countries, it is audiology professionals, along with related nursing and technical staff, who are in a position to implement these strategies.

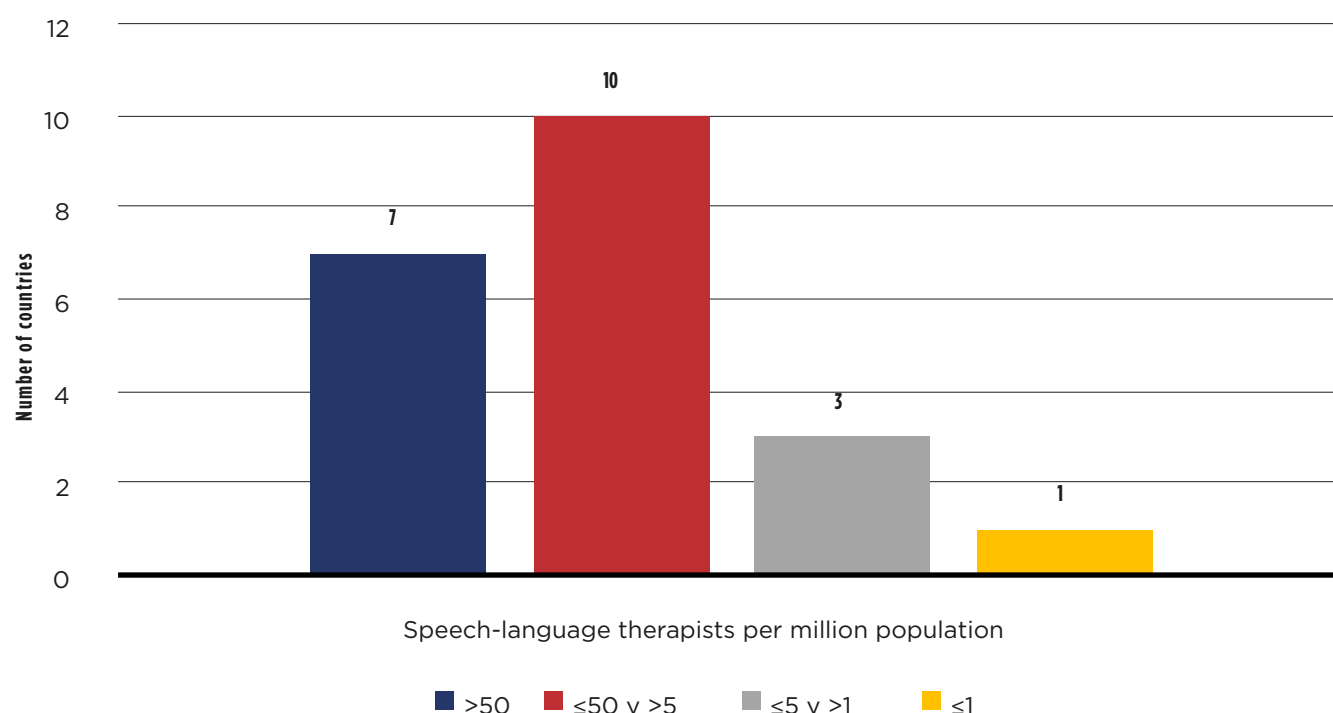
In summary, the gap between countries is attributable to differences in income: wealthier countries have greater availability of professionals, while poor and middle-income countries have insufficient capacity to offer the necessary hearing health services for the over-60 population.

Figure 29. Region of the Americas: Expert audiology personnel per million population



Source: Based on Kamenov K, Martinez R, Kunjumen T, Chadha S. Ear and Hearing Care Workforce: Current Status and its Implications. Ear Hear. 2021;42(2):249–257. Available from: <https://doi.org/10.1097/aud.0000000000001007>.

Figure 30 shows the density of speech therapists or speech-language pathologists in the Region of the Americas. The significant deficit in low- and middle-income countries is notable. Some 33.3% of countries have a density of more than 50 speech therapists per million population, and 47.6% of countries have between 5 and 50 speech therapists per million population (34). These values, lower than those in the European Region, where 69% of countries have more than 50 speech therapists per million population, are far from optimal to meet the needs of the Region’s population.

Figure 30. Region of the Americas: Speech therapists and speech-language pathologists

Source: Based on Kamenov K, Martinez R, Kunjumen T, Chadha S. Ear and Hearing Care Workforce: Current Status and its Implications. *Ear Hear.* 2021;42(2):249–257. Available from: <https://doi.org/10.1097/aud.0000000000001007>.

Given that the older population is increasing even faster in the Region of the Americas than in other regions of the world, countries need to prepare to be able to provide comprehensive hearing health services for the population that needs them. This includes hearing assistive technologies, i.e., available devices such as hearing aids, other types of hearing devices, and cochlear implants, which undoubtedly improve people's functional capacity and, therefore, their quality of life. According to studies carried out by WHO, there is a significant deficit in the effective coverage of these devices (32), and an even greater deficit in their use.

It is estimated that, in the Region of the Americas, approximately 49.5 million people do not use hearing aids and that 83% of people who need them do not use them (35). These figures reflect the gap between countries in various WHO regions; there continues to be a marked gap between low- and high-resource countries in terms of not only the availability of technologies, but also the purchasing power of people who need these aids, and the deficiencies in access to hearing health systems. According to WHO data, the production of these devices is insufficient, given that there are 466 million people with hearing loss, while the production meets only 10% of global needs (36).

In light of this, it is clear that low- and middle-income countries need to strengthen strategies to improve their hearing health systems and implement concrete measures to increase older people's access to hearing devices, while striving to meet their needs, with the goal of improving DALY rates for presbycusis and otitis media. By improving access to hearing technologies, DALYs decrease, with a corresponding reduction in the disease burden. While it is important to provide hearing aids to the older population, it is also important to provide complete rehabilitation services, since many older people do not use the prescribed hearing aids.

Challenges in hearing health

Further epidemiological and population studies need to be conducted in order to gain valid, updated data on the different diseases prevalent in the adult population of each country. In addition, the countries in the Region need to have valid and reliable, accessible, standardized information systems.

All of the Region's countries should formulate strategies to strengthen their health systems, in order to provide integrated, people-centered ear and audiological care, facilitate early detection and intervention in cases of hearing loss, consolidate services, and strengthen hearing health services as part of primary health care.

The lack of human resources at all levels of care (community, primary, secondary, and tertiary) must be remedied, since this is a prerequisite to ongoing efforts to improve hearing services, provide appropriate treatment plans, and monitor the various hearing conditions of the older population.

The capacities of hearing health personnel need to be strengthened in areas related to public health, education, and risk communication.

Lastly, access to and use of hearing technologies must be improved by adopting integrative strategies that provide universal coverage and that involve all key stakeholders in the process.

Conclusions and recommendations

The countries in the Region have implemented a variety of strategies to maintain hearing health. However, with such diversity in their economic and social conditions and level of health services, gaps persist. Policies need to be adopted to strengthen the multiple factors that promote hearing health, including coverage, access, and the human resources needed to face the challenges of an aging population in the Region.

To better guide decision makers, more and better research on hearing health needs to be conducted, tools for recording population-level information need to be standardized, and better indicators need to be developed for monitoring and tracking hearing conditions in the Region's older population, taking into account the needs and differences in the different age groups.

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With the objective of outlining the current knowledge available on the health and well-being of older people in the Region of the Americas at the start of the United Nations Decade of Healthy Aging 2021–2030, this report details the current state of visual and hearing health of older people in the Region of the Americas. Its purpose is to inform, providing evidence and specific information on the needs of this population in these two fundamental areas of intrinsic capacity, which constitute the main causes of disability in the Region's older adults. The information provided should contribute to the implementation of strategic regional actions that promote ongoing improvement in the health of older people.

Accelerated population aging in Latin America and the Caribbean shapes, and will continue to shape, the capacity of countries and health systems to respond to the specific needs of the population. In order to design inclusive and sustainable systems, it is therefore necessary to have reliable up-to-date information to aid in decision-making. During the Decade of Healthy Aging 2021–2030, actions should be geared toward generating and monitoring data, and the present report contributes to this objective.