

Vision impairment and blindness in individuals aged 60 years and older in Latin America and the Caribbean

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ABSTRACT

Objective. To determine the prevalence and causes of vision loss and calculate the effective cataract surgery coverage (eCSC) in adults aged 60 years and older in Latin America and the Caribbean in 2020.

Methods. The International Agency for the Prevention of Blindness Vision Atlas and the Rapid Assessment of Avoidable Blindness databases were used as data source. The collected data were used to estimate the prevalence and causes of vision loss in people aged 60 years and older, and to determine the eCSC.

Results. The overall prevalence of moderate to severe vision impairment (MSVI) and blindness in Latin America and the Caribbean were 14.14% and 2.94%, respectively. Tropical Latin America was the subregion with the highest prevalence of blindness (3.89%) while Southern Latin America had the lowest (0.96%). For both MSVI and blindness, cataract was the main cause of vision loss. The eCSC rates showed great variation, ranging from 4.0% in Guatemala to 75.2% in Suriname.

Conclusions. The prevalence of vision loss in adults aged 60 years and older in Latin America and the Caribbean was higher than previous estimates on younger groups. Cataract was the main cause of blindness, and the eCSC indicates that the outcomes from cataract surgery should be improved. Specific actions associated with improving access, integrating eye assessment with primary care programs, expanding the use of telemedicine, and improving data quality should be taken by public health authorities aiming to address vision loss in this group.

Keywords

Aging; blindness; vision disorders; ophthalmology; public health; Latin America; Caribbean region.

Worldwide, countries are experiencing an increase in the older adult population, caused by different factors, including reduced birth rates, better health services, and technology. Human life expectancy, however, has increased at a different rate than the healthy lifespan (1, 2). While life expectancy at birth increased by 6.6 years from 2000 to 2020, healthy life expectancy at birth increased by only 5.4 years (3), meaning individuals are living longer but not necessarily in better health. The United Nations Decade of Healthy Aging (2021–2030), launched in 2020, reaffirmed that most health systems are set up to address individual acute health conditions rather

than conditions commonly affecting older people, such as sensory losses (4). For this reason, the delivery of person-centered, integrated care and primary health services responsive to older people is one of the main areas of action of the Decade. Considering the impact of sensory losses, including vision and hearing, on older adults' health, visual health should be a priority when providing health services that are responsive to older adults' needs. A range of effective strategies are available to address the needs associated with eye conditions and vision impairment across the life course. These include health promotion, prevention, treatment, and rehabilitation strategies,

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some of which are among the most feasible and cost-effective of all healthcare interventions to implement (5). Recent scientific and technological developments promise to further accelerate these advances. Nonetheless, due to the rapid aging of populations worldwide, progress has not been able to keep pace with population eye care needs in many countries over the past three decades, and this scenario risks becoming an even greater challenge in the next 30 years (6).

Vision plays a critical role in every facet and stage of individuals' structural, economic, and social contexts (7). Vision impairment may affect physical, cognitive, psychological, and social functioning, all important contributors to healthy aging (8). Loss of vision is not life threatening, but it is a disability that can be associated with reduced economic, educational, and employment opportunities, as well as with dependence on care and an increased risk of death (9). Furthermore, in older age, vision loss not only significantly affects quality of life (e.g., the association between vision impairment and depression) but also amplifies comorbidities such as cognitive impairment and risk of falls, hampering healthy aging and the maintenance of proper functional ability (10).

Age is by far the biggest risk factor for blindness and vision impairment and largely determines the magnitude of these conditions in the coming decades. The 2017 Global Burden of Disease (GBD) study ranked vision impairment, including blindness, as the third cause among all impairments for years lived with disability (11). Some ocular conditions such as cataract and presbyopia are expected to affect all individuals as a direct effect of the aging process, while others such as glaucoma, age-related macular degeneration (AMD), and diabetic retinopathy (DR) are multifactorial diseases with strong influence of genetic and environmental characteristics in interaction with the age-related effects. Moreover, not all cases may lead to vision impairment and blindness; however, patients still require access to eye care services for the proper management of such conditions (12).

Eye health is a global public health priority, transforming lives in both poor and wealthy communities. An increasing amount of evidence shows the potential for actions on visual health to advance the Sustainable Development Goals (SDGs), by contributing toward poverty reduction, zero hunger, good health and well-being, quality education, gender equality, and decent work. In that sense, given that cataract is the main cause of vision loss worldwide, the World Health Organization (WHO) has included the effective cataract surgery coverage (eCSC) indicator as one of the parameters to be evaluated in order to achieve the SDGs (13). This is a parameter that not only measures access to cataract surgery in a country but also evaluates the quality of services by considering the surgery outcomes. Eye health needs to be reframed as a development issue as well as a health issue and given greater prominence within the global development and health agendas, especially considering the aging of populations and the impact of visual health on healthy aging (10).

In 2020, an estimated 596 million people had distance vision impairment worldwide, of whom 43 million were blind, 295 million had moderate to severe vision impairment (MSVI), and 258 million had mild vision impairment (MiVI) (10). Another 510 million people had uncorrected near vision impairment (NVI), simply because of not having reading spectacles (10). However, encouragingly, more than 90% of people with vision impairment have a preventable or treatable cause with existing

highly cost-effective interventions, such as cataract surgery and spectacles prescription/provision.

The latest data on vision loss were compiled by the Vision Loss Expert Group (VLEG) as part of the GBD study (10). Both WHO and the International Agency for the Prevention of Blindness (IAPB) consider the data provided by VLEG as the most up-to-date information on blindness and vision impairment. Since 2017, VLEG has provided the Vision Atlas, an open tool aiming to disseminate country-specific prevalence data on blindness and vision impairment, by cause and gender, presented by world regions and with functionality to look at time trends (14). The most recent version of Vision Atlas, published in 2020, uses data from the VLEG/GBD 2020 model. Much of the VLEG data for Latin America and the Caribbean (LAC) originate from Rapid Assessment of Avoidable Blindness (RAAB), a relatively simple and low-cost survey methodology focused on assessing prevalence and causes of visual loss, conducted between 2004 and 2016. The GBD study uses disease modeling to capture the natural course of different eye diseases, as well as demographic developments.

While previous reports have shown the prevalence and causes of vision impairment and blindness in adults over 50 years old, older individuals are now considered those aged 60 years and older (15). This group of individuals is heterogeneous and has specific characteristics and needs compared to younger adults, such as multimorbidity and atypical symptoms, and frequently faces ageism in health services, which hinders adequate care due to beliefs that these conditions are "normal" for an older person (16). Moreover, specific causes of vision loss might require different types of treatment and/or rehabilitation services. Therefore, it is important to understand the specific burden of visual impairment and blindness in this age group; otherwise, public health policies derived from the overall reports may insufficiently address the service demand of this particular age group.

The objective of this study was to determine the prevalence and causes of vision impairment and blindness in adults aged 60 years and older in LAC in 2020, as well as to evaluate the eCSC specifically in this group.

MATERIALS AND METHODS

Data sources

We utilized data from two publicly available databases for our analyses: the IAPB Vision Atlas and the RAAB International Co-Author Group. A detailed summary of the data identification process for these databases has been published previously (10). We selected studies performed in LAC from 2000 to 2020, including those incorporated in the latest IAPB Vision Atlas as well as unpublished data available in the RAAB worldwide databases (10, 14). The collected data were used to estimate the prevalence of blindness and MSVI in individuals aged 60 years and older, to evaluate the causes in this age group by country, and to calculate the eCSC. Participants younger than 60 years old were removed from the original datasets.

Outcomes definitions

Vision loss was classified according to the International Classification of Diseases 11th Revision (ICD-11) criteria, as used by

WHO, considering the individual's vision in the better eye on presentation. Mild vision impairment (MiVI) was defined as a visual acuity of 20/63 or better but less than 20/32; moderate to severe vision impairment (MSVI) as a visual acuity of 20/400 or better but less than 20/63; and blindness as a visual acuity of less than 20/400. Vision impairment from uncorrected presbyopia (NVI) was defined as presenting near vision of worse than N6 or N8 at 40 cm when best-corrected distance visual acuity was 20/32 or better. This definition was used to avoid double counting individuals with both distance and near vision impairment associated with non-refractive causes (10).

Data analysis

The results were presented separately according to the GBD regions classification (Table 1). Aruba, Bermuda, Guadeloupe, Martinique, and Saint Kitts and Nevis from the Caribbean region were not included in the current report due to lack of data.

The prevalence of blindness, MSVI, MiVI, and NVI were calculated considering the number of cases over the total number of individuals in the population. The distribution of causes of MSVI and blindness was calculated considering the number of cases of each cause over the total number of individuals with MSVI and blindness in the population.

The eCSC was calculated as the proportion of people who have received cataract surgery and have a resultant good quality visual outcome relative to the number of people in need of cataract surgery (17). It was automatically calculated using the RAAB software adopting three different levels of vision thresholds: 20/40, 20/63, and 20/200. The eCSC has not been measured for all the countries; therefore, we present data only by country instead of by region, considering the information available from 18 countries.

The study was conducted with publicly available data from the IAPB Vision Atlas without any type of identification of subjects or need for ethical approval.

RESULTS

Table 2 shows the estimated prevalence of blindness, MSVI, MiVI, and NVI in persons aged 60 years and older in 2020 according to country and subregion of LAC.

TABLE 1. Countries and territories of Latin America and the Caribbean by Global Burden of Disease (GBD) Study subregions

GBD subregion	Countries/territories
Caribbean	Antigua and Barbuda, Bahamas, Barbados, Belize, Cuba, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Puerto Rico, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago
Andean Latin America	Bolivia (Plurinational State of), Ecuador, Peru
Central Latin America	Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Venezuela (Bolivarian Republic of)
Southern Latin America*	Argentina, Chile, Uruguay
Tropical Latin America	Brazil, Paraguay

*GBD Study places these countries in a high-income region.
Source: Prepared by the authors based on the GBD Study data.

Tropical Latin America was the subregion with highest prevalence of blindness in LAC while Southern Latin America had the lowest prevalence. When analyzing each country separately, Guatemala had the highest prevalence (4.31%), followed by Brazil (3.92%) and Suriname (3.58%).

Table 3 shows the distribution of causes of MSVI and blindness in persons aged 60 years and older, according to country and subregion.

For both MSVI and blindness criteria, cataract was the main cause of vision loss in individuals aged 60 years and older in

TABLE 2. Estimated prevalence of vision loss by category in persons aged 60+ in 2020, countries and territories of Latin America and the Caribbean

Country/territory by GBD subregion	Blindness	MSVI	MiVI	NVI
Caribbean	2.60%	11.78%	12.71%	27.07%
Antigua and Barbuda	1.69%	9.46%	11.53%	24.32%
Bahamas	1.77%	9.79%	11.92%	25.03%
Barbados	0.63%	4.70%	11.47%	23.82%
Belize	2.36%	10.87%	13.85%	30.26%
Cuba	3.07%	12.97%	12.69%	26.60%
Dominica	0.63%	2.92%	3.54%	7.54%
Dominican Republic	2.49%	12.63%	12.33%	26.62%
Grenada	2.60%	11.89%	14.45%	30.60%
Guyana	2.04%	8.81%	11.32%	24.67%
Haiti	2.80%	9.01%	12.21%	27.35%
Jamaica	1.86%	9.38%	11.52%	24.51%
Puerto Rico	1.76%	11.48%	13.46%	27.11%
Saint Lucia	1.95%	9.87%	12.27%	26.26%
Saint Vincent and the Grenadines	2.43%	10.87%	13.60%	29.57%
Suriname	3.58%	13.75%	14.79%	31.70%
Trinidad and Tobago	1.68%	10.27%	11.30%	27.43%
Virgin Islands (UK)	1.36%	8.13%	9.72%	19.85%
Andean Latin America	3.21%	17.58%	12.67%	26.01%
Bolivia	3.04%	15.08%	11.87%	24.96%
Ecuador	2.05%	13.62%	12.43%	25.78%
Peru	3.57%	19.89%	12.54%	26.44%
Central Latin America	2.70%	15.34%	13.52%	32.61%
Colombia	3.13%	17.02%	14.61%	35.12%
Costa Rica	2.31%	12.26%	11.96%	26.98%
El Salvador	3.26%	16.51%	12.67%	30.46%
Guatemala	4.31%	20.59%	14.75%	35.72%
Honduras	2.92%	15.43%	14.58%	35.62%
Mexico	2.39%	14.67%	13.35%	30.99%
Nicaragua	3.32%	16.14%	14.34%	34.70%
Panama	3.45%	15.58%	13.01%	31.06%
Venezuela	3.24%	14.30%	14.38%	34.34%
Southern Latin America	0.96%	9.20%	5.64%	3.30%
Argentina	0.96%	9.59%	5.77%	3.37%
Chile	1.02%	8.46%	5.30%	3.14%
Uruguay	0.73%	8.80%	5.98%	3.43%
Tropical Latin America	3.89%	14.45%	13.27%	21.22%
Brazil	3.92%	14.41%	13.29%	21.10%
Paraguay	2.69%	15.95%	12.52%	26.37%
Latin American and the Caribbean	2.94%	14.14%	12.27%	23.69%

GBD: Global Burden of Disease Study; MiVI: mild vision impairment; MSVI: moderate to severe vision impairment; NVI: near vision impairment.
Source: Prepared by the authors based on the GBD Study data.

TABLE 3. Distribution of causes of moderate to severe vision impairment (MSVI) and blindness in persons aged 60+

Country/GBD subregion	Year	MSVI						Blindness					
		URE	Cataract	AMD	Glaucoma	DR	Others	URE	Cataract	AMD	Glaucoma	DR	Others
Caribbean		28.1%	29.5%	1.0%	3.9%	1.6%	35.9%	2.1%	30.8%	1.6%	20.6%	4.7%	40.3%
Cuba	2016	41.5%	48.9%	2.0%	2.5%	1.7%	3.4%	1.3%	63.8%	2.5%	15.0%	2.5%	15.0%
Dominican Republic	2008	34.7%	53.6%	1.7%	4.5%	2.0%	3.5%	0.0%	67.2%	4.5%	13.4%	4.5%	10.4%
Suriname	2014	43.7%	38.9%	3.2%	3.7%	2.1%	8.4%	1.8%	56.1%	3.5%	22.8%	1.8%	14.0%
Central Latin America		33.9%	35.7%	1.9%	4.0%	2.9%	21.5%	4.7%	35.7%	3.6%	12.7%	6.3%	37.0%
Costa Rica	2015	15.3%	64.6%	2.2%	5.2%	2.6%	10.1%	0.0%	61.0%	0.0%	7.3%	7.3%	24.4%
El Salvador	2011	50.6%	41.1%	2.5%	0.0%	1.1%	4.7%	4.7%	68.6%	3.5%	5.8%	4.7%	12.8%
Guatemala	2015	48.6%	43.7%	0.1%	1.0%	1.4%	5.2%	5.3%	83.7%	0.0%	1.6%	2.1%	7.4%
Honduras	2013	46.0%	44.8%	2.5%	3.1%	1.5%	2.2%	19.6%	64.3%	0.0%	5.4%	3.6%	7.1%
Mexico	2016	17.9%	47.4%	3.4%	6.4%	10.3%	14.5%	12.2%	48.8%	6.1%	7.3%	8.5%	17.1%
Panama	2014	45.9%	46.1%	0.8%	2.1%	0.8%	4.3%	12.4%	76.0%	1.6%	2.3%	0.0%	7.8%
Venezuela	2005	43.0%	43.7%	3.8%	3.4%	0.8%	5.3%	8.8%	68.4%	5.3%	8.8%	0.0%	8.8%
Andean Latin America		32.4%	46.4%	3.6%	2.9%	1.0%	13.7%	5.1%	44.6%	4.6%	15.9%	0.2%	29.5%
Bolivia	2015	57.4%	28.7%	4.5%	1.4%	2.4%	5.5%	18.4%	51.0%	6.1%	6.1%	6.1%	12.2%
Peru	2012	55.0%	31.8%	7.7%	3.9%	0.2%	1.4%	0.8%	59.7%	12.1%	12.9%	0.0%	14.5%
Ecuador	2009	21.7%	64.2%	4.8%	2.5%	3.3%	3.5%	0.0%	73.9%	4.3%	7.2%	7.2%	7.2%
Southern Latin America		36.7%	35.3%	1.6%	3.0%	2.2%	21.2%	2.3%	35.7%	8.6%	22.7%	5.1%	25.6%
Argentina	2013	57.2%	33.8%	1.9%	1.0%	3.2%	2.9%	8.7%	43.5%	4.3%	8.7%	17.4%	17.4%
Chile	2006	28.7%	52.5%	2.0%	4.0%	4.5%	8.4%	0.0%	57.1%	4.8%	4.8%	9.5%	23.8%
Uruguay	2011	47.8%	46.2%	1.9%	0.9%	0.0%	3.2%	6.1%	48.5%	9.1%	15.2%	3.0%	18.2%
Tropical Latin America		37.0%	33.5%	3.5%	4.9%	3.2%	17.8%	2.8%	37.9%	1.8%	11.9%	6.4%	39.2%
Brazil	2004	28.2%	47.7%	2.7%	2.0%	6.0%	13.4%	2.3%	41.9%	2.3%	11.6%	16.3%	25.6%
Paraguay	2011	68.0%	16.8%	1.6%	5.5%	6.3%	2.0%	3.2%	45.2%	9.7%	16.1%	3.2%	22.6%
LAC		33.9%	35.7%	1.9%	4.0%	2.9%	21.5%	3.5%	37.3%	2.9%	13.6%	5.6%	37.1%
World		41.7%	38.2%	3.0%	2.0%	1.4%	13.7%	6.8%	45.1%	5.5%	10.7%	2.6%	29.3%

AMD: age-related macular degeneration; DR: diabetic retinopathy; GBD: Global Burden of Disease Study; LAC: Latin America and the Caribbean; URE: undercorrected refractive errors.
Source: Prepared by the authors based on the GBD Study data.

the combined LAC countries. When looking at each subregion separately, cataract remains the main cause of blindness in all the subregions and the main cause of MSVI in most of them, with the exception of Southern Latin America and Tropical Latin America, where undercorrected refractive errors showed a slightly higher frequency.

Table 4 shows the eCSC in persons aged 60 years and older in RAAB surveys in LAC countries.

DISCUSSION

The number and proportion of people aged 60 years and older in the global population is constantly increasing, with more than 1 billion people aged 60 years and older in 2020. This number is estimated to increase to 1.4 billion by 2030 and 2.1 billion by 2050 (18). This increase is occurring at an unprecedented pace and will accelerate in coming decades, particularly in low- and middle-income countries. The current period 2021–2030, declared by the United Nations as the Decade of Healthy Aging, provides an important opportunity to address the challenges associated with older adults' health. According to WHO, the maintenance of an individual's functional ability is key for healthy aging. This reflects the importance of optimizing mental and physical capacities, including visual health (19).

Assuming that the prevalence of the four vision categories would remain the same as in 2020, we multiplied the prevalence in LAC by the population forecasts for that region for 2030,

2040, and 2050. This exercise suggests that in LAC the number of persons aged 60 years and older with vision loss would increase from 44.9 million in 2020 to 100.8 million in 2050 due to demographic factors alone, representing 5.6 million blind individuals, 26.8 million with MSVI, 23.3 million with MiVI, and 45 million with NVI.

The financial implications of vision loss affect not only the individual but also the family and community. Considering the global estimates of vision loss worldwide, in 2020, 18.1 million people of working age (15–64 years old) were blind and 142.6 million had MSVI, resulting in an estimated global annual productivity loss of USD 410.7 billion (6). Considering that most affected people live in low- and middle-income countries and have avoidable causes of vision loss (i.e., undercorrected refractive errors, cataract), investments in proper screening and treatment of such conditions could have positive effects on a country's economic situation.

Previous reports on blindness in individuals aged 50 years and older have shown prevalence in Andean Latin America, Caribbean, Central Latin America, Southern Latin America, and Tropical Latin America of 1.74%, 2.20%, 1.83%, 0.66%, and 2.71%, respectively (10). The prevalence of blindness in adults aged 60 years and older calculated in the current study were found to be, on average, 46.4% higher than those calculated for individuals aged 50 years and older, reinforcing the importance of such reports on guiding the development of public health policies specific to the 60 years and older group. While the main

TABLE 4. Effective cataract surgery coverage (eCSC) in persons aged 60+ in Rapid Assessment of Avoidable Blindness (RAAB) surveys in Latin America and the Caribbean

Country	Year	Effective cataract surgery coverage in persons 60+								
		eCSC 20/400			eCSC 20/200			eCSC 20/63		
		M + F	M	F	M + F	M	F	M + F	M	F
Argentina	2013	89.0%	89.3%	88.7%	75.5%	75.0%	75.8%	60.3%	57.7%	62.1%
Bolivia	2015	36.7%	32.5%	39.1%	32.0%	29.6%	33.3%	22.8%	20.9%	23.9%
Brazil	2004	70.8%	63.5%	75.6%	64.6%	59.3%	68.2%	51.5%	50.7%	52.1%
Chile	2006	61.6%	51.7%	68.2%	57.5%	48.4%	63.3%	30.6%	25.0%	34.4%
Costa Rica	2015	61.4%	61.5%	61.4%	51.5%	48.5%	53.5%	34.8%	35.2%	34.6%
Cuba	2016	51.0%	45.0%	55.0%	41.0%	39.0%	43.0%	23.0%	22.0%	23.0%
Dominican Republic	2008	42.0%	39.0%	46.0%	31.0%	27.0%	36.0%	16.0%	15.0%	18.0%
El Salvador	2011	44.0%	51.0%	37.0%	30.0%	35.0%	26.0%	18.0%	22.0%	15.0%
Ecuador	2009	58.0%	54.0%	62.0%	42.0%	40.0%	45.0%	28.0%	28.0%	30.0%
Guatemala	2015	13.0%	17.0%	11.0%	7.0%	9.0%	5.0%	4.0%	4.0%	4.0%
Honduras	2013	52.0%	56.0%	50.0%	44.0%	48.0%	42.0%	27.0%	25.0%	27.0%
Mexico	2016	69.4%	70.5%	68.0%	57.4%	60.6%	53.9%	45.4%	48.9%	41.9%
Panama	2014	52.0%	50.0%	54.0%	45.0%	44.0%	45.0%	34.0%	32.0%	36.0%
Paraguay	2011	73.0%	64.0%	82.0%	65.0%	56.0%	73.0%	50.0%	43.0%	56.0%
Peru	2012	43.0%	52.0%	39.0%	36.0%	42.0%	32.0%	25.0%	26.0%	24.0%
Suriname	2014	86.0%	83.5%	87.6%	83.0%	81.6%	83.8%	74.9%	74.5%	75.2%
Uruguay	2011	71.3%	72.5%	70.7%	65.2%	65.2%	65.2%	38.3%	39.5%	37.7%
Venezuela	2005	52.6%	48.8%	54.8%	42.1%	38.3%	44.6%	28.4%	25.5%	30.3%

Source: Prepared by the authors based on RAAB data.

causes of blindness were similar when considering a 50 or a 60 years threshold, in the latter group a slightly higher frequency of cataract (+1.9%), glaucoma (+1.8%), and AMD (+0.4%) were noticed, and a slightly lower frequency of undercorrected refractive errors (−0.8%), DR (−1.2%), and other causes (−2.1%) (20).

Cataract is the main cause of MSVI and blindness in Latin America. This is a condition characterized by natural intraocular lens opacification as a result of the aging process. Although aging is considered the main risk factor for cataract, other personal and environmental risk factors such as ethnicity, genotype, smoking status, ultraviolet exposure, and diabetes play a role in cataract development (21–23). Despite being a vision-threatening condition, cataract is treatable and consequently one of the main focuses of public health policies addressing visual impairment and blindness worldwide. While cataract is the main common cause of blindness across the world, there is great disparity in the frequencies of cases according to income, reflecting the unequal access of different populations to cataract surgery services (24, 25).

Cataract surgery is the only effective treatment that provides full restoration of vision when no other associated causes of vision loss are concomitant. Successful cataract surgery improves quality of life, as the visual recovery impacts mobility, daily activities, income, and psychosocial life (26). It is a safe and fairly simple procedure and is considered one of the most cost-effective healthcare interventions (23). The eCSC measure is an ideal indicator not only to track changes in the uptake and quality of eye care services over time but also to contribute to monitoring progress toward universal eye health and universal health coverage in general (17, 27). The data from LAC show great disparities in eCSC, ranging from 4.0% in Guatemala to 75.2% in Suriname. WHO recommends a minimum eCSC of 80% considering a vision threshold of 20/63, and so none of the evaluated countries

in LAC were achieving this goal in 2020 when considering the population of 60 years and older. At the global level there are great gender inequalities in terms of eCSC, with men showing better surgical outcomes than women. Our findings show similar rates between men and women, with a few exceptions where the results for women are slightly better than for men. Recent reports evaluating the results of studies from LAC corroborate that gender inequity in terms of receiving cataract surgery and/or its outcomes is not an issue in the region (28–30).

In comparison with cataract, the management of other age-related conditions such as DR requires a disproportionate amount of human and technological resources, including availability of ophthalmologists who are trained in laser and surgery (31). While all the other main causes of vision loss (i.e., cataract, undercorrected refractive errors, glaucoma, AMD) have decreased in prevalence over the past 20 years, DR is the only one that has increased globally (20). This is the most common and specific complication of diabetes: a recent meta-analysis estimates the prevalence of DR at 22.3% globally in the diabetic population (31). The prevalence of diabetes follows the global population life expectancy increase, so that the International Diabetes Federation estimates a prevalence of 11.2% of the population affected by diabetes by 2045, amounting to more than 780 million diabetic patients (32). With the advances in diabetes care overall and in the awareness of the importance of lifestyle changes, the lifespan of people living with diabetes is expected to increase. In that sense, a burden of microvascular and macrovascular complications, such as DR, associated with disease duration and consequently a demand for treatment are expected in the coming years (33). Our findings show a higher prevalence of DR among individuals aged 60 years and older as cause of MSVI and blindness in LAC when compared to worldwide estimates.

Regardless of the cause, irreversible cases make visual rehabilitation services necessary for blind people and those with MSVI, and should be encouraged. Previous analyses have shown that low vision rehabilitation interventions, especially through methods of enhancing vision and psychological therapies, can potentially improve vision-related quality of life and visual functioning for those experiencing sight loss (34).

Reducing the prevalence of vision loss among individuals 60 years and older is particularly challenging, as longevity continues to increase and health services are not keeping pace in terms of improving access and quality. Beyond achieving universal health coverage, countries should prioritize equity so that no minority group is left behind (6, 35). Integrated Care for Older People (ICOPE) is a strategy to optimize older adults' capacity and promote healthy aging through person-centered, integrated care, focusing on primary care. ICOPE proposes early detection of losses in physical and mental capacities and timely interventions through a personalized care plan to prevent dependence on care. Vision health is one of the main domains addressed in the strategy, which is crucial considering that sensory diseases, including vision losses, are the main causes of years lived with disability in LAC (36). Similarly, WHO and the Pan American Health Organization (PAHO) have been leading efforts in incorporating the life course approach into institutional mandates, plans of action, and technical cooperation strategies. The life course approach is a multidisciplinary model that offers a comprehensive understanding of health trajectories and transitions, taking into account the changes occurring in individuals and populations within their structural, economic, and social contexts (7).

While our analyses contribute to advancing policies and practices related to the burden of vision impairment and blindness in LAC, some limitations should be noted. Our data are derived from different studies conducted in various regions at different points in time. Some countries in LAC, particularly in the Caribbean, still have little or no population-based data, leading to estimates that rely on extrapolation from other areas. The lack of data is especially prominent regarding cataract surgical coverage. Additionally, some large countries are represented by only one or two studies, which are assumed to reflect the entire geographic population. As a result, the findings should be interpreted with caution. Despite these limitations, the analyses provide valuable insights that can inform efforts to address vision impairment and blindness in the region. The findings offer a foundational understanding that can guide future research, policy development, and resource allocation to improve eye health across LAC.

Recommended actions

According to our study results, specific actions toward reducing the burden of vision impairment and blindness in individuals 60 years and older include the following:

1. Access: increase the number of eye services focused on cataract surgery delivery and refractive centers for both near and distance spectacles dispensing; increase the number of eye clinics not only with ophthalmologists but also with other eye health practitioners such as optometrists, ophthalmic technologists, and/or trained nurses, which should improve the number of patients seen, dispensing spectacles, and surgery referrals (6, 20).
2. Integration with family medicine/primary care: general health programs with systemic condition assessment could include ocular health screening tools in their practice, in order to detect and refer cases of vision impairment and blindness for specialized care in a timely manner (6, 37).
3. Telemedicine: several telemedicine protocols in ophthalmology focused on DR, glaucoma, and cataract have been shown to be effective in populations with low access to specialized care and could be applied on the overall care protocols of older adults (38–40).
4. Improve data quality: more studies with appropriate methodology and data collection should be performed in LAC, also considering key indicators such as accessibility of eye health services, affordability of eye health services, effective coverage of cataract surgical services and refractive error services, and the prevalence of vision loss (41).

Conclusion

The prevalence of vision impairment and blindness in adults aged 60 years older in LAC in 2020 was higher than previous estimates on younger age groups. Cataract was the main cause of blindness, and the eCSC indicates that the outcomes from cataract surgery should be improved. Specific actions associated with improving access, integrating eye assessment with primary care programs, expanding the use of telemedicine, and improving data quality should be taken by public health authorities aiming to address the vision loss in this group.

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Discapacidad visual y ceguera en personas mayores de 60 años en América Latina y el Caribe

RESUMEN

Objetivo. Determinar la prevalencia y las causas de la pérdida de visión y calcular la cobertura efectiva de la cirugía de las cataratas en personas mayores de 60 años en América Latina y el Caribe en el 2020.

Métodos. Se utilizaron como fuentes la base de datos del Atlas de la Visión de la Agencia Internacional para la Prevención de la Ceguera y la de *Rapid Assessment of Avoidable Blindness* [evaluación rápida de la ceguera evitable]. Los datos recopilados se utilizaron para estimar la prevalencia y las causas de la pérdida de visión en personas mayores de 60 años y para determinar la cobertura efectiva de la cirugía de las cataratas.

Resultados. La prevalencia general de la discapacidad visual moderada a grave y de la ceguera en América Latina y el Caribe fue del 14,14% y el 2,94%, respectivamente. La subregión de América Latina tropical presentó la mayor prevalencia de ceguera (3,89%), mientras que la de América Latina austral registró la menor (0,96%). Tanto en el caso de la discapacidad visual moderada a grave como en el de la ceguera, la causa principal de pérdida de visión fueron las cataratas. Hubo grandes diferencias en la tasa de cobertura efectiva de la cirugía de las cataratas, con valores que iban del 4,0% en Guatemala al 75,2% en Suriname.

Conclusiones. La prevalencia de la pérdida de visión en personas mayores de 60 años en América Latina y el Caribe fue superior a la indicada por las estimaciones anteriores en grupos de menor edad. Las cataratas fueron la principal causa de ceguera, y la cobertura efectiva de la cirugía de las cataratas indica la necesidad de mejorar los resultados de estas intervenciones. Las autoridades de salud pública que pretendan abordar la pérdida de visión en este grupo deben adoptar medidas específicas que se asocien a una mejora del acceso, la integración de las exploraciones oftalmológicas en los programas de atención primaria, la ampliación del uso de la telemedicina y la mejora de la calidad de los datos.

Palabras clave Envejecimiento; ceguera; trastornos de la visión; oftalmología; salud pública; América Latina; región del Caribe.

Deficiência visual e cegueira em indivíduos com 60 anos ou mais na América Latina e no Caribe

RESUMO

Objetivo. Determinar a prevalência e as causas da perda de visão e calcular a cobertura efetiva da cirurgia de catarata em adultos com 60 anos ou mais na América Latina e no Caribe em 2020.

Métodos. Foram usadas as bases de dados do Atlas da Visão da Agência Internacional para a Prevenção da Cegueira e da Avaliação Rápida da Cegueira Evitável (RAAB, na sigla em inglês) como fonte de dados. Os dados coletados foram usados para estimar a prevalência e as causas da perda de visão em pessoas com 60 anos ou mais e para determinar a cobertura efetiva da cirurgia de catarata.

Resultados. A prevalência global de deficiência visual moderada a grave e cegueira na América Latina e no Caribe foi de 14,14% e 2,94%, respectivamente. A América Latina Tropical foi a sub-região com a maior prevalência de cegueira (3,89%), ao passo que a América Latina Meridional teve a menor prevalência (0,96%). Tanto na deficiência visual moderada a grave quanto na cegueira, a catarata foi a principal causa da perda de visão. As taxas de cobertura efetiva da cirurgia de catarata variaram muito, desde 4,0% na Guatemala até 75,2% no Suriname.

Conclusões. A prevalência da perda de visão em adultos com 60 anos ou mais na América Latina e no Caribe foi maior do que as estimativas anteriores em grupos de indivíduos mais jovens. A catarata foi a principal causa de cegueira, e a cobertura efetiva da cirurgia de catarata indica que os desfechos dessa cirurgia precisam ser melhorados. Medidas específicas associadas à melhoria do acesso, à integração da avaliação oftalmológica aos programas de atenção primária, à expansão do uso da telemedicina e à melhoria da qualidade dos dados devem ser adotadas pelas autoridades de saúde pública com o objetivo de enfrentar a perda de visão nesse grupo.

Palavras-chave Envelhecimento; cegueira; transtornos da visão; oftalmologia; saúde pública; América Latina; região do Caribe.