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RESEARCH ARTICLE

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Inequalities in access to health services among older adults in Colombia, 2015–2023

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ABSTRACT

Disparities in access to health services for older adults in Colombia require monitoring. This study examines inequalities in access to health services among Colombian adults aged 60 and older from 2015 to 2023, using data from the Colombian National Quality of Life surveys. Levesque's model was applied to evaluate the abilities to perceive, seek, reach, pay for, and engage with healthcare services. A composite score was used to aggregate these dimensions, reflecting overall access to health services. Stratified analyses were conducted to explore disparities by sex, region, residence, and income. The results indicate that access to health services varied over time, with notable discrepancies based on sex, region, residence, and income. Urban residents and individuals from higher-income households consistently experienced better access to healthcare services. Disparities persisted across the study period, with the greatest regional differences observed in 2023. These findings underscore the importance of addressing these inequalities to ensure equitable healthcare for Colombia's aging population.

KEY POINTS

- Colombia's aging population faces growing healthcare service demands.
- Significant disparities exist in healthcare access by sex, region, place of residence, and income.
- Urban residents and higher-income groups have better access to healthcare services.

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Older adults; aging; health inequalities; disparities; Colombia

Background

The Pan American Health Organization and the Economic Commission for Latin America and the Caribbean describe aging as the result of demographic changes in fertility and mortality rates (Pan American Health Organization & Economic Commission for Latin America and the Caribbean, 2023). There has been a progressive increase in the proportion of adults aged 60 and older (United Nations Population Fund Colombia, 2023). Projections for the Colombian population indicate that the number of older adults will reach 14% (7.6 million) of the population by 2023, increasing to 25% (14.9 million) by 2050 (United Nations Population Fund Colombia, 2023).

Colombia, an upper-middle-income country, has made significant efforts in recent decades to ensure universal healthcare access for its entire population in the face of epidemiological and demographic changes. The General System of Social Security for Health (SGSSS) divides the population into three categories: Contributory – for workers in the formal sector and others with the ability to pay; Special – for teachers in public schools/universities, military and police officers, and those working for the national oil

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company; and Subsidized – for the unemployed, those working in the informal sector and the poor (Guerrero et al., 2015).

Globally, the phenomenon of population aging presents significant challenges for healthcare systems across both high-income and middle-income countries. By 2080, those aged 65 or older are projected to outnumber the number of children under the age of 18 (United Nations, Department of Economic and Social Affairs, Population Division, 2024). This shift is not only a demographic issue but also a socio-economic one, as it places increasing strain on healthcare systems, social support services, and economic policies. Countries with established welfare systems, such as those in Europe, have been adjusting their healthcare models to accommodate this change (OECD & European Union, 2022). However, in middle-income countries such as Colombia, the transition is more challenging, as the aging process is occurring at a faster pace, and healthcare systems often lack the capacity to meet the growing demand for services targeted at older populations (Aboderin & Beard, 2015). For example, many countries in Latin America, including Colombia, are experiencing what is referred to as compressed aging, meaning that the shift to an older population is occurring much faster than it did in high-income countries (Palloni & Pinto, 2014; Palloni et al., 2002). This demographic shift presents significant challenges for healthcare systems, particularly in low- and middle-income countries, where resources are more limited. The need for tailored healthcare services to address the specific needs of aging populations is critical for improving health outcomes and ensuring equitable access.

The primary ethical goals of universal health coverage include promoting and maintaining individual health, enhancing health functionality and agency, and protecting individuals from the physical and economic consequences of poor health. In resource-constrained contexts, particularly in middle- and low-income countries, essential health services should be prioritized over nonessential services (Esteves, 2012). To monitor progress in the health sector, it is important that data on health indicators accurately reflect the characteristics of individuals and are frequently used to describe health system performance and situate the discussion of equity in access to care populations (Silva et al., 2018; World Health Organization, 2013).

The Colombian SGSSS provides universal coverage for older adults, with 46.7% enrolled in the Subsidized scheme, 46.7% in the Contributory scheme, and 5.8% in the Special scheme in 2020 (Decree 681 of 2022) (United Nations Population Fund Colombia, 2023). Compared with people between 10 and 59 years of age, older adults in Colombia have lower percentages in the perception of their health status as 'very good or good' and higher percentages in the perception of their health status as 'fair or poor' (Departamento Administrativo Nacional de Estadística, 2021b). In terms of the number of care services, the older population is projected to increase the demand for healthcare services in 2009 to 117 million in 2019. Although current data is unavailable, it is estimated that this demand will continue to grow in subsequent years (Cubillos Álzate et al., 2020).

In Colombia, despite the progress made toward universal health coverage, older adults face specific challenges that are compounded by social inequalities and regional disparities. For example, rural areas continue to struggle with limited access to healthcare services because of both geographical isolation and fewer healthcare providers per capita (Blandón-Lotero & Jaramillo-Mejía, 2020). The health status of older adults is also influenced by socioeconomic factors such as income, education, and employment history. For example, older adults who spend their working years in the informal sector are often enrolled in the Subsidized healthcare scheme and have less access to specialized services (Garcia-Ramirez et al., 2020). Additionally, health outcomes among older Colombians are affected by the prevalence of chronic diseases, such as diabetes and hypertension, which require long-term and ongoing care – something that can be difficult to manage within the current healthcare infrastructure.

Compared to the general population, which has an average demand of eight services per person per year, older people require an average of 12 services per person. In terms of the types of services required, those aged 60 and older require more care than does the general population, particularly in the areas of surgeries and non-urgent medical consultations (Cubillos Álzate et al., 2020). These demographic changes and health characteristics underscore the need to ensure access to healthcare services for older adults, which is critical for improving outcomes such as quality of life.

Access to healthcare is the ability of communities to use medical services or facilities according to their needs, characterized by both ease and efficiency (Levesque et al., 2013). There is ongoing debate about

what elements should be considered when examining this concept, particularly whether the focus should be placed on the availability of service providers or the process of care. Previous research has described utilization as the actual engagement with health care services, considering various dimensions, such as type, location, purpose and timing of services, which are shaped by population characteristics, along with policies, resources and organizational factors (Andersen, 1995).

In addition, social determinants of health play a crucial role in shaping the health and care needs of older adults in Colombia (U.S. Office of Disease Prevention and Health Promotion, 2024). A significant proportion of this population resides in urban areas, and projections by the National Administrative Department of Statistics (DANE) indicate that metropolitan regions will experience more rapid aging (Departamento Administrativo Nacional de Estadística, 2022). This demographic trend, coupled with lower educational levels and economic incomes, heightens the vulnerability of older adults. In 2022, only 10.2% of older adults had attained higher education (Departamento Administrativo Nacional de Estadística, 2021a), underscoring the critical need for detailed data to identify the most vulnerable groups effectively. Disaggregated data is essential for designing and implementing targeted strategies and policies aimed at reducing inequalities, in line with Sustainable Development Goal 3, which seeks to ensure healthy lives and promote well-being for all ages (United Nations, 2023). Such data enables the quantification of the impact of evidence-based strategies and provides a foundation for evaluating current health initiatives and their effectiveness in promoting equity (World Health Organization, 2013).

In light of these findings, there is a growing interest in analyzing data from the Colombian National Quality of Life (QoL) surveys. These surveys provide a valuable tool for monitoring and addressing disparities in access to health care. They allow for comparisons between different sociodemographic variables and inequality indices over time, providing a comprehensive understanding of the challenges faced by older adults in Colombia (Departamento Administrativo Nacional de Estadística, 2024). This analysis is crucial for developing interventions that can improve health outcomes and ensure equitable access to health care for all. Therefore, the aim of this study was to describe inequalities in access to health services among Colombian adults aged 60 and older from 2015 to 2023.

Methods

Study design and data source

This study used cross-sectional, openly available data from the Colombian National QoL surveys from 2015 to 2023. The surveys characterize the socioeconomic conditions of households throughout the country, facilitating the monitoring of variables essential for the design and implementation of public policies. These variables also include various sociodemographic and health-related variables. The QoL surveys are managed by the DANE (Departamento Administrativo Nacional de Estadística, 2024).

Population

Adults aged 60 and older from the universe of data available for the QoL surveys from 2015 to 2023, which corresponds to the non-institutional civilian population residing throughout the national territory (Departamento Administrativo Nacional de Estadística, 2024).

Variables

Access to healthcare is multidimensional, as it depends on an adequate supply of services, the existence of the opportunity to obtain healthcare, and a population that may have access to the services. To define the study variables, we used the theoretical model of Levesque et al. (2013), which considers supply-side and demand-side determinants, to understand the complexity of access to health services. We used the demand-side determinants centered around the person's interaction with the five dimensions of accessibility, which correspond to abilities to perceive, seek, reach, pay, and engage.

Based on the Levesque's framework (Levesque et al., 2013), the selected variables were as follows:

- Ability to perceive: described as the perception of needs and desire for care. For this study, we used the variable literacy (knowing how to read/write) as a proxy for health literacy – as it impacts the ability to understand health information – and the perception of general health status.
- Ability to seek: represents autonomy in health-seeking behavior. Autonomy indicators include the ability to talk/discuss and cognitive functions (understanding, learning, remembering, and decision-making).
- Ability to reach: described as healthcare reaching. We used the variable of mobility (moving, walking and going up and down stairs).
- Ability to pay: defined as the financial ability to access healthcare. This dimension was assessed using the variable of health insurance schemes from the SGSSS, where the responses were categorized into Contributory, Special, and Subsidized. For the purposes of this study, these responses were recoded into two categories: 'financial capacity', which included individuals covered by the Contributory and Special insurance schemes, and 'limited financial capacity', which included individuals covered by the Subsidized scheme, indicating reliance on state-provided insurance due to insufficient financial resources (Congreso de Colombia, 2011).
- Ability to engage: described as healthcare utilization. We used the variable of preventive consultation to a medical doctor at least once a year.

These variables were selected to represent each dimension of Levesque's framework (Levesque et al., 2013), ensuring consistency with the model's conceptualization.

Index creation

For each dimension, a binary indicator was created to reflect whether an individual met any of the following criteria within that dimension:

- Perceive ability: individuals were coded as 1 if they were literate or had a valid response for general health status.
- Seek ability: individuals were coded as 1 if they were able to perform any of the specified autonomy-related activities.
- Reach ability: individuals were coded as 1 if they reported being able to move/walk.
- Pay ability: individuals were coded as 1 if they were enrolled in a health insurance plan with financial capacity.
- Engaging ability: individuals were coded as 1 if they had any preventive consultations or non-urgent medical consultations.

These binary indicators were then summed to create an overall composite score representing the total number of dimensions in which the individual demonstrated the ability to access health services.

Data analysis

We conducted descriptive analyses of the anonymized data from the QoL surveys to assess the distribution of the composite score over the years. The surveys employed a probabilistic, multistage, stratified and clustered sampling designs. We applied the provided expansion factors to the sample data to ensure that each element of the sample accurately represented its proportion in the overall population. This weighting ensures that the survey sample is representative of the target population.

We conducted stratified analyses to explore and describe the inequalities in access to healthcare services by sex, region, place of residence, and household income quintile. Each stratification variable was defined as follows:

- Sex: female or male.
- Region: groupings of the 32 Colombian departments as nine areas classified by the DANE as having homogeneous geographic characteristics: (1) Caribbean, (2) Eastern Andean, (3) Central, (4) Pacific, (5) Bogotá Capital District, (6) Antioquia, (7) Valle del Cauca, (8) San Andrés, and (9) Orinoquía – Amazon.

- Place of residence: urban or dispersed rural area based on geographic delimitation criteria defined by the DANE.
- Household income quintiles: total monthly household income divided into five equal parts. The quintiles range from quintile 1, which represents approximately the poorest 20% of the households, to quintile 5, which represents approximately the wealthiest 20%.

To explore inequalities, we used equiplots to inspect the distance between groups in an inequality graph. We also calculated simple measures of inequality (pairwise comparisons), such as the absolute (i.e. absolute magnitude of the difference) and relative (i.e. proportional differences/ratio) differences between subgroups. Additionally, we determined complex measures of inequality in non-ordered groups, such as the mean difference (i.e. average deviation between each year and the overall yearly average) and the Theil Index (i.e. relative measure of inequality considering the population proportion in each region and the health indicator prevalence ratios relative to the national average) (Barros & Victora, 2013; Hosseinpoor et al., 2016).

It is worth mentioning some data gaps and limitations. The dataset had missing values for the education variable, with the following proportions: 0.2% for the years 2015 through 2019, and 0.1% for the years 2020 through 2023. Additionally, for DANE administrative reasons, the 2017 QoL survey includes only urban data and lacks some regional and departmental disaggregation (Departamento Administrativo Nacional de Estadística, 2017). Furthermore, the 2020 and 2021 QoL surveys were excluded from the analyses because the variable indicating the ability to engage was absent from the dataset due to administrative reasons according to the DANE (Lopez Alfonso, 2024).

The analyses were performed using Stata (version 18.0, StataCorp, College Station, TX), and the graphs were created using the Equiplot Creator Tool from the International Center for Equity in Health, which is located in Pelotas, Brazil.

Results

We analyzed national surveys with available data for almost a decade. Table 1 presents the characteristics of the adults aged 60 and older from the QoL surveys between 2015 and 2023. The sample size notably increased significantly from 6,225 in 2015 to 25,189 in 2023. In terms of the distribution of sex at birth, men constitute the majority, with their share increasing slightly from 59.4% in 2015 to 52.9% in 2023. Across all years, the largest age group was consistently those aged 60–69, while those aged 90–99 and 100 years or older remained the smallest proportion.

In terms of marital status, there was a consistent proportion of married individuals through the years, fluctuating between 29%–35%. Most respondents lived in urban areas, reaching 100% in 2017 due to the survey's scope that year—which excluded rural data for administrative reasons (Departamento Administrativo Nacional de Estadística, 2017). Regional representation varied, with the Caribbean and Eastern Andean regions each comprising approximately 17%–19% of the surveyed population annually.

Educational levels varied, with primary education remaining the highest at approximately 47%. Secondary, middle, and higher education (technical/technological and professional/graduate) increased, particularly professional/graduate education, which rose from 8.7% in 2015 to 12% in 2023. Most respondents were from the high household income quintile, accounting for approximately 29% of the sample. Affiliation to Health Promotion Entities (EPS) was consistently high, averaging above 97%, indicating a broad coverage among respondents.

In 2015 and 2016, only 36.2% and 35.1% of individuals had access to health services, respectively, with over 64% lacking access (Table 2). In 2017, 57.4% still lacked access. A decrease was observed in 2018, with 33.9% of individuals having access to health services, and this trend continued in 2019, reaching 35.1%. However, in 2022 and 2023, 29.4% and 28.8% of individuals, respectively, had access to health services each year.

Figure 1 shows the ability to access health services in Colombia over nine years, stratified by different demographic and socioeconomic dimensions. Men consistently had higher prevalence rates of access compared to women, although the gap fluctuated, it remained evident across the years (panel A). Urban area residents had significantly higher access rates to health services compared to those in dispersed rural areas. Ability to access health services varied among different regions (panel B). Regions such as Bogotá and

Table 1. General characteristics of adults aged 60 and older from the Colombian National Quality of Life Surveys from 2015 to 2023.

	2015	2016	2017	2018	2019	2020	2021	2022	2023
Observations	6,225	6,342	2,310	23,904	25,261	23,218	24,023	24,809	25,189
Population size	3,294,065	3,469,023	2,910,245	3,866,770	4,127,663	4,218,698	4,426,825	4,612,859	4,855,518
Place of residence									
Urban area	2,526,5167 (76.7%)	2,664,748 (76.8%)	2,910,245 (100.0%)	2,998,160 (77.5%)	3,110,685 (75.4%)	3,184,517 (75.5%)	3,383,711 (76.4%)	3,545,577 (76.9%)	3,743,941 (77.1%)
Dispersed rural area*	767,548 (23.3%)	804,275 (23.2%)	-	868,610 (22.5%)	1,016,978 (24.6%)	1,034,181 (24.5%)	1,043,114 (23.6%)	1,067,282 (23.1%)	1,111,577 (22.9%)
Region									
Caribbean	619,104 (18.7%)	654,317 (18.8%)	114,283 (3.9%)	690,703 (17.9%)	773,833 (18.7%)	803,410 (19.0%)	821,294 (18.6%)	872,983 (19.0%)	916,539 (18.8%)
Eastern Andean	592,060 (18.0%)	624,438 (18.0%)	190,242 (6.5%)	691,345 (17.8%)	794,022 (19.3%)	788,963 (18.7%)	845,373 (19.1%)	862,814 (18.7%)	904,238 (18.6%)
Central	456,142 (13.8%)	443,131 (12.8%)	169,016 (5.8%)	493,845 (12.8%)	545,713 (13.2%)	564,904 (13.4%)	565,669 (12.8%)	581,610 (12.6%)	603,279 (12.4%)
Pacific	232,564 (7.1%)	252,553 (7.3%)	49,736 (1.7%)	254,490 (6.6%)	294,440 (7.1%)	301,708 (7.2%)	333,593 (7.5%)	344,878 (7.5%)	352,266 (7.3%)
Bogotá	537,368 (16.3%)	557,243 (16.1%)	93,266 (3.2%)	682,178 (17.6%)	648,953 (15.7%)	633,993 (15.0%)	700,393 (15.8%)	720,690 (15.6%)	775,474 (16.0%)
Antioquia	472,942 (14.4%)	532,001 (15.3%)	121,018 (4.2%)	570,990 (14.8%)	555,777 (13.5%)	600,643 (14.2%)	635,218 (14.3%)	661,084 (14.3%)	733,282 (15.1%)
Valle del Cauca	342,038 (10.4%)	360,898 (10.4%)	67,406 (2.3%)	406,177 (10.5%)	429,326 (10.4%)	437,364 (10.4%)	432,793 (9.8%)	469,797 (10.2%)	464,512 (9.6%)
San Andrés**	3,517 (0.1%)	3,960 (0.1%)	-	4,545 (0.1%)	3,454 (0.1%)	4,016 (0.1%)	4,426 (0.1%)	4,648 (0.1%)	4,713 (0.1%)
Orinoquía – Amazon	38,330 (1.2%)	40,482 (1.2%)	13,431 (0.5%)	72,497 (1.9%)	82,145 (2.0%)	83,697 (2.0%)	88,066 (2.0%)	94,355 (2.0%)	101,215 (2.1%)
Sex									
Male	1,957,256 (59.4%)	2,056,946 (59.3%)	1,538,768 (52.9%)	2,235,828 (57.8%)	2,402,582 (58.2%)	2,400,249 (56.9%)	2,410,980 (54.5%)	2,533,181 (54.9%)	2,568,279 (52.9%)
Female	1,336,809 (40.6%)	1,412,077 (40.7%)	1,371,477 (47.1%)	1,630,942 (42.2%)	1,725,081 (41.8%)	1,818,449 (43.1%)	2,015,845 (45.5%)	2,079,678 (45.1%)	2,287,239 (47.1%)
Age									
60–69	1,828,679 (55.5%)	1,928,039 (55.5%)	1,594,501 (54.7%)	2,142,231 (55.4%)	2,320,385 (56.2%)	2,321,807 (56.0%)	2,436,569 (55.0%)	2,550,550 (55.4%)	2,677,407 (55.1%)
70–79	1,062,998 (32.3%)	1,108,058 (31.9%)	901,402 (31.0%)	1,202,901 (31.1%)	1,252,302 (30.3%)	1,371,755 (32.5%)	1,402,943 (31.7%)	1,444,701 (31.3%)	1,529,183 (31.5%)
80–89	362,533 (11.0%)	397,354 (11.5%)	360,033 (12.4%)	456,421 (11.8%)	489,455 (11.9%)	460,735 (10.9%)	507,218 (11.5%)	541,537 (11.7%)	568,957 (11.7%)
90–99	38,828 (1.2%)	33,038 (1.0%)	49,080 (1.7%)	62,878 (1.6%)	64,659 (1.6%)	62,996 (1.5%)	78,271 (1.8%)	74,205 (1.6%)	77,323 (1.6%)
100 or older	1,027 (0.0%)	2,534 (0.1%)	5,229 (0.2%)	2,339 (0.1%)	862 (0.0%)	1,405 (0.0%)	1,824 (0.0%)	1,866 (0.0%)	2,648 (0.1%)
Marital status									
Not married and lives with partner	458,869 (13.9%)	487,356 (14.0%)	303,297 (10.4%)	548,705 (14.1%)	635,927 (15.4%)	647,994 (15.4%)	631,821 (14.3%)	671,371 (14.6%)	737,196 (15.2%)
Widowed	842,536 (25.6%)	930,548 (26.8%)	804,539 (27.6%)	1,000,948 (25.9%)	996,342 (24.1%)	1,093,524 (25.9%)	1,133,425 (25.6%)	1,147,691 (24.9%)	1,174,905 (24.2%)
Separated or divorced	532,972 (16.2%)	524,069 (15.1%)	516,939 (17.8%)	686,598 (17.8%)	675,705 (16.4%)	736,669 (17.5%)	746,955 (16.9%)	757,056 (16.4%)	850,911 (17.5%)
Single	276,036 (8.4%)	326,195 (9.4%)	274,945 (9.4%)	336,286 (8.7%)	417,465 (10.1%)	436,976 (10.4%)	507,088 (11.5%)	604,910 (13.1%)	654,182 (13.5%)
Married	1,183,652 (35.9%)	1,200,855 (34.6%)	1,010,525 (34.8%)	1,294,233 (33.5%)	1,402,224 (34.0%)	1,303,535 (30.9%)	1,407,536 (31.8%)	1,431,831 (31.0%)	1,438,324 (29.6%)
Educational level* **									
None	465,445 (14.1%)	483,456 (13.9%)	252,415 (8.7%)	533,641 (13.8%)	545,549 (13.2%)	534,306 (12.7%)	532,329 (12.0%)	532,883 (11.6%)	550,967 (11.3%)
Preschool	5,538 (0.2%)	7,857 (0.2%)	1,616 (0.1%)	4,824 (0.1%)	0	8,189 (0.2%)	8,369 (0.2%)	15,780 (0.3%)	10,368 (0.2%)
Primary (1°–5°)	1,729,877 (52.5)	1,760,710 (50.8%)	1,267,732 (43.5%)	1,721,217 (44.5%)	1,924,633 (46.6%)	1,987,819 (47.1%)	1,986,658 (44.9%)	2,137,328 (46.3%)	2,208,919 (45.6%)
Secondary (6°–9°)	379,180 (11.5%)	406,024 (11.7%)	370,727 (12.7%)	400,453 (10.4%)	426,829 (10.3%)	465,267 (11.0%)	480,721 (10.9%)	520,126 (11.3%)	503,635 (10.4%)
Middle (10°–13°)	298,451 (9.1%)	332,247 (9.6%)	380,449 (13.1%)	447,006 (11.6%)	504,706 (12.2%)	522,027 (12.4%)	575,387 (13.0%)	600,065 (13.0%)	702,107 (14.5%)
Technical/ Technologic	121,185 (3.7%)	158,500 (4.6%)	169,074 (5.8%)	190,533 (4.9%)	193,994 (4.7%)	212,752 (5.0%)	252,247 (5.7%)	235,263 (5.1%)	288,883 (5.9%)
Professional/ Graduate	287,687 (8.7%)	312,857 (9.0%)	463,137 (15.9%)	561,956 (14.5%)	524,439 (12.7%)	483,628 (11.5%)	588,159 (13.3%)	564,575 (12.2%)	584,505 (12.0%)

Table 1. (*Continued*)

	2015	2016	2017	2018	2019	2020	2021	2022	2023
Household income quintile (Q)									
Q1	519,742	534,232	527,362	507,976	550,337	582,554	635,115	688,317	691,388
	(15.8%)	(15.4%)	(18.1%)	(13.1%)	(13.3%)	(13.8%)	(14.3%)	(14.9%)	(14.2%)
Q2	564,462	570,907	531,870	587,989	594,039	659,693	650,908	710,887	732,706
	(17.1%)	(16.5%)	(18.3%)	(15.2%)	(14.4%)	(15.6%)	(14.7%)	(15.4%)	(15.1%)
Q3	599,901	660,341	559,664	639,293	705,599	711,430	729,998	780,740	815,927
	(18.2%)	(19.0%)	(19.2%)	(16.5%)	(17.1%)	(16.9%)	(16.5%)	(16.9%)	(16.8%)
Q4	740,980	777,521	640,061	884,782	937,060	956,678	979,914	1,005,779	1,059,521
	(22.5%)	(22.4%)	(22.0%)	(22.9%)	(22.7%)	(22.7%)	(22.1%)	(21.8%)	(21.8%)
Q5	868,980	926,022	651,288	1,246,730	1,340,628	1,308,343	1,430,890	1,427,136	1,555,976
	(26.4%)	(26.7%)	(22.4%)	(32.3%)	(32.5%)	(31.0%)	(32.4%)	(31.0%)	(32.0%)
Affiliated to health promotion entities (EPS)									
Yes	3,216,761	3,414,759	2,824,319	3,785,368	4,028,890	4,134,280	4,340,318	4,530,120	4,791,671
	(97.7%)	(98.4%)	(97.0%)	(97.9%)	(97.6%)	(98.0%)	(99.0%)	(98.2%)	(98.7%)
No	72,928	48,908	80,539	73,785	90,677	76,149	77,086	69,713	55,772
	(2.2%)	(1.4%)	(2.8%)	(1.9%)	(2.2%)	(1.8%)	(1.7%)	(1.5%)	(1.1%)
Don't know	4,376	5,355	5,387	7,617	8,096	8,269	9,421	13,026	8,075
	(0.1%)	(0.2%)	(0.2%)	(0.2%)	(0.2%)	(0.2%)	(0.2%)	(0.3%)	(0.2%)

Note: Weighted counts and proportions. Due to administrative National Administrative Department of Statistics (DANE) reasons, the 2017 Colombian National Quality of Life Survey had a reduced sample size and excluded rural data. Therefore, the 2017 data includes only urban data and lacks some regional and departmental disaggregation (Departamento Administrativo Nacional de Estadística, 2017).

* No data reported in 2017 for dispersed rural areas.

** Missing data in 2017: 2,091,847 (71.9%).

*** Missing data: 6,702 (0.2%) in 2015, 7,372 (0.2%) in 2016, 5,095 (0.2%) in 2017, 7,140 (0.2%) in 2018, 7,511 (0.2%) in 2019, 4,710 (0.1%) in 2020, 2,955 (0.1%) in 2021, 6,840 (0.1%) in 2022, 6,134 (0.1%) in 2023.

Table 2. Ability to access health services of adults aged 60 and older. Colombian National Quality of Life Surveys (QoL) from 2015 to 2023.

	Ability to access health services			
	Yes		No	
QoL Survey	n	%	n	%
2015	1,192,040	36.2	2,102,025	63.8
2016	1,216,034	35.1	2,252,988	64.9
2017	1,232,951	42.4	1,677,294	57.6
2018	1,310,405	33.9	2,556,365	66.1
2019	1,450,227	35.1	2,677,436	64.9
2020*	-	-	-	-
2021*	-	-	-	-
2022	1,353,977	29.4	3,258,882	70.6
2023	1,396,833	28.8	3,458,685	71.2

Note: Weighted counts and proportions. Owing to the National Administrative Department of Statistics (DANE) administrative reasons, the 2017 QoL survey had a reduced sample size and excluded rural data. Therefore, the 2017 data includes only urban data and lacks some regional and departmental disaggregation (Departamento Administrativo Nacional de Estadística, 2017) . Additionally, the 2020 and 2021 QoL surveys did not include the variable of preventive consultations or non-urgent medical consultations, preventing the calculation of the 'ability to engage' dimension within the overall composite score for access to health service, and thus we excluded those years from the analysis (Lopez Alfonso, 2024).

* QoL Surveys of 2020 and 2021 excluded from the analysis.

Eastern Andean showed higher and relatively stable rates, whereas regions such as Orinoquía – Amazon and San Andrés consistently lagged behind (panel C). Across household income quintiles, the gaps remained the same over time and did not decrease (panel D). There was a clear socioeconomic gradient, where the wealthiest quintile consistently showed the highest prevalence rates and the poorest quintile showed the lowest access rates.

We also identified differences using absolute measures to demonstrate the overall scenario of inequality (see Table 3) (Barros & Victora, 2013; Hosseinpoor et al., 2016). The absolute inequality between males and females varied, peaking at 18.4 percentage points in 2016 and 2019. The urban and dispersed rural areas were the highest at 89.2 percentage points in 2018, and income-related absolute inequality reached 58.5 percentage points in 2019.

The inequality for older adults in Colombia across regions in relation to the ability to access health services was the highest in 2023, with a mean difference of 19.0 and a Theil index of 107.1 (see Table 4). These high values suggest greater variation in inequality levels among regions.

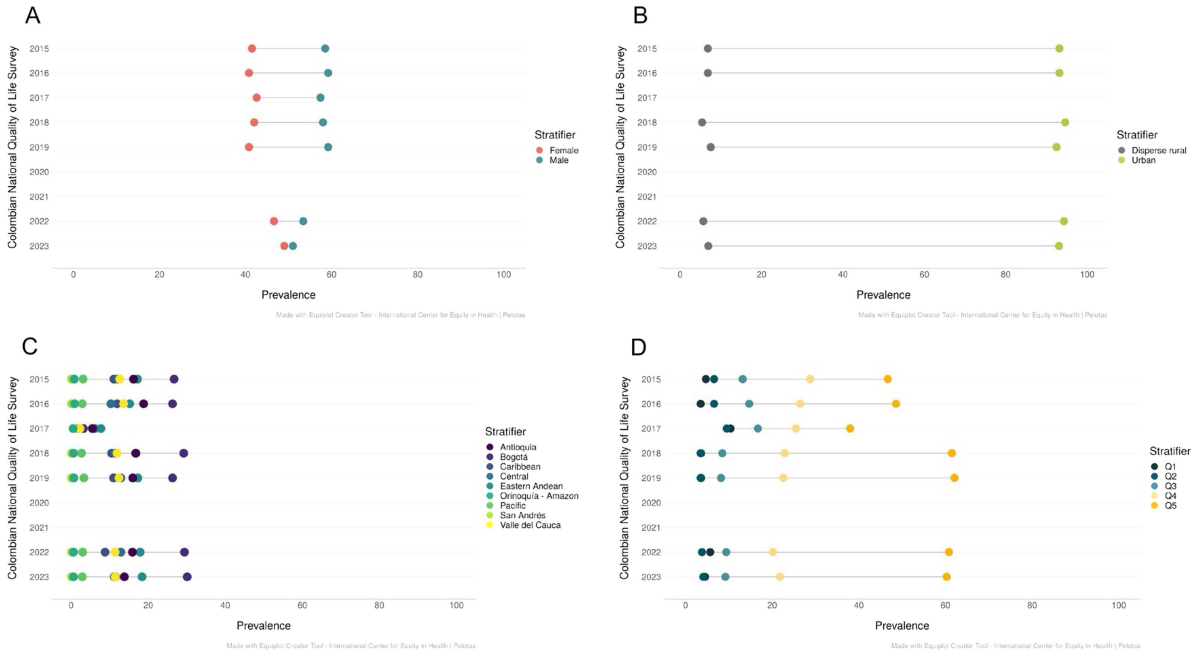


Figure 1. Ability to access health services of adults aged 60 and older stratified by (A) sex, (B) place of residence, (C) region, (D) household income quintiles – Q1 (poorest) to Q5 (wealthiest). Colombian National Quality of Life (QoL) Survey from 2015 to 2023. Note: Due to National Administrative Department of Statistics (DANE) administrative reasons, the 2017 QoL survey had a reduced sample size and excluded rural data. Therefore, the 2017 data includes only urban data and lacks some regional and departmental disaggregation (Departamento Administrativo Nacional de Estadística, 2017). Additionally, the 2020 and 2021 QoL surveys did not include the variable of preventive consultations or non-urgent medical consultations, preventing the calculation of the 'ability to engage' dimension within the overall composite score for access to health services, and thus we excluded those years from the analysis (Lopez Alfonso, 2024).

Table 3. Inequality in ability to access health services of adults aged 60 and older by sex, place of residence, and household income quintiles. Colombian National Quality of Life Surveys (QoL) from 2015 to 2023.

QoL Survey	Sex Absolute (male-female) (percentage points)	Place of residence Absolute (urban-dispersed rural) (percentage points)	Household income quintiles (Q)* Absolute (Q5–Q1) (percentage points)
2015	17.0	86.4	42.0
2016	18.4	86.4	45.1
2017**	14.8	–	27.6
2018	16.0	89.2	58.0
2019	18.4	85.0	58.5
2020***	–	–	–
2021***	–	–	–
2022	6.8	88.6	55.1
2023	2.0	86.2	55.8

Note: Owing to National Administrative Department of Statistics (DANE) administrative reasons, the 2017 QoL survey had a reduced sample size and excluded rural data. Therefore, the 2017 data includes only urban data and lacks some regional and departmental disaggregation (Departamento Administrativo Nacional de Estadística, 2017). Additionally, the 2020 and 2021 QoL surveys did not include the variable of preventive consultations or non-urgent medical consultations, preventing the calculation of the 'ability to engage' dimension within the overall composite score for access to health service, and thus we excluded those years from the analysis (Lopez Alfonso, 2024).

* Q1: poorest and Q5: wealthiest.

** No information available on dispersed rural areas.

*** QoL surveys of 2020 and 2021 excluded from the analysis.

Discussion

Our findings should be interpreted in light of the Colombian Policy on Human Aging and Old Age (2015–2024), which was developed to promote equitable access to services for older adults. This policy framework provides an important reference point to evaluate what has been achieved and to identify persisting gaps (Ministerio de Salud y Protección Social, 2015). The Colombian National QoL surveys over almost a decade revealed that the majority of older adults surveyed were males with only primary

Table 4. Mean difference inequality and Theil Index between regions. Colombian National Quality of Life Surveys (QoL) from 2015 to 2023.

	Inequality in ability to access health services	
QoL survey	Mean difference	Theil index
2015	15.6	78.6
2016	15.2	76.4
2017*	4.0	98.3
2018	18.1	97.6
2019	15.2	73.5
2020**	–	–
2021**	–	–
2022	18.3	100.0
2023	19.0	107.1

Note: For easier comprehension, the Theil Index components were all multiplied by 1000.

Inequality was assessed between unordered groups, in this case the 9 regions of analysis: (1) Caribbean, (2) Eastern Andean, (3) Central, (4) Pacific, (5) Bogotá Capital District, (6) Antioquia, (7) Valle del Cauca, (8) San Andrés, (9) Orinoquía – Amazon. Due to National Administrative Department of Statistics (DANE) administrative reasons, the 2017 QoL survey had a reduced sample size and excluded rural data. Therefore, the 2017 data includes only urban data and lacks some regional and departmental disaggregation (Departamento Administrativo Nacional de Estadística, 2017). Additionally, the 2020 and 2021 QoL surveys did not include the variable of preventive consultations or non-urgent medical consultations, preventing the calculation of the 'ability to engage' dimension within the overall composite score for access to health service, and thus we excluded those years from the analysis (Lopez Alfonso, 2024).

* No information available for San Andrés in 2017.

** QoL Surveys of 2020 and 2021 excluded from the analysis.

education. Health care providers have emphasized that limited educational levels and health literacy pose significant barriers to the effective management of multiple chronic conditions (McGilton et al., 2018). Moreover, limited education is correlated with lower health literacy, which has been shown to negatively impact the management of chronic diseases and overall health outcomes (Berkman et al., 2011). Interventions aimed at improving health literacy could significantly increase healthcare access and outcomes for older Colombians, particularly in rural and low-income communities, where educational attainment is often limited (World Bank, 2023). The development of targeted educational programs that address the specific needs and contexts of these populations may foster better health management and promote healthier aging.

Additionally, exploring inequalities in access to health services for older adults in Colombia is crucial. The data highlight disparities across various demographics, with some reduction in sex disparities in recent years. However, the ability to access health services remains lower for older adults living in dispersed rural areas. Previous studies have stressed the need for preventive care, particularly for women, the poorest population groups, and those living in rural areas, as they often face a scarcity of personal resources, lack family support, and inadequate transportation, affecting their overall health (Garcia-Ramirez et al., 2020; Garcia-Subirats et al., 2014; McGilton et al., 2018).

We identified a rich pattern (World Health Organization, 2013). Income-related disparities also present significant challenges for older adults. This finding is consistent with a recent study in Colombia, El Salvador, Paraguay, and Peru that revealed that 26% to 66% of the population does not seek formal health care when experiencing a health problem, with greater barriers affecting the lower income quintiles (Houghton et al., 2020). Another study demonstrated significant inequality gaps in access to health services between the highest- and lowest-income populations (Chavarro-Carvajal et al., 2019). Furthermore, wealthier individuals are more likely to have private health insurance, which facilitates better access to a range of health services (Barros et al., 2012).

Our study also emphasizes the importance of using various stratifiers for inequalities, such as sex, place of residence, region, and household income quintiles, which reflect social conditions (World Health Organization, 2013, 2015; Barros & Victora, 2013). However, further research should consider additional variables, including expenses and pensions, to better understand health outcomes for the older adults in Colombia (Rivillas et al., 2017). Identifying more policy-relevant equity stratifiers can help reveal gaps and guide government efforts to address these issues. The incorporation of social determinants of health into policy planning can provide a more comprehensive understanding of health inequities (Solar, 2010).

The analysis focused on the period from 2015 to 2023, corresponding to the Colombian Policy on Human Aging and Old Age 2015–2024 (Ministerio de Salud y Protección Social, 2015). This policy serves as a

framework aimed at addressing the situation of human aging and old age within the Colombian population. It includes various action lines to promote and guarantee the human rights of older adults; comprehensive social protection; active, satisfactory, and healthy aging; and the development of human talent and research. Furthermore, the policy acknowledges the need for relevant and effective strategies to ensure the availability, access, timeliness, quality, and continuity of health services (Ministerio de Salud y Protección Social, 2015). Building on the abovementioned framing, our results demonstrate that while this policy provides a strong foundation, its implementation has not sufficiently reduced regional and socioeconomic disparities. More robust implementation strategies are needed to address the disparities highlighted in our findings. It should be promoted and extended to cover this population and prioritize improved health service access. This aligns with the World Health Organization's Framework on Integrated People-Centred Health Services, which highlights strategies to ensure equal access to quality health services that meet people's needs throughout their lives (World Health Organization, 2018). Effective implementation of such policies requires ongoing evaluation and adaptation to address emerging challenges and inequities (Kluge et al., 2020).

Furthermore, continued evaluation and monitoring of policies are necessary to identify gaps in healthcare access among older adults. Longitudinal studies could provide insights into the effectiveness of current interventions and the evolving needs of this demographic (Newman, 2010). As the population ages, it will be crucial for researchers and policymakers to remain responsive to the changing dynamics of health access and outcomes in Colombia.

Studies from various regions have highlighted the impact of socioeconomic factors, such as income, education, and geographical location, on healthcare access among older adults, with rural populations and those with lower incomes experiencing greater barriers (Beard et al., 2016). These global trends emphasize the importance of analyzing local disparities in healthcare access, as the challenges faced by older adults in Colombia align with broader international concerns. Marked regional inequalities were observed, with Bogotá and the Eastern Andean regions showing comparatively better outcomes, while regions such as Orinoquía–Amazon and San Andrés consistently lagging behind. These differences highlight how geographic and infrastructural factors continue to shape access, underscoring the need for regionally tailored strategies within the national policy framework.

Overall, we observed a low prevalence of the ability to access health services among older adults, with significant disparities between population subgroups. Addressing these inequalities is essential to improve coverage, especially for the most vulnerable groups. Government programs aimed at improving health assistance in impoverished communities need to expand their reach to support a larger portion of the older adult population (Ministerio de Salud y Protección Social, 2015). Additionally, community-based interventions and targeted outreach can help bridge the gap in healthcare access for underserved populations (Martin et al., 2024; Wallerstein & Duran, 2010).

Limitations

Our study provides valuable insights into healthcare access disparities using openly available data. The score provides a clear and easily interpretable summary of the data. However, this approach assumes equal importance across all dimensions and may mask specific issues within individual dimensions. While missing data were proportionally small, they may have led to a slight underestimation of inequalities by underrepresenting certain subgroups and limiting comparability across years. To address these challenges, we relied on proxies; thus, our findings should be interpreted with caution. These considerations underscore the need for improved data collection strategies and the inclusion of more comprehensive variables in future surveys to better understand healthcare access disparities.

Conclusion

The data revealed shifting patterns of inequality in access to health services in Colombia over a nine-year period. These patterns underscore persistent disparities influenced by sex, place of residence, region, and income. Addressing these disparities is critical for ensuring more equitable access to health services across the older population. Future research should adopt longitudinal approaches to track evolving inequalities

and researchers can play an active role in supporting policymakers by generating evidence-based strategies and advocating for equity-focused interventions that prioritize vulnerable groups.

Ethics approval

Ethics approval was obtained from the Aging Institute Committee of Pontificia Universidad Javeriana, Bogotá, Colombia (2024; Approval No. FM-CIE–0649–24).

Consent for publication

Not applicable.

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Author contributions

AMG, JMG, EGGN and CMCB conceptualized and designed the study. AMG, JMG, EGGN, CMCB and LA participated in the collection, analysis, and interpretation of the data. AMG, JMG, EGGN and CMCB drafted the first version of the manuscript. DAChC, GINC, LA, and CAC provided feedback on the first version of the manuscript. All the authors revised and approved the final version of the manuscript.

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Data availability statement

The data that support the findings of this study are openly available in the National Data Archive (ANDA) from the National Administrative Department of Statistics (DANE) at https://www.dane.gov.co/index.php/estadisticas-por-tema/salud/calidad-de-vida-ecv.

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