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Individual- and state-level factors associated with functional limitation prevalence among Colombian elderly: a multilevel analysis

Factores individuales y departamentales asociados con la prevalencia de limitación funcional entre ancianos colombianos: un análisis multinivel

Fatores individuais e estaduais associados à prevalência de limitação funcional em idosos colombianos: uma análise multinível

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Abstract

This study aimed to identify the main regional factors associated with variations in the prevalence of functional limitation on the older adult in Colombia adjusted by individual characteristics. This multilevel study used cross-sectional data from 23,694 adults over 60 years of age in the SABE, Colombia nationwide survey. State-level factors (poverty, development, inequity, violence, health coverage, and access to improved water sources), as well as individual health related, socioeconomic and demographic characteristics, were analyzed. The overall prevalence of functional impairment for the basic activities of daily living (ADL) was 22%. The presence of comorbidities, low educational level, physical inactivity, no participation in social groups, mistreatment and being over 75 years old were associated with functional limitation. At the group level, the analysis showed significant differences in the functional limitation prevalence across states, particularly regarding the socioeconomic status measured according to the Human Development Index (median OR = 1.22; 95%CI: 1.13-1.30; p = 0.011). This study provides evidence on the impact of socioeconomic variation across states on FL prevalence in the Colombian elderly once adjusted for individual characteristics. The findings of this study, through a multilevel approach methodology, provide information to effectively address the conditions that affect the functionality in this population through the identification and prioritization of public health care in groups with economic and health vulnerability.

Activities of Daily Living; Aged; Socioeconomic Factors; Multilevel Analysis

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Introduction

Functional limitation, defined as decreased ability of an individual to independently perform activities of daily living (ADL) [1], is strongly associated with increased prevalence of falls, depression and decreased quality of life in the elderly population [2,3,4]. Functional decline also impacts on economic and social factors as it is related to augmented mortality rates and health care costs [5,6]. In developed countries, the functional limitation prevalence varies from 9.6 to 12.3% [2,5], while in developing countries it affects between 13 to 28% of the older adults [7,8], being the latter the most affected, due to the demographic transition [9,10], with growth rates of older adults almost three times higher than in developed regions [11].

Demographic reports indicate that the functional limitation prevalence is larger with aging [12,13,14] and sex (females) [8,15,16], and associated with poor self-perceived health [17], non-white population [13], physical inactivity [14,18], obesity [19] and presence of co-morbidities such as type 2 diabetes, stroke, depression, heart disease, hypertension and cognitive impairment [18]. Moreover, individual socioeconomic status characteristics such as income [20], educational level [8,14,15], health care access [13] and occupation [8,15] have impact on elderly functionality.

Besides these factors, the health status of older adults is also influenced by environmental characteristics that may act on individual and population health through different pathways such as economic opportunities and healthcare services [21]. Contextual factors such as area-level wealth have been related to differences between regions in limitations for ADL. Populations living in economically developed provinces and in wealthier villages are less likely to report difficulties with ADLs [22,23]. In this regard, the resource availability of a region to fulfil its population needs is reported to be associated with their mental and physical health [21,24]. Previous studies indicate that regional socioeconomic deprivation and inequality have a negative impact on the facilities for physical activity and on the availability and accessibility to healthy food [25,26]; therefore, these factors are related to increased prevalence of chronic conditions such as diabetes and hypertension in older adults [21,27]; conditions whose association with poor performance in ADL has been previously reported [14,18]. Prior research also indicates that elderly individuals living in wealthier villages experience fewer depressive symptoms [24]. Furthermore, depression is associated with decreases in energy production to perform activities and consequently with alterations in functional capacity [14]. However, in particular contexts, as China, it has been found higher per capita gross domestic product (GDP) at the community level is associated with a higher rate of ADL disability of older people [28].

In addition, the region's income inequality has also been related to ADL prevalence discrepancies between areas. Previous reports indicate that the odds of having ADL limitations for an individual in a state with the highest inequality is approximately 32% higher than those in the states with the lowest income inequality [29]. Neighborhood safety has also been related to ADL in elderly population. Longitudinal studies claim that older adults who reported to be functionally independent at baseline and considered their neighborhood to be unsafe were 21% more likely to experience functional decline after 10-year follow-up compared with those who perceived their neighborhood to be very safe [30].

On the other hand, inequalities in the availability of health care services at the regional level have been associated with health disparities between provinces in China [31]. Moreover, previous research indicates that older adults living in states with higher percentages of uninsured population and lower-than-average annual per capita health expenditure had lower odds of receiving quality preventative care [32]. Furthermore, adequate access to health services is suggested to delay functional decline among aged population [13]. Other contextual factors such as having a sewage system and a continuous supply of electricity were associated with reduced physical limitations [22].

Area-level resources have reported to be more influent in the maintenance of health for the elderly population than for their younger counterparts [33]. Nonetheless, comprehensive research for factors related to elderly ADL disability is still sparse in the Colombian population. Therefore, this study aimed to identify the regional factors related to the functional limitation prevalence across states in Colombian elderly after individual characteristics' adjustment.

Methods

SABE study

This study is based on the sociodemographic and health related data obtained from the cross-sectional SABE (from initials, in Spanish, *Salud, Bienestar y Envejecimiento* – Health, Well-being and Aging) Colombian study. A total of 23,694 household surveys were undertaken in community-dwelling adults aged 60 and above living in urban and rural areas of 246 municipalities out of 1,122 and 32 states of the country in 2015 [34]. SABE Colombia study replicated SABE international survey methods and procedures [7]. The *Folstein Mini-Mental State Examination* was used to assess the ability of the subjects to complete the study procedures, for those whose scores were less than 13, a proxy interview was developed. Sampling strategy implied a multistage, probabilistic and stratified selection scheme with national representativeness. Municipalities were selected as primary sampling units, blocks within them as the secondary ones, and housing and household units as the third and fourth stages, respectively. For the four large cities of the country (Bogota, Cali, Medellín and Barranquilla), a fixed sample size of 3,500 adults was taken, and the same selection scheme was maintained [34]. The University of Caldas and University of Valle Committees on the Ethics of Human Research approved the protocol.

Individual-level variables

Functional status was measured using the Barthel Index scale, which covers the self-report independence in performing ten basic ADLs including, bathing, dressing, grooming, toileting, feeding, continence, transferring, mobility and use of stairs [35]. Functional limitation was defined herein by the report of difficulty in performing at least one of these activities [8]. Independent individual variables such as sex, age, educational level, self-reported comorbidities, lifestyle characteristics, mistreatment, income, participation in social groups, presence of barriers to health services and internal displacement due to armed conflict were included in the analyses.

Regional-level variables

Regional socioeconomic status were analyzed using the following state-level variables: the Unsatisfied Basic Needs index (UBN) in 2011 [36], the Gini coefficient in 2014 [37], the Human Development Index (HDI) in 2010 [38], the participation percentage in the national GDP of 2014 [39] and percentage of the population without access to improved water sources in 2005 [40]. States healthcare services were assessed by the percentage of health coverage in 2014 (Ministerio de Salud y Protección Social de Colombia. Estadísticas – afiliados cargados BDUA marzo 2014. https://www.minsalud.gov.co/estadisticas/Estadsticas/Forms/DispForm.aspx?ID=1046, accessed on 20/Apr/2017); and violence was analyzed using the homicide rate per 100,000 inhabitants in 2014 [41].

Statistical analysis

Study sample characteristics were assessed by using absolute and relative frequencies with 95% confidence intervals (95%CI) for qualitative variables, as well as measures of central tendency and dispersion were calculated for quantitative variables. Differences in baseline characteristics were compared using independent χ^2 test; variables with p-values below 20% were included in the adjusted models. A preliminary evaluation of the effect of individual-level variables was performed by 1-level stepwise logistic model, significant variables ($p < 0.05$) were included in the multilevel model. A first empty model (intercept only) was used to assess geographic variation, and the suitability of the 2-level approach was evaluated with the intraclass correlation coefficient. The associations and variance between individual variables and functional limitations were evaluated using odds ratios (ORs) and 95%CI in the fixed-effects part of the models. For the selection of the variables at state level, Wald tests were developed to evaluate their significance regarding the functional limitation prevalence. For the adjustment of regional-level variables, a two-level logit model [42] was used taking as random effects the state variables. To evaluate the variability in prevalence between regions, a median OR (MOR)

was used to generate a reference value for comparison between two potential subjects in regions with opposite values of the regional aggregation variable under study. The MOR translates the area-level variance, due to area-level variables, to the odds ratio scale; therefore, MOR is a measure that allows comparison with the individual OR. In this research, this value shows the extent to which the individual probability of functional limitation is determined by the state-level variables [43]. All analyses were carried out using Stata version 14 software (StataCorp LP, Colege Station, USA).

Results

The overall functional impairment prevalence for ADL was 22% (95%CI: 21.73-22.27), ranging from 11.9% (95%CI: 11.75-12.05) in the west of Colombia (Chocó) to 28.9% (95%CI: 28.54-29.26) in the north (Atlantic). The mean (standard deviation – SD) age of the study sample was 70.82 (8.2) years; 70% (95%CI: 69.12-70.88) of the subjects were between 60 and 74 years old and 57.3% (95%CI: 56.50-58.10) were women. The main comorbidities in Colombian older adults were hypertension (53.7%; 95%CI: 53.02-54.38) and depression (46.2%; 95%CI: 45.55-46.85); 16.8% (95%CI: 16.57-17.03) reported suffering from some type of mistreatment by the members of their household during the three months before the application of the survey and 28.5% (95%CI: 28.14-28.86) reported having at least one access barrier to healthcare services, such as delay of appointment allocation and refusal to provide medications or medical procedures. About individual SES characteristics, most of the older adults (68.7%; 95%CI: 67.75-69.65) have an income of less than 7.83 dollars per day and 93.4% (95%CI: 92.21-94.59) have secondary education or lower (Table 1).

All crude comparisons among individual characteristics showed significant differences between subjects with and without functional limitation, except for smoking and urban/rural residence (Table 1). The prevalence of chronic diseases, overweight, mistreatment and physical inactivity were significantly higher among subjects withfunctional limitation, as well as the proportion of people with low education level (Table 1). The HDI (MOR = 1.186; 95%CI: 1.124-1.249; $p = 0.009$) and the percentage of participation in the national GDP (MOR = 1.017; 95%CI: 1.016-1.017; $p < 0.001$) were the only state-level variables that achieved statistical convergence and had a significant effect in the crude analysis without individual-level variable adjustments.

The adjusted analysis (Model II, Table 2) showed that secondary education level or lower, poor self-perceived health, no participation in social groups, age 75 or older, low subjective quality of vision, experience of falls during the last year, physical inactivity, mistreatment, and comorbidities such as depression, cognitive impairment, hypertension, diabetes and respiratory, cerebrovascular and mental diseases were factors associated with functional limitation.

The estimation of regional variance, by a null model analysis, showed inter-state variability regarding functional limitation prevalence was statistically significant ($p < 0.001$; intraclass correlation coefficient = 2.9%). In the multilevel models adjusted for individual-level variables, except for percentage of population without access to improved water sources, in which the convergence of the statistical model was not achieved, all state-level variables had significant effects regarding functional limitations prevalence (Table 3).

Nonetheless, the models with multiple state-level variables did not achieve statistical convergence, hence correlations between state-level variables were assessed. Strong correlations were identified between HDI and UBN, GDP, and percentage of the population without access to improved water sources. Medium strength correlations were identified between Gini and water access, percentage of population with health coverage and UBN, and GDP with homicide rate (Table 4). Due to these correlations and considering that the HDI is a measure that represents several dimensions of a region socioeconomic status, HDI was the state-level variable used to explain the plausible association between environmental socioeconomic characteristics and individual functional limitations (Model III, Table 2). The inclusion of regional variables had minimal effects on the ORs estimated for individual-level variables (Table 2).

Table 1

Functional limitation and individual characteristics.

Variable	Total (N = 23,694)		With functional limitation (n = 5,229)		Without functional limitation (n = 18,465)		p-value
	n	%	n	%	n	%	
Sex (1 = Female; 0 = Male)	13,582	57.3	3,547	67.8	10,035	54.3	**< 0.001**
Civil status (1 = Single, Widowed, Divorced; 0 = Other)	11,127	47.0	3,079	58.9	8,048	43.6	**< 0.001**
Health insurance regime (1 = Not contributive; 0 = Contributive)	14,672	62.0	3,393	65.0	11,279	61.1	**< 0.001**
Private supplemental health insurance (1 = No; 0 = Yes)	7,603	15.5	1,494	81.8	6,109	85.2	**< 0.001**
Culture (1 = Minority groups; 0 = Not minority groups)	4,759	26.7	662	24.0	4,097	27.2	**0.001**
Race (1 = Non-white; 0 = White)	12,925	71.3	1,950	68.9	10,975	71.7	**0.003**
Income (1 = Less than USD 7.83 per day)	13,468	68.7	3,154	76.9	10,314	66.5	**< 0.001**
Income (2 = USD 7.83 per day; 0 = More than USD 7.83 per day)	3,168	16.2	544	13.3	2,624	16.9	
Education level (1 = Secondary or lower; 0 = Upper than secondary)	22,139	93.4	5,046	97.2	17,093	92.8	**< 0.001**
Physical inactivity (1 = Yes; 0 = No)	11,306	47.8	4,158	79.6	7,148	38.8	**< 0.001**
Victim of armed displacement (1 = Yes; 0 = No)	4,413	18.6	901	17.2	3,512	19.0	**0.003**
Regular perceived childhood economic situation (1 = Yes; 0 = Good perceived childhood economic situation)	8,000	42.3	1,244	41.7	6,756	42.4	**0.001**
Poor perceived childhood economic situation (2 = Yes; 0 = Good perceived childhood economic situation)	3,143	16.6	564	18.9	2,579	16.2	
Regular self-perceived health status (1 = Yes; 0 = Good self-perceived health status)	8,265	34.9	1,582	52.8	6,683	41.8	**< 0.001**
Poor self-perceived health status (2 = Yes; 0 = Good self-perceived health status)	1,615	6.8	549	18.3	1,066	6.7	
Diabetes (1 = Having; 0 = Not having)	3,893	16.5	1,141	21.9	2,752	15.0	**< 0.001**
Hypertension (1 = Having; 0 = Not having)	12,690	53.7	3,462	66.4	9,228	50.1	**< 0.001**
Cancer (1 = Having; 0 = Not having)	1,038	4.4	328	6.3	710	3.9	**< 0.001**
Respiratory disease (1 = Having; 0 = Not having)	2,423	10.2	894	17.2	1,529	8.3	**< 0.001**
Heart disease (1 = Having; 0 = Not having)	3,234	13.7	1,055	20.2	2,179	11.8	**< 0.001**
Cerebrovascular disease (1 = Having; 0 = Not having)	1,080	4.6	519	10.0	561	3.0	**< 0.001**
Joint disease (1 = Having; 0 = Not having)	6,158	26.0	2,015	38.7	4,143	22.5	**< 0.001**
Mental illness (1 = Having; 0 = Not having)	2,013	8.5	754	14.5	1,259	6.8	**< 0.001**
Cognitive impairment (1 = MMSE ≤ 12; 0 = MMSE > 12)	6,243	26.3	2,590	49.5	3,653	19.8	**< 0.001**
Depression symptoms (1 = GDS-VE ≥ 6; 0 = GDS-VE < 6)	10,953	46.2	3,371	78.1	7,582	50.9	**< 0.001**
Extremity amputation (1 = Having; 0 = Not having)	420	1.8	149	2.8	271	1.5	**< 0.001**
Joint pain (1 = Having; 0 = Not having)	13,048	55.1	2,791	53.4	10,257	55.6	**0.005**
Smoking (1 = Current or former smoker; 0 = Nonsmoker)	12,286	51.9	2,660	50.9	9,626	52.1	0.119
Poor quality of vision (1 = Yes; 0 = Good or regular quality of vision)	3,742	15.8	916	17.5	2,826	15.3	**< 0.001**
Hearing problems (1 = Having; 0 = Not having)	5,537	23.4	1,834	35.2	3,703	20.1	**< 0.001**
Falls (1 = Yes in the last year; 0 = Not in the last year)	7,310	30.9	2,287	43.7	5,023	27.2	**< 0.001**
Social groups participation (1 = No; 0 = Yes)	13,266	56.0	3,001	57.4	10,265	55.6	**0.021**
Access barriers to healthcare (1 = Ever experienced; 0 = Never experienced)	6,734	28.5	1,898	36.3	4,836	26.2	**< 0.001**
Mistreatment (1 = Yes in the last 3 months; 0 = Not in the last 3 months)	3,181	16.8	711	23.9	2,470	15.5	**< 0.001**
Group age 75-89 years old (0 = Group age < 75 years old)	6,699	28.3	2,565	49.1	4,134	22.4	**< 0.001**
Group age ≥ 90 years old (0 = Group age < 75 years old)	567	2.4	440	8.4	127	0.7	
Rural residence (1 = Yes; 0 = No)	6,505	27.5	1,402	26.8	5,103	27.6	0.239
Low BMI [< 22kg/m^2] (0 = 22kg/m^2 ≤ BMI ≤ 27 kg/m^2)	3,133	13.2	626	19.1	2,507	17.3	**< 0.001**
High BMI [> 27 kg/m^2] (0 = 22kg/m^2 ≤ BMI ≤ 27kg/m^2)	7,557	42.6	1,485	45.4	6,072	41.9	
Poor self-perceived childhood health status (1 = Yes; 0 = Good or regular self-perceived childhood health status)	1,968	10.4	394	9.1	1,574	10.7	**0.002**

BMI: body mass index; MMSE: *Mini-Mental State Examination*; GDS-VE: *Geriatric Depression Scale Spanish Version.*

Note: boldface indicates statistical significance (p < 0.05).

Table 2

Significant effects at the individual- and state-level variables.

	Model I *	Model II **		Model III ***	
General mean (SE)	-1.268 (0.0292)	-5.203 (0.175)		-5.076 (0.172)	
		OR	95%CI	OR	95%CI
Individual-level					
Education level		1.34	1.06-1.70	1.33	1.05-1.69
Regular self-perceived health status		1.52	1.35-1.70	1.52	1.36-1.71
Poor self-perceived health status		2.59	2.20-3.06	2.56	2.16-3.03
Social groups participation		1.20	1.08-1.32	1.19	1.07-1.31
Cognitive impairment		1.34	1.14-1.58	1.34	1.13-1.58
Group age 75 to 89 years old		2.33	2.10-2.60	2.35	2.10-2.61
Group age ≥ 90 years old		7.82	5.08-12.06	7.93	5.14-12.25
Depression		3.48	3.11-3.89	3.46	3.09-3.88
Mistreatment		1.36	1.20-1.54	1.37	1.21-1.54
Falls		1.48	1.34-1.65	1.47	1.33-1.64
Hypertension		1.35	1.21-1.50	1.34	1.20-1.49
Diabetes		1.30	1.15-1.47	1.27	1.18-1.44
Respiratory disease		1.44	1.24-1.67	1.45	1.25-1.68
Cerebrovascular disease		2.23	1.80-2.76	2.26	1.82-2.81
Joint disease		1.88	1.69-2.09	1.88	1.70-2.09
Mental illness		1.46	1.24-1.72	1.45	1.23-1.71
Poor quality of vision		1.36	1.21-1.53	1.37	1.22-1.54
Physical inactivity		3.37	3.03-3.75	3.31	2.98-3.69
State-level					
Variance (SE)	0.099 (0.031)	0.112	(0.037)	0.066 (0.029)	
ICC (%)	2.90	3.30		1.96	
				MOR	95%CI
Random effects					
HDI				1.22	1.13-1.30

95%CI: 95% confidence interval; HDI: Human Development Index; ICC: intraclass coeficient; MOR: median odds ratio; SE: standard error.

* Model I: null model;

** Model II: individual-level variables only;

*** Model III: include both individual-level and state-level variables.

Discussion

This study verified that the functional limitations prevalence for ADLs in Colombian elderly varies regarding individual characteristics and factors that affect the subjects collectively, in particular the regional socioeconomic level; this situation reflects lags on the access, use or quality of primary prevention and health care services [44,45,46]. Similar findings have previously been reported for other chronic diseases, including mental illness [47], type 2 diabetes [21], hypertension [27] and coronary disease [45].

As reported previously, low human development has been associated with lesser functional levels, in particular poor self-care prevalence has reported to be higher in low income countries [48], and individuals living in highly developed regions reported better physical health than those living in developing regions [49]. Deprived regions are linked to high area-level crime rates, which has been correlated to physical inactivity and social isolation and, thus, functional decline [30]. Disadvantaged area-level socioeconomic status has also been related to reduced cohesiveness [50]. Previous research indicates that social cohesion promotes social participation and enables elderly population to actively

Table 3

State-level effects in functional limitations prevalence.

State-level variable	MOR	95%CI	p-value
Gini	1.004	1.003956-1.004024	< 0.001
UBN	1.005	1.004583-1,004674	< 0.001
HDI	1.218	1.134209-1.300876	0.011
Health coverage	1.000	1.000000-1.000000	< 0.001
Homicide rate	1.007	1.006972-1.007186	< 0.001
GDP	1.000	1.000000-1.000000	< 0.001

95%CI: 95% confidence interval; GDP: Gross Domestic Product; HDI: Human Development Index; MOR: median odds ratio; UBN: Unsatisfied Basic Needs index.

Table 4

Correlations between state-level variables.

	Gini	UBN	HDI	Health coverage	Homicide rate	GDP	Not water access
Gini	1.00	0.27	-0.24	-0.11	-0.03	0.08	0.31
UBN		1.00	-0.86	0.31	-0.28	-0.62	0.87
HDI			1.00	-0.14	0.13	0.75	-0.75
Health coverage				1.00	-0.20	-0.10	-0.03
Homicide rate					1.00	0.04	-0.18
GDP						1.00	-0.55
Not water accessd *							1.00

GDP: Gross Domestic Product; HDI: Human Development Index; UBN: Unsatisfied Basic Needs index.

* Percentage of the population without access to improved water sources.

participate in their community in actions that promote health, thereby it is related to fewer ADL disabilities [51]. The human development index is also an indicator of the population literacy. Former literature report higher prevalence of self-care limitations in the lowest education level population compared with the highest [48]. For this work, HDI was considered as a proximal or indicator variable of the effect derived from any or several development or deprivation aspects in communities regarding functional limitations.

Low human development, as an indicator of low regional socioeconomic status [46], has also previously been related to increased prevalence of health conditions that affect functional independence [27]. It is reported that disadvantaged regions show higher food insecurity prevalence [21,25] and lower access to sport areas [26], factors associated with chronic conditions like diabetes [21], whose consequent complications such as neuropathies, loss of limbs, cognitive impairment and microvascular dysfunction may affect motion capacity [52]. Also, psychosocial stress and depression, caused by higher rates of violence and low levels of social support, may be factors linked with the mechanism that links individual functional capacity to perform tasks with regional economic deprivation [21,50,53].

As in previous research, this study verified the association between functional limitations and individual variables such as age [12,13,14], educational level [12,14], participation in social groups [12,18,54], physical activity [14,18,55], and the presence of comorbidities [12,13,14,18]. However, the effect of overweight was discarded. In this regard, previous findings state the deficiency of body mass index (BMI) as an indicator of the probability of developing chronic diseases given its limitations to characterize body composition [56,57]. On the other hand, the relationship between low body weight and decreased muscle strength with individuals' mobility affectations has been consistently reported [12,14].

The self-reported perception of access barriers to healthcare did not have a significant association with function limitations in this study. Previous research has reported that elderly subjects without private supplemental health insurance (medication and diagnostic test coverage) are more likely to suffer chronic diseases related to function limitations than their counterpart with such coverage; however, among individuals with functional impairment, private supplemental insurance is not correlated to improving or weakening functional status [13].

Mistreatment was also associated with functional limitations in the current study. Previous research indicates that the presence of multiple types of abuse in the elderly population is associated with the manifestation of depressive symptoms and cognitive deficit [58,59], health conditions whose negative impact on the physical and intellectual capacity of subjects to preserve independence has been widely reported [12,14,17,18].

Our findings, however, have some limitations. Due to the cross-sectional nature of the data, derived inferences must be analyzed in the scenario of temporal transversality, in which it is impossible to define the temporality of causal inferences, and which could be bidirectional. Another limitation resides in the use of self-reports [60], implying the use of perceptions, a situation that can distort the evaluation of the effect of the exposures of interest in a non-differential way; and in the lack of simultaneity of secondary sources, which does not guarantee the contemporaneity of the described effects [61]. Moreover, further studies may include area-level factors such as social cohesion and social capital, which have been previously reported to play a role in the functional disability onset [51].

Nonetheless, this study provides evidence on the impact of regional socioeconomic variation on the functiona limitations prevalence for ADL in Colombian elderly. As the context is similar to other scenarios in the region, this study may constitute a benchmark to strengthen the understanding of the phenomena inherent to the aging process in the Latin American population. Also, this study provides information for the identification and priorization of public health care in groups with economic and health vulnerability [21,46,62]. Consistent with other studies, the evidence provided here reiterates the importance of caring for the elderly and the control of chronic diseases, particularly in a growing demographic transition framework [10]. Therefore, the use of regional and individual information allows to effectively address the information research for the control and prevention of conditions that affect the functional status of older people [63].

Contributors

S. M. Ballesteros and J. Moreno-Montoya participated in the study conception and design, analysis and interpretation of data, drafting the paper and revising it critically for important intellectual content and final approval of the version to be published.

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Resumen

Este estudio tuvo por objetivo identificar los principales factores regionales, asociados con variaciones en la prevalencia de la limitación funcional en adultos mayores en Colombia, ajustados por características individuales. Este estudio multinivel usó datos transversales de 23.694 adultos, con más de 60 años de edad, en el SABE, encuesta nacional colombiana. Los factores nacionales (pobreza, desarrollo, inequidad, violencia, cobertura sanitaria, y acceso a fuentes mejoradas de agua), así como en relación con su salud individual, al igual que se analizaron las características socioeconómicas y demográficas. La prevalencia general de discapacidad funcional para las actividades básicas de la vida diaria (ABVD) fue de un 22%. La presencia de comorbilidades, bajo nivel educacional, inactividad física, la no participación en grupos sociales, maltrato y tener más de 75 años de edad estuvo asociado con la limitación funcional. En el nivel del grupo, el análisis mostró significativas diferencias respecto a la prevalencia de limitación funcional, a través de los diferentes estados, particularmente en lo referente al estatus socioeconómico, medido según el Índice de Desarrollo Humano (OR mediano = 1,22; IC95%: 1,13-1,30; p = 0,011). Este estudio proporciona evidencia sobre el impacto de la variación socioeconómica a través de los estados sobre la prevalencia de limitación funcional en los ancianos colombianos, una vez ajustadas las características individuales. Los resultados de este estudio, mediante una metodología de aproximación multinivel, proporcionan información con el fin de orientar efectivamente sobre las condiciones que afectan la funcionalidad de este tipo de población, mediante la identificación y priorización de los cuidados en la salud pública con grupos vulnerables económicamente y desde la perspectiva de la salud.

Actividades Cotidianas; Anciano; Factores Socioeconómicos; Análisis Multinivel

Resumo

O estudo teve como objetivo identificar os principais fatores regionais associados a variações na prevalência de limitação funcional na população idosa colombiana, ajustada por fatores individuais. O estudo multinível usou dados transversais de 23.694 adultos com mais de 60 anos de idade do estudo SABE colombiano. Foram analisados fatores de nível estadual (índices de pobreza, desenvolvimento, inequidade, violência, cobertura de saúde e acesso a água potável) e fatores individuais (sociodemográficos e de saúde). A prevalência global de comprometimento funcional nas atividades de vida diária (AVD) foi de 22%. A presença de comorbidades, escolaridade baixa, sedentarismo, falta de participação em grupos sociais, maus tratos e idade acima de 75 anos estiveram associados à limitação funcional. Em nível de grupo, a análise mostrou diferenças significativas na prevalência de limitação funcional entre os estados, particularmente quanto à condição socioeconômica, medida pelo Índice de Desenvolvimento Humano (OR médio = 1,22; IC95%: 1,13-1,30; p = 0,011). O estudo oferece evidências do impacto da variação socioeconômica entre estados na prevalência de limitação funcional nos idosos colombianos depois de ajustar por fatores individuais. Através de uma metodologia multinível, os achados fornecem informações para tratar efetivamente as condições que afetam a funcionalidade dessa população idosa através da identificação e priorização dos cuidados de saúde em grupos com vulnerabilidade econômica e sanitária.

Atividades Cotidianas; Idoso; Fatores Socioeconômicos; Análise Multinível

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