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ARTICLE

Prevalence, associated factors, and limitations related to chronic back problems in adults and elderly in Brazil

Prevalência, fatores associados e limitações relacionados ao problema crônico de coluna entre adultos e idosos no Brasil

Prevalencia, factores asociados y limitaciones relacionadas con el problema crónico de columna entre adultos y ancianos en Brasil

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Abstract

The objective was to analyze the epidemiological characteristics of chronic back problems in Brazil and study the association between their prevalence and demographic and socioeconomic factors, lifestyle, and health conditions. The study used micro-data from the Brazilian National Health Survey *(PNS), 2013. The epidemiological indicators were: prevalence, time with chronic back problems, life cycle (from young adults to the elderly), limitations in activities of daily living, and mean age at onset of symptoms, according to sex and age bracket. In order to analyze inequality in chronic back problems according to socioeconomic characteristics and risk factors, a multivariate logistic regression model was used, based on life cycle stages, with the presence of chronic back problems as the dependent variable and the following independent variables: sex, schooling, area of residence, race/color, self-rated health, types of chronic diseases, body mass index (BMI), and physical activity. Prevalence of chronic back problems in Brazil was 18.5%, and was higher in women than in men (21.1%; 95%CI: 20.2-21.9). Mean age at onset of chronic back problems was 35 years. There was an association between chronic back problems and lower schooling, poor self-rated health, and presence of the majority of the selected chronic diseases. Area of residence, BMI, age, and race/color were weakly associated or not associated with chronic back problems. Prevalence of chronic back problems stabilized at 50 years of age, but the severity of limitations increased at older ages. As in other countries, high prevalence and the impact on living conditions revealed the need for epidemiological studies on chronic back problems in Brazil. The results suggest that health promotion and the prevention of chronic back problems should be intensified, especially before 50 years of age, considering the on-going population aging in Brazil.*

Spine; Spinal Diseases; Chronic Disease; Aged

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Introduction

Chronic back problems may not be potentially fatal, but they are an important public health [1,2,3], economic, and social problem [4,5]. Chronic back problems are highly prevalent [6], one of the main reasons for medical visits, and account for serious losses in quality of life due to heavy suffering and societal and personal costs. As shown by the *Global Burden of Disease* study in 2010, held in 47 countries, chronic back problems are the leading cause of years of life lost to disability [7].

Global prevalence of chronic back problems in the adult population in 2000 ranged from 12% to 33% [8]. Variations in prevalence in systematic reviews [2,4,9,10,11] are due largely to difficulties in the precise anatomical-pathological diagnosis of the condition, variability in anatomical site (lumbar, back, or other), relevance of symptoms (such as pain) for definition of chronicity, and differences in the reference period for back problems in survey questions (days, months, or the previous year). Chronicity of back problems is generally defined as continuous pain for at least three months, regardless of possible limitations caused by the problem [8].

In Brazil, chronic back problems are also one of the most frequent chronic conditions in the population, with prevalence in adults 18 years or older of 18.5% (95%CI: 17.8-19.1), according to data from the *Brazilian National Health Survey* (PNS) in 2013 [12]. Chronic back problems in the PNS are self-reported (not requiring a medical diagnosis), specifying the location (neck, lumbar area, vertebrae/discs) and including pain in the definition of chronicity.

Knowledge of the patient's life cycle in relation to the condition, age bracket, and the problem's impact on quality of life provides fundamental input for health promotion and the prevention of back problems in the population [9]. However, there is little evidence of an association between prevalence of chronic back problems and age in Brazil, as underscored by Dionne et al. [2] based on a systematic review of 51 articles, none of which were from Latin America. A systematic review from this perspective showed that although prevalence increases with age, the relationship is non-linear and stabilizes around 60 years [13]. The relevance of chronic back problems in old age is due not to the increasing prevalence, but to the severity of limitations caused by them [2]. Since the proportion of elderly individuals will increase considerably in the coming years in most countries, chronic back problems should be a priority in clinical and epidemiological research.

Due to the impacts on public health, Dionne et al. [2] recommend that all countries ask about the severity of chronic back problems, pain, and limitations resulting from them. Brazil still lacks studies from this perspective, due mainly to the lack of population data on the limitations and restrictions caused by chronic back problems. According to a systematic review, studies on back problems generally lack a significant sample size and precise data collection instruments [14]. The PNS in 2013 was the first nationally representative large-scale study to address this question.

The unequal prevalence of chronic back problems according to lifestyle, general health status, and socioeconomic and demographic characteristics has been identified by various studies, especially in developed countries like England, Canada, Sweden, United States, and Denmark [1,15], but there is no consensus on the relevance and direction of each of the risk factors [13]. Low schooling has been identified as one of the most robust predictors of high prevalence of chronic back problems [3]. Other individual factors identified in studies are sex, age, occupation, and obesity [6,16,17,18]. Depression [19] and low self-rated health [20] have also been related to chronic back problems.

The aim of this study is to analyze epidemiological aspects of chronic back problems in Brazil, such as prevalence and the association with demographic and socioeconomic factors, lifestyle, and health conditions, in addition to time lived with chronic back problems, the impact of limitations in daily living, and mean age at onset of symptoms according to sex, age bracket, and life cycle phase.

Methodology

Information source

The study uses micro-data from the PNS of 2013, conducted by the Brazilian Institute of Geography and Statistics (IBGE). The PNS is a household survey with a complex sampling design, representative

of the population of Brazil and its major geographic regions, states, metropolitan areas, and state capitals [21]. The survey's main objective is to characterize the population's health status and lifestyle, in addition to collecting information on healthcare, access, and health services. The questionnaire consists of three parts, with the first two covering questions on household characteristics and the residents' socioeconomic and health status; the third part is individual and is addressed to a previously selected household resident 18 years or older, with questions on health/disease and lifestyle [22].

Brazil's 2013 PNS covered a total sample of 60,202 individuals 18 years and older. The sampling plan was three-stage cluster (census tracts, households, and individuals). In the first stage, selection of the primary analytical unit used simple random sampling, selected previously in the master sample. In the second stage, simple random sampling was used to select a fixed number of permanent private households in each primary analytical unit selected in the first stage. In the third stage, in each household in the sample, a resident 18 years or older was selected (also by simple random sampling) to answer the third (individual) part of the questionnaire. This selection was based on a list of eligible residents prepared at the time of the interview [21].

Variables

Prevalence of chronic back problems was measured with the question: "Do you have some chronic back problem, like chronic pain in your back or neck, lumbago, sciatica, or problems in the vertebrae or discs?" The answer was dichotomous (yes or no).

Severity of chronic back problems was examined by prevalence according to the degree of limitation in activities of daily living, measured with the question: "In general, to what degree does your back problem limit your daily activities (working, housework, etc.)?" the categories were: (1) does not limit; (2) a little; (3) moderately; (4) intensely; and (5) very intensely. In the current study, the outcome was reclassified in four categories according to degree of limitation: absent, mild, moderate, and intense, with the latter combining "intensely" and "very intensely".

Mean age at onset of chronic back problems was calculated with the question: "How old were you when your back problem began?" The age variable was used both in five-year brackets (for studying the limitations caused by chronic back problems) and in three categories (18-49, 50-59, and ≥ 60 years) for analysis of the patient's life cycle in relation to chronic back problems (to calculate the prevalence and prevalence ratio).

The association between chronic back problems and demographic, socioeconomic, behavioral, and health characteristics was analyzed according to the following variables: sex (male; female), age bracket (18-49, 50-59, and ≥ 60 years), area of residence (urban versus rural), race/color (white, brown, black, indigenous, Asian-descendant), schooling (university or greater, complete secondary, complete primary, incomplete primary, none), self-rated health (very good, good, fair, bad, or very bad), the most prevalent chronic diseases in the population (arterial hypertension or high blood pressure, depression, arthritis or rheumatism, asthma or asthmatic bronchitis, and heart diseases including infarction, angina, congestive heart failure, or other), body mass index – BMI (underweight: < 18.5kg/m^2; normal weight: 18.5-24.9kg/m^2; overweight: 25.0-29.9kg/m^2; and obesity: > 30kg/m^2).

Statistical analysis

The study of severity and characteristics of chronic back problems in Brazil was based on analysis of prevalence according to sex and age.

Strength of association between chronic back problems and risk factors was analyzed using prevalence ratios (PR) and 95% confidence intervals (95%CI), calculated by Poisson regression, where the dependent variable was presence of chronic back problems and the independent variables were: sex, schooling, area of residence, race/color, self-rated health, type of chronic disease, body mass index (BMI), and physical activity. Crude (bivariate) and adjusted prevalence ratios were calculated according to all the independent variables. The models were also stratified by age bracket to identify differences in the strength of association between risk factors and chronic back problems in different age groups.

Due to the complex, multi-stage sampling design, all the analyses were done with the Stata 14.0 *survey* library (StataCorp LP, College Station, USA).

Results

The results represent the Brazilian population 18 years and older in the PNS, the majority of whom were females (52.9%) and 18 to 49 years of age (64.8%). Some 40% had low schooling (up to incomplete primary schooling or the equivalent), 47.5% were white and 42% brown, and only 13.8% lived in rural areas. As for health, fewer than 50% had adequate weight, approximately 69% rated their health as good or very good, 21% had been diagnosed with hypertension, and less than 10% had any other of the chronic diseases included in the analysis.

Estimated time with back pain (Table 1) confirms its chronic nature: 95% of the sample reported that symptoms had begun at least a year before. In fact, 73.4% reported symptom for more than 5 years.

The prevalence of chronic back problems was 18.5% (95%CI: 17.8-19.1), and was higher in women than in men (21.1%, 95%CI: 20.2-21.9) and increased with age, reaching 28.1% (95%CI: 26.6-29.7) at 60 years.

Table 1 lists socioeconomic differences and risk factors for prevalence of chronic back problems. Adults with less schooling (none or incomplete primary) had higher prevalence of chronic back problems than those with more schooling. The urban population showed slightly higher prevalence when compared to rural residents (21.3%, 95%CI: 19.6-23.1). Prevalence of chronic back problems by race/color did not show a major difference, but was slightly higher in whites (19%, 95%CI: 18.4-20.2). Prevalence was higher in individuals with worse self-rated health: 43.9% among those with bad or very bad self-rated health (95%CI: 41.1-46.8) and only 8.4% in those who rated their health as very good. Obese individuals showed higher prevalence of chronic back problems (22.3%, 95%CI: 20.7-24) than normal weight (16.7%, 95%CI: 15.7-17.8) or underweight individuals (17.4%, 95%CI: 13.0-22.8). Individuals with chronic comorbidities generally showed higher prevalence of chronic back problems: one out of two individuals with arthritis also had chronic back problems (50.4% 95%CI: 47.8-53); among those with depression, prevalence of chronic back problems was 39.3% (95%CI: 36.9-41.8); and among those with chronic heart disease it was 37.3%, (95%CI: 33.8-41.0).

Figure 1 represents the patient's life cycle in relation to chronic back problems, according to sex. Prevalence of chronic back problems and that of chronic back problems with some limitation showed similar trends: it increased progressively up to 50 years of age, when it stabilized. From that age on, the increases were no longer significant when compared to the more elderly groups. In the transition from the younger age bracket (18 to 19 years) to adulthood (30 to 34), prevalence of chronic back problems doubled (from 6.06% to 12.45%) and quadrupled in the 50 to 54 year bracket (25.7%).

Prevalence of chronic back problems and chronic back problems with some limitation was higher in women than in men. There was also an increase (although not significant) starting at 50 years. Mean age at onset of chronic back problems was 35 years, similar between the sexes and increasing with age (Table 2).

Chronic back problems caused some limitation (mild, moderate, or intense) in activities of daily living (ADL) in 67% of those with the condition (Table 2): mild in 32.6%, moderate in 18.3%, and intense in 16.4%. Starting at 50 years of age, 70% of individuals with chronic back problems presented some limitation and some 20% suffered intense limitations in ADL, regardless of gender. The proportion of individuals with mild limitation remained stable in the age brackets (some 30%), but limitations in ADL increased gradually with age (intense limitation increased from 2.8% at 18 years to 20.2% at 75), stabilizing around 50 years. Limitations in ADL had a similar impact in men and women.

Figure 2 shows the changes in intensity of limitation according to age bracket. The proportion of persons with mild limitation decreased gradually up to 40 years, while the proportion of moderate and intense limitations increased with age (32% at 25 years and 60% at 55 years). Women in younger age brackets suffered more intense limitations.

PR showed that women had a higher likelihood than men of presenting chronic back problems (PR = 1.18, 95%CI: 1.11-1.25), with larger disadvantages in youth and adulthood, from 18 to 49 years (PR = 1.26, 95%CI: 1.15-1.38) (Table 3). Female gender only failed to show a significant difference in the 50 to 59 year age bracket.

Less schooling was significantly associated with chronic back problems: persons with no schooling or that had not finished primary school shower a higher likelihood of chronic back problems in

Table 1

Characteristics of the population responding to the sections on chronic non-communicable diseases and lifestyle in the *Brazilian National Health Survey* (PNS) and the population with chronic back problems. Brazil, 2013.

Categories	Total [N = 60,202]	Men	Women	Prevalence of chronic back problems	
	%	%	%	%	95%CI
Total	100.0	47.1	52.9	18.5	17.8-19.1
Age bracket (years)					
18-49	65.8	66.9	64.8	13.9	13.3-14.6
50-59	16.2	16.4	16.0	26.2	24.6-27.8
≥ 60	18.0	16.7	19.2	28.1	26.6-29.7
Sex					
Male	-	-	-	15.5	14.8-16.4
Female	-	-	-	21.1	20.2-21.9
Schooling					
None	13.7	13.6	13.8	25.6	23.9-27.4
Incomplete primary or equivalent	25.2	26.3	24.3	24.0	22.8-25.3
Complete primary or incomplete secondary	15.5	16.5	14.6	15.8	14.5-17.2
Complete secondary	28.0	27.4	28.6	14.2	13.3-15.2
University or greater	17.5	16.3	18.6	14.0	12.8-15.3
Area of residence					
Rural	13.8	15.0	12.7	18.0	17.3-18.7
Urban	86.2	85.0	87.3	21.3	19.6-23.1
Color or race					
White	47.5	46.8	48.0	19.3	18.4-20.2
Brown	42.0	42.8	41.2	17.7	16.9-18.6
Black	9.2	9.2	9.2		
Asian-descendant	0.9	0.8	1.0	17.8	16.2-19.6
Indigenous	0.4	0.4	0.5		
Self-rated health					
Very bad	1.2	0.9	1.4	43.9	41.1-46.8
Bad	4.7	3.9	5.4		
Fair	28.0	24.9	30.8	28.4	27.1-29.7
Good	52.8	55.4	50.5	12.9	12.3-13.7
Very good	13.3	14.9	11.9	8.4	7.4-9.6
Body mass index					
Normal	29.9	30.7	29.1	16.7	15.7-17.8
Underweight	1.5	1.2	1.8	17.4	13.0-22.8
Overweight	24.7	29.5	20.4	19.5	18.3-20.6
Obese	13.1	12.7	13.5	22.3	20.7-24.0
Does not know (sum)	30.8	25.8	35.2	17.8	16.8-18.8
Hypertension					
No	78.6	81.7	75.8	15.5	14.9-16.2
Yes	21.4	18.3	24.2	29.2	27.7-30.7
Depression					
No	92.4	96.1	89.1	16.7	16.1-17.4
Yes	7.6	3.9	10.9	39.3	36.9-41.8
Arthritis					
No	93.6	96.5	91.0	16.3	15.7-16.9
Yes	6.4	3.5	9.0	50.4	47.8-53.0
Diabetes					
No	93.8	94.6	93.0	17.9	17.3-18.5
Yes	6.2	5.4	7.0	26.9	24.4-29.4

(continues)

Tabela 1 (continued)

Categories	Total [N = 60,202] %	Men %	Women %	Prevalence of chronic back problems %	95%CI
Asthma					
No	95.6	96.4	94.9	18.0	17.3-18.6
Yes	4.4	3.6	5.1	29.3	26.3-32.6
Chronic heart disease					
No	95.8	96.1	95.6	17.6	17.0-18.3
Yes	4.2	3.9	4.4	37.3	33.8-41.0
Physically active					
No	68.5	63.1	73.2	16.0	15.1-17.1
Yes	31.5	36.9	26.8	19.6	18.9-20.3
Population with chronic back problems [n = 11,118]	18.5	39.6	60.4	-	-
Time with chronic back problems (years)					
< 1	4.5	3.8	4.9	-	-
1 to 4	22.1	21.4	22.6	-	-
≥ 5	73.4	74.9	72.5	-	-

95%CI: 95% confidence interval.

all age brackets when compared to those with a university education or more. Complete primary or incomplete secondary school only showed a significant association in the 50 to 59 year bracket.

As for area of residence, persons living in rural areas showed a PR of chronic back problems 10% greater than those living in urban areas (PR = 1.10, 95%CI: 1.01-1.20).

Brown (mixed-race) individuals showed lower prevalence of back problems when compared to whites in the overall general population (PR = 0.91, 95%CI: 0.85-0.97) and in the 50 to 59 year age bracket (PR = 0.86, 95%CI: 0.76-0.97). Persons self-classified as black, indigenous, or Asian-descendant showed a lower probability of chronic back problems when compared to whites in the overall population (PR = 0.90, 95%CI: 0.81-0.99), but not according to age bracket.

Self-rated health was heavily associated with chronic back problems. Persons with bad or very bad self-rated health had three times greater likelihood of chronic back problems (PR = 3.32, 95%CI: 2.84-3.87) when compared to those with very good self-rated health. With fair self-rated health, the prevalence ratio for chronic back problems was 2.5 (PR = 2.59, 95%CI: 2.23-3.00). The effect of self-rated health on chronic back problems was relevant in nearly all the categories, but the effect's weight decreased with age.

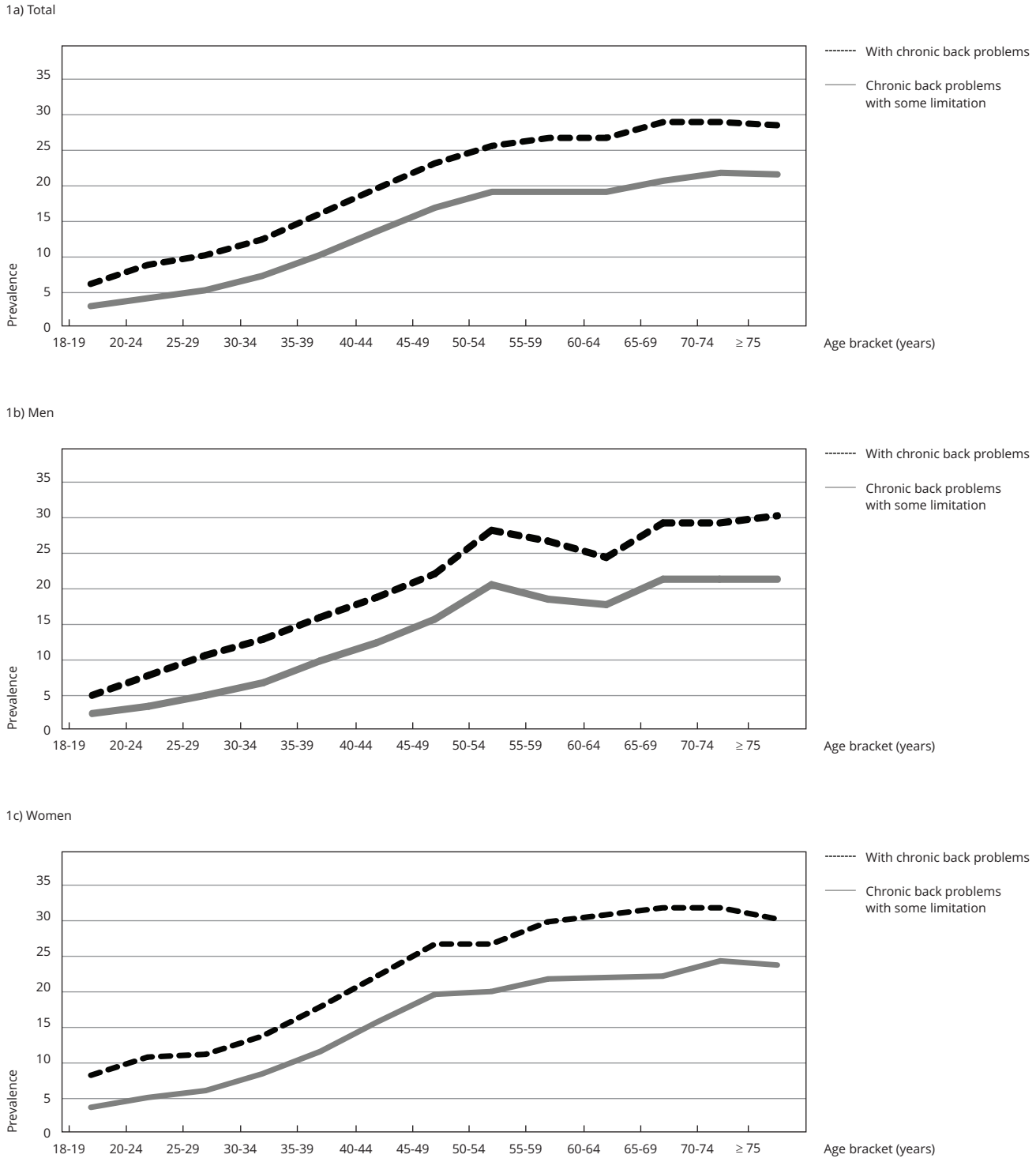
Various chronic diseases were associated with chronic back problems. The diseases showing the strongest association with chronic back problems were arthritis (PR = 1.76, 95%CI: 1.64-1.89) and depression (PR = 1.51, 95%CI: 1.41-1.63), similar in all age brackets. Chronic heart disease increased by 15% the likelihood of chronic back problems in the general population (PR = 1.15, 95%CI: 1.03-1.28), and this association was stronger in the 18 to 49 year bracket (PR = 1.31, 95%CI: 1.06-1.63).

Hypertension increased the likelihood of chronic back problems by 9% in the general population (PR = 1.09, 95%CI: 1.02-1.17) and by 24% in the 18 to 49 year age bracket (PR = 1.24, 95%CI: 1.11-1.38). Asthma also increased the risk of chronic back problems by 23% in the general population (PR = 1.26, 95%CI: 1.14-1.40). Diabetes was associated statistically with fewer chronic back problems in the general population and in young people, but the association lost significance starting at the 50 to 59 year age bracket. In the general population, the prevalence ratio for chronic back problems was 17% lower among individuals with diabetes (PR = 0.83, 95%CI: 0.75-0.91).

BMI was not associated significantly with chronic back problems in the general population. As for age bracket, among individuals 18 to 49 years of age, overweight was a risk factor compared to normal weight (PR = 1.19, 95%CI: 1.06-1.33), while in the 50 to 59 year bracket, obesity was associated with fewer chronic back problems (PR = 0.82, 95%CI: 0.69-0.98). Physical activity was not associated significantly with chronic back problems in any of the age brackets.

Figure 1

Prevalence of chronic back problems and chronic back problems with some limitation according to sex and age bracket. Brazil, 2013.



Source: *Brazilian National Health Survey*, 2013 [12].

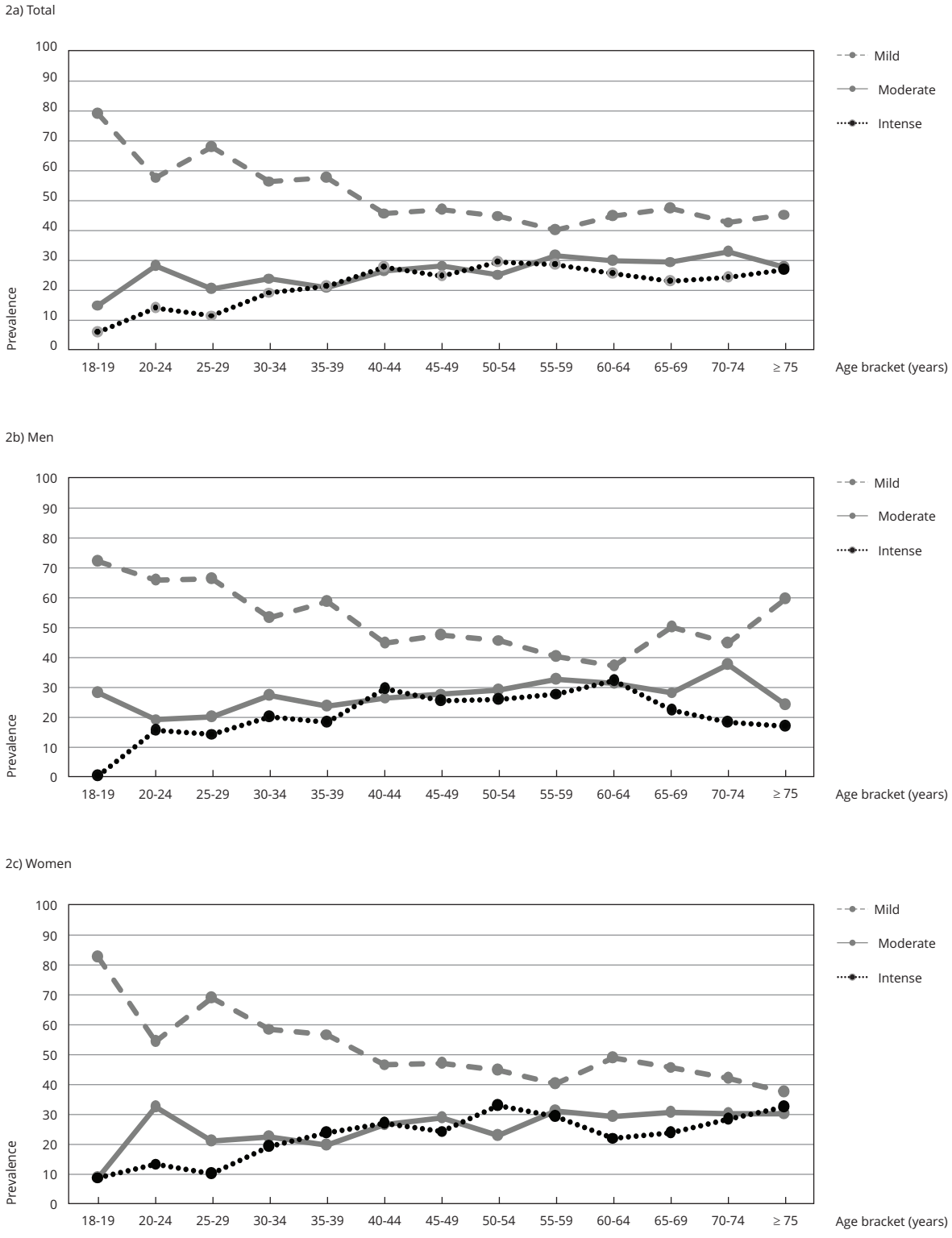
Table 2

Mean age at onset of chronic back problem according to degree of limitation by sex and age bracket. Brazil, 2013.

Age bracket (years)	Mean age at onset	Degree of limitation (%)			
		Absent	Mild	Moderate	Intense
Total					
Total	35	32.7	32.6	18.3	16.4
18-19	14	52.8	37.2	7.2	2.8
20-24	16	54.0	26.6	13.0	6.4
25-29	20	48.9	34.6	10.5	6.0
30-34	23	42.7	32.4	13.8	11.1
35-39	26	36.7	36.4	13.4	13.5
40-44	31	30.9	31.7	18.2	19.2
45-49	33	27.7	34.0	20.5	17.8
50-54	37	26.3	33.2	18.7	21.8
55-59	40	28.8	28.5	22.5	20.3
60-64	42	28.5	32.0	21.2	18.2
65-69	47	29.1	33.6	21.0	16.3
70-74	52	24.9	32.2	24.6	18.3
≥ 75	56	24.6	34.3	21.0	20.2
Men					
Total	35	35.4	31.6	18.0	15.0
18-19	14	53.0	33.8	13.2	0.0
20-24	15	59.6	26.6	7.7	6.1
25-29	20	54.2	30.3	9.0	6.5
30-34	23	50.0	26.5	13.6	9.9
35-39	25	39.7	35.4	14.2	10.8
40-44	31	34.5	29.1	17.2	19.2
45-49	34	29.7	33.1	19.4	17.7
50-54	37	27.9	33.0	20.7	18.4
55-59	38	31.3	27.5	22.2	19.0
60-64	41	28.2	26.5	22.3	23.0
65-69	48	27.5	36.1	20.3	16.0
70-74	51	27.1	32.5	27.2	13.2
≥ 75	54	29.6	41.9	16.7	11.8
Women					
Total	35	30.8	33.3	18.5	17.3
18-19	14	52.7	38.9	4.1	4.2
20-24	17	50.9	26.7	15.9	6.5
25-29	20	44.8	38.0	11.6	5.6
30-34	23	37.6	36.6	13.9	11.9
35-39	26	34.6	37.1	12.8	15.4
40-44	31	28.8	33.3	18.8	19.2
45-49	33	26.4	34.6	21.2	17.8
50-54	37	24.9	33.4	17.1	24.6
55-59	42	27.0	29.2	22.6	21.2
60-64	43	28.7	34.9	20.7	15.7
65-69	46	30.1	32.1	21.4	16.5
70-74	52	23.6	32.0	22.9	21.5
≥ 75	56	21.5	29.4	23.7	25.5

Figure 2

Prevalence of chronic back problems and chronic back problems with limitations according to degree of limitation and age bracket by sex. Brazil, 2013.



Source: *Brazilian National Health Survey*, 2013 [12].

Table 3

Prevalence ratio of presence of chronic back problems according to demographic, socioeconomic, behavioral, and health conditions, by age bracket. Brazil, 2013.

Category	Total		18-49 years		50-59 years		≥ 60 years	
	PR	95%CI	PR	95%CI	PR	95%CI	PR	95%CI
Sex								
Male	1.00		1.00		1.00		1.00	
Female	1.18	1.11-1.25	1.26	1.15-1.38	1.02	0.90-1.16	1.14	1.01-1.27
Age bracket (years)								
18-49	1.00							
50-59	1.35	1.25-1.46	-	-	-	-	-	-
≥ 60	1.27	1.17-1.37	-	-	-	-	-	-
Schooling								
University or more (6-7 years)	1.00		1.00		1.00		1.00	
Complete secondary (5 years)	0.99	0.89-1.10	0.99	0.86-1.13	0.97	0.75-1.25	1.07	0.86-1.34
Complete primary or incomplete secondary (3-4 years)	1.02	0.91-1.14	1.00	0.87-1.15	1.21	0.92-1.58	0.86	0.66-1.11
Incomplete primary or equivalent	1.21	1.10-1.35	1.21	1.05-1.39	1.29	1.02-1.61	1.14	0.94-1.39
None	1.26	1.12-1.41	1.23	1.05-1.44	1.24	0.96-1.59	1.26	1.02-1.56
Area of residence								
Urban	1.00		1.00		1.00		1.00	
Rural	1.10	1.01-1.20	1.11	1.00-1.24	1.16	1.00-1.34	1.01	0.88-1.17
Race/Color								
White	1.00		1.00		1.00		1.00	
Brown	0.91	0.85-0.97	0.93	0.85-1.01	0.86	0.76-0.97	0.92	0.83-1.03
Black/Indigenous/Asian-descendant	0.90	0.81-0.99	0.88	0.76-1.02	0.87	0.72-1.06	0.91	0.77-1.08
Self-rated health								
Very good	1.00		1.00		1.00		1.00	
Good	1.45	1.26-1.67	1.53	1.28-1.82	1.38	0.96-1.97	1.06	0.79-1.42
Fair	2.59	2.23-3.00	2.92	2.43-3.51	2.34	1.63-3.36	1.66	1.24-2.21
Bad/Very bad	3.32	2.84-3.87	3.76	3.05-4.63	2.99	2.06-4.33	2.16	1.59-2.92
Hypertension								
No	1.00		1.00		1.00		1.00	
Yes	1.09	1.02-1.17	1.24	1.11-1.38	0.99	0.88-1.13	1.06	0.95-1.19
Depression								
No	1.00		1.00		1.00		1.00	
Yes	1.51	1.41-1.63	1.59	1.41-1.79	1.55	1.36-1.76	1.36	1.17-1.57
Arthritis								
No	1.00		1.00		1.00		1.00	
Yes	1.76	1.64-1.89	1.82	1.58-2.09	1.73	1.52-1.98	1.82	1.63-2.03
Diabetes								
No	1.00		1.00		1.00		1.00	
Yes	0.83	0.75-0.91	0.68	0.53-0.86	0.93	0.78-1.10	0.88	0.77-1.00
Asthma								
No	1.00		1.00		1.00		1.00	
Yes	1.26	1.14-1.40	1.27	1.08-1.49	1.12	0.92-1.37	1.27	1.07-1.50
Chronic heart disease								
No	1.00		1.00		1.00		1.00	
Yes	1.15	1.03-1.28	1.31	1.06-1.63	1.04	0.86-1.27	1.15	0.99-1.33
Body mass index								
Normal	1.00		1.00		1.00		1.00	
Underweight	0.97	0.73-1.27	0.89	0.65-1.22	1.45	0.76-2.77	0.96	0.59-1.56
Overweight	1.07	0.99-1.16	1.19	1.06-1.33	0.90	0.76-1.05	0.96	0.83-1.11
Obese	1.01	0.92-1.11	1.02	0.89-1.17	0.82	0.69-0.98	1.11	0.93-1.32
Does not know	0.79	0.74-0.85	0.80	0.72-0.89	0.78	0.67-0.90	0.80	0.70-0.92
Physically active								
Yes	1.00		1.00		1.00		1.00	
No	0.96	0.90-1.02	0.99	0.90-1.09	0.89	0.78-1.03	0.88	0.78-1.00

95%CI: 95% confidence interval; PR: prevalence ratio.

Discussion

The prevalence of chronic back problems (18.5%) indicates that some 25 million Brazilians 18 years and older suffer from this condition. This result is consistent with a meta-analysis by Hoy et al. [10], covering 165 studies from 54 countries: median prevalence of chronic back problems was 19.4%, and mean prevalence was 18.1%. Importantly, it is a challenge to compare the prevalence of chronic back problems, due mainly to the methodological heterogeneity between studies and the difficulties in obtaining valid population estimates.

Mean age at onset of chronic back problems was 35 years in our study, similar between the sexes and increasing with age. The result was similar to that of an Australian study [23] in which mean age at the first complaint of back pain was 28.4 years.

The PNS does not provide information on chronic back problems in children and adolescents, due to the sample design. However, the question concerning age at onset of chronic back problems showed that among younger adults (18 to 25 years), mean age at onset of chronic back problems was between 14 and 16 years. This finding corroborates studies conducted in other countries, showing that prevalence increases greatly in early adolescence, especially in girls [10,24]. We thus conclude that the study of causes and the prevention of chronic back problems should begin in childhood [25].

The chronicity of back problems studied in the PNS was confirmed by calculation of the time since onset of the condition. In this study, 95.5% of individuals with back problems reported back pain for at least a year. However, future studies should specify in the question the minimum duration for defining back pain as chronic, considering the lack of consensus on this issue [2].

The analysis of patient's life cycle in chronic back problems, from 18 years to old age, showed a similar trend to other studies [2,26]: prevalence of chronic back problems increases quickly until young adulthood (around 6% at 18 years and 12% at 30 years) and stabilizes after 50 years of age. Dionne et al. [2], in a systematic review of hypotheses for the leveling of prevalence of chronic back problems with advancing age, highlight that cognitive impairment, greater tolerance of pain, and increasing comorbidities could explain this stability in old age.

The severity of chronic back problems also increases with age. In Brazil, starting at 50 years, 70% of individuals with chronic back problems suffered some limitation. Intense and very intense limitations in ADL increased in prevalence from 2.8% at 18 years to 20.2% at 75. This result agrees with the *Global Burden of Disease* study [7] showing chronic back problems as one of the main problems leading to losses in quality-adjusted life years. The degree of intensity of limitations in ADL did not differ between men and women. International studies suggest that intensity of pain is associated with degree of limitation [27], especially among the elderly [28].

Compared to men, women showed higher prevalence of chronic back problems and more limitations in ADL caused by chronic back problems. Starting at 65 years, the severity of limitations in ADL was more intense in women. Various international studies point to this gender inequality [26,29,30,31], and two hypotheses are musculoskeletal makeup and daily activities performed by women [6]. Hoy et al. [7] highlight other hypotheses for the higher prevalence in women, like osteoporosis, menstruation, pregnancy, and cultural factors.

The current study confirms the association between presence of chronic back problems and demographic, socioeconomic, behavioral, and health conditions, with bad self-rated health, presence of comorbidities (arthritis, depression, and asthma), and low schooling as the leading risk factors, as identified in various international studies [1,3,15,30].

Schooling has been associated with prevalence of chronic back problems [3,30]. In Brazil, prevalence of chronic back problems was 26% higher in individuals with no schooling compared to those with a university education. Plouvier et al. [32] suggest that differences in work characteristics explain a substantial part of this association, since individuals with low schooling are more exposed to poor working conditions.

As for race/color, whites showed a higher prevalence of chronic back problems than the other categories, but the association was weak and lost significance when analyzed by age bracket. The results of a study in Bahia State, Brazil, differed from ours [33]. As reported by Manchikanti et al. [27], there are still few studies analyzing the relationship between race/color and chronic back problems.

Self-rated health is considered a good indicator of quality of life and morbidity, and an important predictor of subsequent mortality, which has drawn considerable interest in studies in the last three decades [34]. A strong association was found between bad or very bad self-rated health and chronic back problems, confirming findings from studies both in the adult population in the South of Brazil [20] and in international studies [17,35]. Interestingly, with advancing age, the association between bad self-rated health and chronic back problems loses strength.

Arthritis, depression, and asthma were the diseases most frequently associated with chronic back problems, confirming international findings [36]. Although depression and chronic back problems are closely related, the order of causality is not clear; Hurwitz et al. [19] suggest that the conditions are interdependent.

The association between area of residence (urban/rural) and chronic back problems was weak, similar to the findings by Hoy [10]. BMI and physical activity were not relevant to the risk of chronic back problems. Although various international studies point to obesity as a predictor of chronic back problems [6,10,18,37], our study did not find an association with high BMI. Leboeuf-Yde [38], in a review article, found conflicting results in the literature.

One of the study's limitations was the definition of chronic back problems used in the PNS. The question in the survey included neck, lumbar, vertebrae, discs, and even sciatic pain, and did not set a minimum time to define it as a chronic problem. The generic definition of the outcome hinders comparison with international studies. Cedraschi et al. [39] found a discrepancy between theory and practice on the definition of chronic back problems. The authors discuss the ambiguity in the definition of chronicity of back problems and low back pain (both for patients and health professionals), partly due to the event's timeline, but also because not only objective physical conditions lead to chronic back problems, but the self-reported pain and limitations should be considered in the definition [39]. In most international studies, back problems refer to the lumbar area and include pain.

We suggest that future surveys on this problem include better wording of the question and standardized orientation for the answers. Another limitation was the cross-sectional design, in which it is not possible to determine if the exposure occurred before the outcome, and there may be problems of reverse causality. In the current study, such variables as self-rated health, depression, and BMI, among others, may have undergone changes after the onset of chronic back problems, influencing the strength of association.

The high prevalence and impact on living conditions reveal the need for epidemiological studies on chronic back problems. The results suggest that health promotion and prevention of chronic back problems should be intensified, especially before 50 years of age, considering Brazil's aging population.

Contributors

D. E. Romero and D. Castanheira made substantial contributions to the study's conception and design, data collection, analysis, and interpretation, drafting and critical revision of important intellectual content. D. Santana and P. Borges made substantial contributions to the study's conception and data collection, analysis, and interpretation. A. Marques made substantial contributions to the study's conception and design and data collection, analysis, and interpretation. J. M. Rodrigues and L. Sabbadini contributed substantially to the data collection, analysis, and interpretation. All the authors approved of the final version for publication.

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Resumo

O objetivo foi analisar aspetos epidemiológicos do problema crônico de coluna no Brasil e estudar a associação entre a prevalência do problema crônico de coluna e fatores demográficos, socioeconômicos, estilo de vida e condições de saúde. Utilizam-se microdados da Pesquisa Nacional de Saúde *(PNS) de 2013. Os indicadores epidemiológicos foram: prevalência, tempo vivido com problema crônico de coluna, ciclo vital (de adulto jovem até idoso), impacto nas limitações da vida diária e idade média do início dos sintomas, segundo sexo e faixa etária. Para analisar a desigualdade do problema crônico de coluna segundo características socioeconômicas e fatores de risco realiza-se modelo de regressão logística multivariada, por etapa do ciclo vital, tendo como variável dependente a presença de problema crônico de coluna e como independentes: sexo, escolaridade, área de residência, raça/cor, autoavaliação da saúde, tipo de doença crônica, índice de massa corporal (IMC) e atividade física. A prevalência de problema crônico de coluna no Brasil foi de 18,5%, sendo maior entre mulheres do que entre homens (21,1%; IC95%: 20,2-21,9). A idade média de início do problema crônico de coluna é 35 anos. Encontrou-se associação entre problema crônico de coluna e menor nível educacional, má autoavaliação da saúde e presença da maioria das doenças crônicas consideradas. Local de residência, IMC, idade e raça/cor estiveram fracamente ou não associados. A prevalência de problema crônico de coluna estabiliza aos 50 anos, mas a severidade da limitação aumenta em idades mais avançadas. A alta prevalência, similar a outros países, e o impacto nas condições de vida revelam a necessidade de estudos epidemiológicos sobre problema crônico de coluna. Resultados sugerem que a promoção e prevenção do problema crônico de coluna devem ser intensificadas, especialmente antes dos 50 anos de idade, considerando-se o acentuado envelhecimento populacional do país.*

Coluna Vertebral; Doenças da Coluna Vertebral; Doença Crônica; Idoso

Resumen

El objetivo fue analizar aspectos epidemiológicos del problema crónico de columna en Brasil y estudiar la asociación entre la prevalencia del problema crónico de columna y factores demográficos, socioeconómicos, estilo de vida y condiciones de salud. Se utilizan microdatos de la Encuesta Nacional de Salud *(PNS) de 2013. Los indicadores epidemiológicos fueron: prevalencia, tiempo vivido con problema crónico de columna, ciclo vital (desde la etapa de adulto joven a incluso anciano), impacto en las limitaciones de la vida diaria y edad media del inicio de los síntomas, según sexo y franja de edad. Para analizar la desigualdad del problema crónico de columna, según características socioeconómicas y factores de riesgo, se realiza un modelo de regresión logística multivariada, por etapa del ciclo vital, teniendo como variable dependiente la presencia de problema crónico de columna y como independientes: sexo, escolaridad, área de residencia, raza/color, autoevaluación de la salud, tipo de enfermedad crónica, índice de masa corporal (IMC) y actividad física. La prevalencia de problema crónico de columna en Brasil fue de un 18,5%, siendo mayor entre mujeres que entre hombres (21,1%; IC95%: 20,2-21,9). La edad media de inicio del problema crónico de columna es 35 años. Se encontró una asociación entre problema crónico de columna y un menor nivel educacional, mala autoevaluación de la salud y una presencia de la mayoría de las enfermedades crónicas consideradas. Lugar de residencia, IMC, edad y raza/color estuvieron escasamente o no asociados. La prevalencia de problema crónico de columna se estabiliza a los 50 años, pero la severidad de la limitación aumenta en edades más avanzadas. La alta prevalencia, similar a otros países, y el impacto en las condiciones de vida revelan la necesidad de estudios epidemiológicos sobre problema crónico de columna. Los resultados sugieren que la promoción y prevención del problema crónico de columna deben ser intensificadas, especialmente antes de los 50 años de edad, considerándose el acentuado envejecimiento poblacional del país.*

Columna Vertebral; Enfermedades de la Columna Vertebral; Enfermedad Crónica; Anciano

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