

ORIGINAL RESEARCH

The Brazilian Back Complaints in the Elders (Brazilian BACE) study: characteristics of Brazilian older adults with a new episode of low back pain



Fabianna Resende De Jesus-Moraleida^{a,b,*}, Paulo Henrique Ferreira^c,
Manuela Loureiro Ferreira^d, Juscelio Pereira Da Silva^a, Marcella Guimarães Assis^b,
Leani Souza Máximo Pereira^b

^a Universidade Federal do Ceará, Faculdade de Medicina, Departamento de Fisioterapia, Fortaleza, CE, Brazil

^b Universidade Federal de Minas Gerais (UFMG), Escola de Educação Física, Fisioterapia e Terapia Ocupacional, Departamento de Fisioterapia, Belo Horizonte, Brazil

^c The University of Sydney, Faculty of Health Sciences, Sydney, New South Wales, Australia

^d The University of Sydney, Sydney Medical School, Institute of Bone and Joint Research, Sydney, New South Wales, Australia

Received 24 November 2016; received in revised form 8 February 2017; accepted 13 February 2017

Available online 10 August 2017

KEYWORDS

Low back pain;
Aged;
Health status;
Epidemiology;
Latin America

Abstract

Objective: Low back pain (LBP) is little explored in the aging population especially when considering age-relevant and culturally dependent outcomes. We aimed to describe socio-demographic and clinical characteristics of Brazilian older people with a new episode of LBP presenting to primary care.

Methods: We sourced baseline information on socio-demographic, pain-related and clinical characteristics from 602 older adults from the Brazilian Back Complaints in the Elders (Brazilian BACE) study. We analyzed differences in pain, disability, functional capacity and psychosocial factors between sub-groups based on age (i.e. participants aged 55–74 or ≥ 75 years), education (i.e. those with four years or less of schooling or those with more than four years of schooling) and income (i.e. participants who reported earning two or less minimal wages or three and more).

* Corresponding author at: Departamento de Fisioterapia, Faculdade de Medicina, Universidade Federal do Ceará, Rua Alexandre Baraúna, 949 Rodolfo Teófilo, Fortaleza, Ceara, Brazil.

E-mail: fabiannamoraleida@gmail.com (F.R. Jesus-Moraleida).

Results: Participants presented severe LBP (7.18/10, SD: 2.59). Younger participants were slightly more disabled (mean difference 1.29 points, 95% confidence interval [CI]: 0.03/5.56), reporting poorer physical health, and less fall-related self-efficacy (mean difference of 2.41, 95% CI 0.35/4.46). Those less educated, and those with income equal or less than two minimum wages had more disability, pain catastrophizing and worse functional capacity.

Conclusions: This was the first study showing that Brazilian older adults with LBP present high levels of functional disability and psychological distress, especially those with low socioeconomic status.

© 2017 Associação Brasileira de Pesquisa e Pós-Graduação em Fisioterapia. Published by Elsevier Editora Ltda. All rights reserved.

Introduction

Low back pain (LBP) is ranked as the top condition contributing to years lived with disability (YLD) globally.¹ In Brazil, back complaints were the second most commonly reported health condition in 2003 and 2008² and the third cause for early retirement due to disability in 2007, bringing a high demand for health care services in older people.^{3,4} While both the prevalence and the associated burden of LBP in terms of disability increase with age,¹ information about LBP in the older adults is very limited, and the majority of studies on LBP exclude these patients. Considering the fast growth of the aging population in developing countries, and the influence of socioeconomic context in many health outcomes, addressing LBP in this population is crucial. To date, there is no data available on LBP in older people from Latin America.

In the present study, we explored variables related to pain and disability in Brazilian older patients using the Brazilian baseline data collected for the Back Complaints in the Elder (BACE) international consortium, which was established by Australia, Brazil and the Netherlands to investigate the burden of back complaints in the older adult.^{5,6} Thus, the aim of this study was to describe the clinical characteristics of Brazilians aged 55 or more with an acute episode of LBP. Moreover, we also aimed to: (i) compare if these characteristics differ between different groups of age (55–74 years; 75 and over) and (ii) compare if pain and functional capacity related characteristics differ between groups of educational level and income status.

Methods

Study design and participants

The BACE protocol has been published in detail elsewhere.⁵ This study examined the Brazilian Back Complaints in the Elders (Brazilian BACE) cohort study data (ethics 0100.0.203.000-11, Ethics Committee of Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG, Brazil), which consists of patients with LBP, defined as pain in the area between the inferior margin of the ribs and the gluteal crease. To be included, participants needed to present with

a new episode of pain, i.e. not seeking care for LBP in the preceding six months of recruitment and having an acute episode of LBP lasting six weeks or less. Participants were excluded if presenting any severe visual, motor or hearing loss, or cognitive dysfunctions⁷ that prevented them from being assessed.

Physicians or allied health care professionals at primary care or health centers specialized in geriatrics from either public or private healthcare systems in Brazil invited participants identified with LBP to contact the Brazilian BACE research team, who screened participants for eligibility. All participants signed the informed consent form.

Data collection

We divided baseline data collection into two stages. The first stage consisted of a structured interview with history taking and questionnaires. The second stage consisted of physical examination. The interview included questions on (i) demographic and patient characteristics, (ii) lifestyle behavior, (iii) symptoms' characteristics, (iv) psychological factors, and (v) comorbidities. To accommodate for the requirements in text limit a more comprehensive description is provided in [Table 1](#).

The physical examination included assessing trunk mobility, measured by finger-to-floor distance test; gait speed measured during a 4.6 m route, then converted to total meters per second (m/s); the Timed Up and Go (TUG) test⁸ measured in seconds (s); the dominant handgrip strength in kg/F, using a manual handheld dynamometer (SAEHAN Hydraulic Hand Dynamometer, SH5001 – 973, 8 KOREA).

Data analysis

We reported characteristics of the sample with descriptive statistics, including mean, median, interquartile (IQ), standard deviation (SD), and confidence interval (CI). We conducted subgroup analyses based on age, 55–74 years, and ≥ 75 years. We performed the *Levene* test prior to comparisons, and used a *p*-value equal or greater than 0.05 to assume equality of variances between groups. We conducted the Chi square test to compare frequencies between

Table 1 Contents of the Brazilian BACE interview.

Outcomes (instruments)	Rationale for instrument
<i>Demographics and patient</i>	
Sex	
Age	Years
Marital status	Categorized into married/living with a partner or not
BMI	Body mass/height in meters ²
Educational levels	Categorized into up to 4 years in elementary, 4 to completion of middle school, and college to post graduation education
Living settings	Categorized into community dwelling or institutionalized
Income	Categorized into 1–2 minimum Brazilian wages, 2–4 minimum Brazilian wages, 5 or more minimum Brazilian wages
Job	Categorized into currently having a paid job or not
History of recent falls	History of falls within 6 weeks prior to assessment
Comorbidities (adapted form SCQ) ³⁸	Reported comorbidities
Quality of life (SF 36) ³⁹	Range from 0 to 100
<i>Lifestyle behaviour</i>	
Smoking habit	Categorized into previous or past smoking habit and non-smoking.
General quality of sleep (question adapted from the PSQI) ⁴⁰	Categorized into good and altered overall quality of sleep in the past month.
Quality of sleep due to LBP	Categorized into good and altered overall quality of sleep in the past month.
Drinking (AUDICT) ⁴¹	Range from 0 to 12, 0 = no drinking. The cut-off point for man was considered 4 or higher; for female, 3 or higher
<i>Characteristics of the complaint</i>	
Severity of pain complaint in the past week (NRS) ⁴²	Range from 0 to 10, where 0 indicates no pain, and 10 indicates worst pain imaginable
Presence of leg pain	Categorized into two categories: yes or no
Severity of leg pain in the past week (NRS) ⁴²	Range from 0 to 10, where 0 indicates no pain, and 10 indicates worst pain imaginable
Disability (RMDQ – Br) ⁴³	Range from 0 to 24, where 0 indicates no disability
First episode of LBP	Categorized into two categories: yes and no
History of surgery for LBP	Categorized into two categories: yes and no
Presence of LBP morning stiffness (adapted from WOMAC) ⁴⁴	Range from 0 to 8, where 0 indicates no stiffness
LBP morning stiffness intensity (adapted from WOMAC) ⁴⁴	Range from 0 to 8, where 0 indicates no stiffness
Constant presence of pain	Categorized into two categories: yes and no
Number of locations of pain ⁴⁵	McGill Pain Questionnaire Drawing
Sleeping problems due to LBP	Categorized into two categories: yes or no.
Intake of medication for pain	Categorized into two categories: yes and no
<i>Psychosocial factors</i>	
Kinesiophobia (FABQ – Physical Activity Component) ⁴⁶	Range from 0 to 28, higher scores indicate higher levels of kinesiophobia
Depressive symptoms (CES-D) ⁴⁷	Range from 0 to 60, higher scores indicate higher levels of kinesiophobia
Pain catastrophizing (PCS) ⁴⁸	Range from 0 to 52, higher scores indicate higher levels of catastrophizing pain
Self-efficacy for falls (FES) ⁴⁹	Range from 16 to 64, higher scores indicate less self-efficacy for falling
Beliefs toward back pain (BBQ) ⁵⁰	Range from 9 to 49, higher scores indicate positive beliefs for recovery from pain

AUDIT-C, alcohol use disorders identification test; BBQ, Back Beliefs Questionnaire; CES-D, Center for Epidemiologic Studies Depression Scale; FABQ-A, Fear Avoidance Beliefs Questionnaire; FES, Falls Efficacy Scale; NRS, Numeric Rating Scale; PCS, Pain Catastrophization Scale; PSQI, Pittsburg Sleep Quality Index; RMDQ-Br, Roland Morris Disability Questionnaire – Brasil; SCQ, Self-administered Comorbidity Questionnaire; SF 36, Short Form (36) Health Survey.

subgroups, and the independent *T* test or Mann–Whitney–*U* test for continuous outcomes.

Additionally, we analyzed subgroups based on income and educational level status according to Brazilian national information on the topic for the aging population. For income status, subgroups were as following: (i) low income (i.e. up to two minimum Brazilian wages); (ii) medium and high income (i.e. three or more minimum Brazilian wages). The selection of subgroups for educational levels were: (i) low educational level (i.e. from illiteracy up to four years of education in elementary school); (ii) medium and high levels of education (i.e. five or more years of education). For both of these comparisons, we included analyses on severity of LBP in the past week, presence of leg pain, severity of leg pain in the past week, disability, TUG test and pain catastrophizing. We selected these variables a priori based on the literature for LBP main outcomes and related psychological factors, and in the biological measurement used in both BACE cohorts that is a gold reference for functional mobility in the elderly. We carried out the analyses using SPSS version 22.0 (SPSS Inc., Chicago, IL, USA), significance level at $p > 0.05$.

Results

The research team screened 3711 older adults to participate in the Brazilian BACE study, later resulting in the inclusion of 602 participants (Fig. 1). Physicians directly referred 7.1% of participants, whereas allied health professionals referred the remaining participants. The median age of all 602 participants was 67 (IQ = 10), and median duration of pain in days from the acute pain episode was 15 days (IQ = 23). Approximately 85% of the participants were female, 40% reported having low income, and the majority had low levels of education. Almost 50% of participants were either married or had a partner, 99% were community dwellers, and 19% had a recent history of falls.

Age group comparisons

Patient characteristics (55–74 years or 75 years or older)

More participants from the older participants' group reported low levels of both income and education compared to the younger group (Table 2). The younger group had significant higher BMI levels, and fewer of them were either married or lived with a partner, compared to the older group. More participants from the younger group had paid jobs (21.5% vs. 3.8%), and more of them had either current or past history of smoking; we observed a similar frequency of hazardous drinking in both groups of age.

Characteristics of LBP symptoms and associated variables comparing groups of age

The number of pain locations reported by participants was greater in the younger group, compared to the older group (mean difference of 1.0; 95% CI 0.4–1.9). Similarly, participants from the younger group referred more constant pain during the day (58.1% vs. 44.6%) and sleep disruption due to pain (51.3% vs. 37.6%). Disability was slightly higher in the younger group (mean difference of 1.3; 95% CI 0.03–5.6). LBP stiffness was higher in frequency in the younger group

(66.9% vs. 55.8%), and stiffness intensity was greater in that group as well (mean difference of 0.6; 95% CI 0.4–1.1). The only significant difference observed for psychosocial was on the Falls related Efficacy Scale – International scores, in which younger participants had less self-efficacy for falls compared to the older group (mean difference of 2.4, 95% CI 0.4–4.5).

Physical examination comparison between groups of age

When compared to the older group, participants from the younger group took less time to complete the TUG test (mean difference of -1.43 s, 95% CI -2.3 to -0.6). Gait speed values revealed that younger people took less time to complete the determined route (mean difference between younger and older groups of -0.40 s, 95% CI -0.8 to -0.03). In contrast, participants from the older group presented more trunk mobility assessed by the finger to floor mobility test (mean difference of 3.0; 95% CI 0.3–5.8).

Self-reported comorbidities

For the whole cohort, the most prevalent self-reported comorbidities were neck and shoulder complaints (73.1%), hypertension (70.9%), followed by knee and or hip osteoarthritis (46.9%) (Table 3). The most frequently reported comorbidity in the older group was hypertension (74.8%), whereas in the younger group it was neck and shoulder complaints (74.2%). Participants from the older group had higher rates of cancer (7.7% vs. 3.0%), while participants from the younger group referred more foot problems (45.5% vs. 29.0%).

Comparisons between groups of educational levels and income status

Participants with low levels of education had more severe LBP and leg pain levels compared to those more educated (mean difference of 0.85, 95% CI 0.4–1.3, and 0.61, 95% CI 0.1–1.2, respectively) (Table 4). Notably, they were more disabled (mean difference of 2.6; 95% CI 1.7–3.6), had more signs of pain catastrophizing (mean difference of 3.5; 95% CI 1.3–5.7), and took longer to complete the TUG test (mean difference of 1.0; 95% CI 0.4–1.7). Participants with low levels of income reported more disability (mean difference of 1.7; 95% CI 0.7–2.7), more pain catastrophizing (mean difference of 2.9; 95% CI 0.7–5.2) and took longer to complete the TUG test (mean difference of 0.7; 95% CI 0.04–1.4).

Discussion

This study presents the characteristics of 602 Brazilian older adults who suffered from a new episode of LBP. Our participants presented higher levels of pain, disability and psychological distress compared to international data.^{9,10} Present results demonstrate that age, educational levels, and income status appear to affect older people's report of pain, but even more of disability.

Results indicate that the relationship between LBP and disability is not linearly dependent on chronological aging. In contrast to the Dutch BACE findings,⁹ the younger group

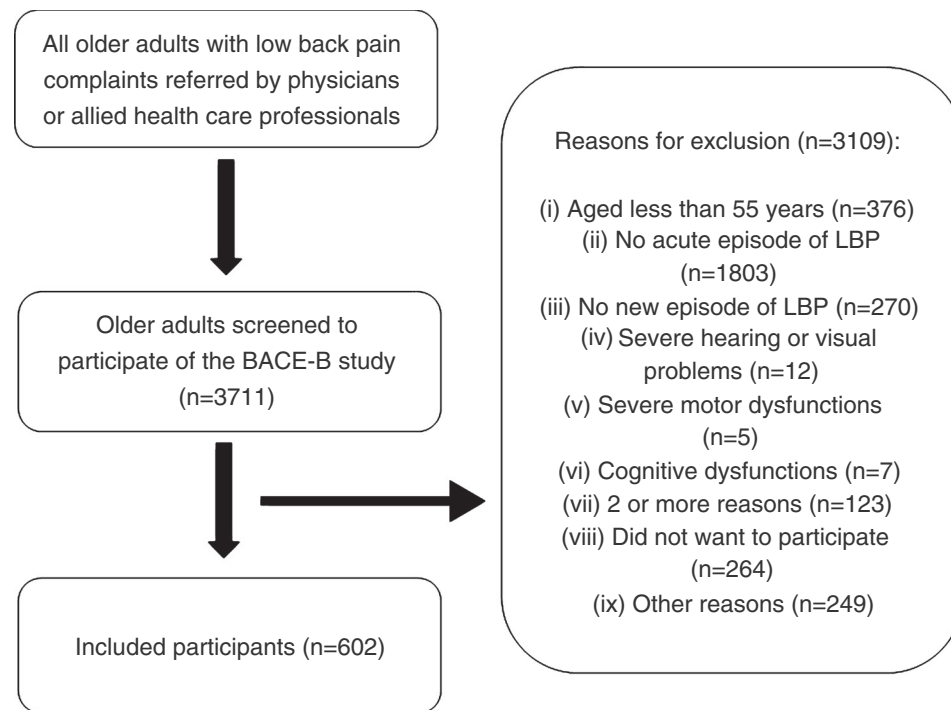


Figure 1 Flowchart of participants for the Brazilian Back Complaints in the Elders study.

reporting slightly more pain-related disability than the older group, and worse quality of life related to physical function. We hypothesize that these differences could be due to some factors: younger adults were more active in the community, thus pain could have affected more significantly their daily functions; also, other factors influence pain and disability in the aged population, such as increased levels of inflammatory cytokines,^{11,12} sarcopenia,^{13,14} degenerative diseases, having poorer perception of health, psychosocial factors, and having more concurrent diseases.^{15–17} Additionally, these results might also lie in the peculiarity of the evolution of life expectancy in Brazil, which in 1940 was around 40 years old. Thus, Brazilians aged 75 and over from this study must have physical and functional characteristics that favored their survival over the years, thus being more resilient to their health condition.

We highlight the prevalence of falls in the sample, moreover the younger group having less self-efficacy for falls. A recent systematic review revealed that musculoskeletal pain is associated with an increased risk of falls in community-dwelling older adults (OR = 1.56; 95% CI 1.36–1.79),¹⁸ thus LBP can also be associated with such events.¹⁹ In more active older adults, having reduced self-efficacy can be associated with some protective behavior in them triggered by falling, and this behavior could have a negative impact in function.²⁰ Particularly comorbidities are also associated with the burden of pain whereas having other musculoskeletal conditions might negatively impact the lower back.^{21–25} Hence, we encourage understanding comorbidities in older patients with LBP, for they bring more complexity for LBP care. The older group had more participants with a history of cancer. Cancer is a red flag for LBP,²⁶ and it might differently influence these groups in the course of the complaint, though this needs to be followed-up in the long term.

For aged people with LBP, limited evidence shows that LBP can be associated with poor performance of the TUG test^{14,22} and difficulty in performing daily life activities.²⁷ In this study, those who were older, less educated, and with lower levels of income took longer to complete the TUG test. Also, while older participants had lower gait speed, we observed that the overall mean speed was lower than that from the general older population,^{28,29} suggesting that there might be an association between LBP and gait speed. Indeed, Leveille et al.,³⁰ showed a negative, linear relationship between LBP intensity and gait speed in a prospective, population-based, 5-year follow-up study with 1002 American older women.

Our results suggest that these socio-demographic factors have a negative influence in overall function of older patients with LBP. There is some evidence in the LBP literature that having lower levels of education is linked to poorer prognosis for younger adults with chronic LBP.³¹ In general, older people with low socio economic status present worse health conditions,³² especially taking into account the influence of environmental exposure, adverse health behavior and the difficulty in accessing health care throughout life.^{33,34} On the other hand, there is evidence that more educated people present better health care, use more health services, and adopt more preventive measures in terms of the impact health in life.³⁵ The present sample had predominantly lower levels of education and income status. In agreement with our findings, a survey conducted in 2003 demonstrated that 37.8% of Brazilian aged 60 years and more were illiterate, whereas 37.2% reported having 1–4 years of education.^{36,37} These data leads to reflection on the importance of dealing with LBP in a lifetime perspective, for it can negatively affect adults in later life in countries where many of them have unequal access to health care.

Table 2 Baseline characteristics – comparison between groups of age and characteristics of total sample from Brazilian BACE (n = 602).

Variable	55–74 years (n = 498) n (%)	>75 years (n = 104) n (%)	Total (n = 602) n (%)
Patients characteristics			
Male	75 (15.1)	16 (15.4)	91 (15.1)
Body mass index (mean, SD)	29.2 (5.2)	27.8 (4.7)	29.0 (5.2)
Educational levels:			
4 years or less of education	199 (40)	61 (58.7)	260 (43.3)**
4 years up to completion of middle school	212 (42.7)	37 (35.6)	249 (41.4)
Graduation or post graduation	86 (17.3)	6 (5.8)	92 (15.3)**
Low income	187 (38.3)	52 (50.0)	239 (40.4)*
Marital status – married or with a partner	235 (47.3)	35 (33.7)	270 (44.9)*
Paid job	106 (21.5)	4 (3.8)	110 (18.4)**
Smoking habits	172 (34.5)	24 (23.1)	196(32.6)*
Good overall quality of sleep	297 (59.8)	68 (66.7)	365 (60.9)
Hazardous drinking behavior	63 (12.7)	11 (10.7)	74 (12.4)
Number of comorbidities (mean, SD)	4.6 (2.4)	4.3 (2.3)	4.5 (2.4)
Recent history of falls	98 (19.8)	19 (18.6)	117 (19.6)
Community dwellers	494 (99.4)	103 (99.0)	597 (99.3)
Quality of life – physical function (SF 36) (mean, SD)	41.1 (8.1)	44.1 (7.8)	41.7 (8.1)**
Quality of life – mental function (SF 36) (mean, SD)	42.1 (13.9)	43.4 (12.2)	42.3 (13.6)
Pain complaints			
Severity of low back pain in the past week (mean, SD)	7.3 (2.5)	6.8 (2.8)	7.2 (2.6)
Presence of leg pain in the past week	325 (65.5)	58 (55.8)	383 (63.8)
Severity of leg pain in the past week (mean, SD)	6.8 (2.7)	6.7 (2.9)	6.8 (2.8)
Number of pain sites (mean, SD)	5.7 (4.6)	4.7 (4.1)	5.5 (4.5)*
Presence of morning stiffness	331 (66.9)	58 (55.8)	389 (64.9)*
LBP disability – RMDQ – Br (mean, SD)	14.0 (5.7)	12.7 (6.2)	13.7 (5.8)*
Stiffness levels – WOMAC (mean, SD)	3.0 (2.3)	2.4 (2.2)	2.9 (2.3)*
Trigger for low back pain – trauma or mechanical cause	341 (76.5)	64 (68.8)	405 (75.1)
First episode of low back pain	98 (19.7)	18 (17.5)	116 (19.3)
Low back pain surgery in the past	22 (4.2)	4 (3.9)	24 (4.2)
Use of medication for low back pain	375 (75.3)	71 (68.3)	446 (74.1)
Awake in the night due to pain	253 (51.3)	38 (37.6)	291 (49)*
Altered quality of sleep due to LBP	329 (66.2)	52 (50)	381 (63.4)**
Presence of constant pain	288 (58.1)	45 (44.6)	333 (55.8)*
Psychological factors			
Self-efficacy for falls (FESI) (mean, SD)	32.1 (9.6)	29.8 (8.6)	31.7 (9.5)*
Depressive Symptoms (CESD) (mean, SD)	18.5 (11.9)	18.7 (12.0)	18.5 (11.9)
Kinesiophobia (FABQ – Physical Activity Component) (mean, SD)	15.75 (6.2)	15.9 (7.0)	15.8 (6.3)
Pain catastrophizing (PCS) (mean, SD)	22.3 (13.7)	19.7 (13.7)	21.9 (13.7)
Back Beliefs Questionnaire (BBQ) (mean, SD)	23.8 (6.6)	23.4 (7.1)	23.7 (6.7)
Physical function			
Trunk mobility (Finger – Floor Distance) (mean, SD)	17.6 (13.0)	14.7 (12.9)	17.1 (13.0)*
Gait speed (m/s) (mean, SD)	1.0 (0.4)	0.9 (0.2)	1.0 (0.3)**
Timed Up and Go Test (mean, SD)	11.2 (4.1)	12.6 (4.4)	11.4 (4.2)
Hand Grip Strength (mean, SD)	23.2 (7.7)	22.3 (6.7)	23.1 (7.6)

AUDIT-C, alcohol use disorders identification test; BBQ, Back Beliefs Questionnaire; CES-D, Center for Epidemiologic Studies Depression Scale; FABQ-A, Fear Avoidance Beliefs Questionnaire; FESI, Falls Efficacy Scale International; NRS, Numeric Rating Scale; PCS, Pain Catastrophization Scale; PSQI, Pittsburg Sleep Quality Index; RMDQ-Br, Roland Morris Disability Questionnaire – Brasil; SCQ, Self-administered Comorbidity Questionnaire; SF 36, Short Form (36) Health Survey.

* $p < 0.05$.

** $p < 0.01$.

Table 3 Self-reported comorbidities in Brazilian BACE participants.

Comorbidities	55–74 years n (%)	>75 years n (%)	Total (602) n (%)
Heart disease	99 (19.9)	28 (26.9)	127 (21.1)
High blood pressure	344 (69.1)	83 (74.8)	427 (70.9)
Lung disease	46 (8.6)	3 (5.8)	49 (8.1)
Diabetes	120 (24.1)	23 (22.1)	143 (23.8)
Ulcer or stomach disease	175 (35.1)	27 (26)	202 (33.6)
Kidney disease	50 (11.4)	10 (11.5)	60 (11.5)
Liver disease	40 (8.1)	7 (6.7)	47 (7.8)
Anemia or other blood diseases	33 (6.6)	6 (5.8)	39 (6.5)
Cancer	15 (3)	8 (7.7)	23 (3.8)*
Depression	165 (33.1)	32 (30.8)	197 (32.7)
OA knee/hip	235 (47.3)	47(45.2)	282 (46.9)
OA hand	97 (22.3)	18 (20.7)	115 (22)
Rheumatoid arthritis	34 (6.9)	10 (9.6)	44 (7.3)
Neck and shoulder complaints	322 (74.2)	59 (67.8)	381 (73.1)
Headache	166 (38.2)	27 (31)	193 (37)
Foot problems	127 (45.5)	26 (29)	223 (42)*
Gout	20 (4.6)	2 (2.3)	22 (4.2)
Neurological problems	17 (3.9)	5 (5.7)	22 (4.2)

* $p < 0.05$.
** $p < 0.01$.

Table 4 Baseline characteristics – comparison between participants with different educational levels and income status.

Variable	Low level of education (n = 260) (mean, SD)	Medium and high levels of education (n = 241) (mean, SD)	p value	Up to 2 minimum wages (n = 239) (mean, SD)	3 minimum wages or more (n = 353) (mean, SD)	p value
<i>Pain complaints</i>						
Severity of low back pain in the past week (NRS)	7.7 (2.4)	6.8 (2.7)	0.000	7.3 (2.6)	7.1 (2.6)	>0.05
Presence of leg pain in the past week	169 (65.5%)	213 (62.5%)	>0.05	155 (65.4%)	222 (62.9%)	>0.05
Severity of leg pain in the past week (NRS)	7.2 (2.7)	6.6 (2.8)	0.03	6.6 (2.9)	6.9 (2.6)	>0.05
Disability levels (RMDQ)	15.24 (5.6)	12.6 (5.7)	0.000	14.7 (5.6)	13.0 (5.9)	0.001
<i>Psychological factors</i>						
Kinesiophobia (FABQ – Physical Activity Component)	16.3 (6.5)	15.4 (6.1)	>0.05	15.9 (6.7)	15.6 (6.1)	>0.05
Catastrophization (PCS)	23.9 (13.6)	20.4 (13.7)	0.002	23.6 (13.8)	20.7 (13.6)	0.012
<i>Physical function</i>						
Timed Up and Go	12.0 (4.4)	10.9 (3.9)	0.03	11.8 (4.4)	11.1 (4.0)	0.037

NRS, Numeric Rating Scale; RMDQ-Br, Roland Morris Disability Questionnaire – Brazil; FABQ, Fear Avoidance Beliefs Questionnaire; PCS, Pain Catastrophizing Scale; FESI, Falls Efficacy Scale International.

* $p < 0.05$.

** $p < 0.01$.

We acknowledge the study has limitations. Although we settled a formal agreement with the Primary Care Network of the city of Belo Horizonte, Brazil, it is likely we failed to consecutively include a significant proportion of participants because many patients who suffer from a new episode of pain do not have prompt access to care for this condition. Also, due to the workload of local staff, some patients might not have been referred to contact the research group. The cross sectional design of the present study prevented us from discussing causality; still, it gives us a clear scenario of older adults suffering from LBP in a country that has one of the largest older population globally. Moreover, the use of instruments of assessment that are used in the aging group gives clinicians who deal with these patients a practical framework for exploring this condition in them. Indeed, it gives researchers ground to discuss the relevance of investigating specific measurements aiming this target population. To our knowledge, this is the first study describing detailed data in LBP with older adults in Latin America.

In summary, LBP in Brazilian older people is disabling, associated with the number of comorbidities and general musculoskeletal pain, and brings significant psychological distress to those with an acute episode of pain. Within this population there are groups of people who behave worse in terms of pain, disability, physical capacity, and also psychological factors such as fear of falling and pain catastrophizing, especially considering those less educated and with lower income status. Our results highlight the need to better address both demographic and psychosocial factors in LBP in older adults, considering that the impact of pain in the older adult is context dependent. This is a starting point to pave the way for investigators and clinicians in the rehabilitation field for managing older patients with LBP especially at Primary Care level. The importance of the listed factors such as age, education and income status in the prognosis of LBP in them are the subject of further investigation by this consortium.

Conflicts of interest

The authors declare no conflicts of interest.

Acknowledgements

Authors would like to thank all researchers involved in the development of the BACE consortium, especially professors Bart W. Koes and Chris G. Maher, and those who were involved in developing the protocol, Jantine Scheele, Pim A.J. Luijsterburg, Wilco C. Peul, Maurits W. van Tulder, Arthur M. Bohnen, Marjolein Y. Berger, Sita M.A. Bierma-Zeinstra. Authors would also like to thank professors Joao Marcos Dias and Rosângela Correa Dias for their support given to the Brazilian BACE. *Funding sources:* The Brazil BACE cohort study was funded by Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq). This study was also funded by two other funding agencies, Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) and Fundação de Amparo à Pesquisa do Estado de Minas Gerais (FAPEMIG), Brazil. Fabiana received a sandwich PhD scholarship from CAPES for studying at the University of Sydney. Juscelio received a PhD scholarship from CNPq.

References

- Hoy D, March L, Brooks P, et al. The global burden of low back pain: estimates from the Global Burden of Disease 2010 study. *Ann Rheum Dis*. 2014;73(6):968–974.
- Barros MBdA, Francisco PMSB, Zanchetta LM, César CLG. Tendências das desigualdades sociais e demográficas na prevalência de doenças crônicas no Brasil, PNAD: 2003–2008. *Ciência Saúde Coletiva*. 2011;16:3755–3768.
- Meziat Filho N, Silva GA. Disability pension from back pain among social security beneficiaries, Brazil. *Rev Saude Publica*. 2011;45(3):494–502.
- Dellarozza MS, Pimenta CA, Lebrao ML, Duarte YA. Association of chronic pain with the use of health care services by older adults in Sao Paulo. *Rev Saude Publica*. 2013;47(5):914–922.
- Scheele J, Luijsterburg PA, Ferreira ML, et al. Back complaints in the elders (BACE); design of cohort studies in primary care: an international consortium. *BMC Musculoskelet Disord*. 2011;12:193.
- Jesus-Moraleida FR, Ferreira PH, Ferreira ML, et al. Back complaints in the elders in Brazil and the Netherlands: a cross-sectional comparison. *Age Ageing*. 2017.
- Brucki SMD, Nitri R, Caramelli P, Bertolucci PHF, Okamoto IH. Sugestões para o uso do mini-exame do estado mental no Brasil. *Arq Neuro-Psiquiatr*. 2003;61:777–781.
- Podsiadlo D, Richardson S. The timed “Up & Go”: a test of basic functional mobility for frail elderly persons. *J Am Geriatr Soc*. 1991;39(2):142–148.
- Scheele J, Enthoven WT, Bierma-Zeinstra SM, et al. Characteristics of older patients with back pain in general practice: BACE cohort study. *Eur J Pain*. 2014;18(2):279–287.
- Jarvik JG, Comstock BA, Heagerty PJ, et al. Back pain in seniors: the Back pain Outcomes using Longitudinal Data (BOLD) cohort baseline data. *BMC Musculoskelet Disord*. 2014;15:134.
- Beyer I, Mets T, Bautmans I. Chronic low-grade inflammation and age-related sarcopenia. *Curr Opin Clin Nutr Metab Care*. 2012;15(1):12–22.
- Queiroz BZ, Pereira DS, Lopes RA, et al. Association between the plasma levels of mediators of inflammation with pain and disability in the elderly with acute low back pain: data from the Back Complaints in the Elders (BACE)-Brazil study. *Spine (Phila Pa 1976)*. 2015.
- Fielding RA, Vellas B, Evans WJ, et al. Sarcopenia: an undiagnosed condition in older adults. Current consensus definition: prevalence, etiology, and consequences. International working group on sarcopenia. *J Am Med Dir Assoc*. 2011;12(4):249–256.
- Queiroz BZ, Pereira DS, Rosa NM, et al. Functional performance and plasma cytokine levels in elderly women with and without low back pain. *J Back Musculoskelet Rehabil*. 2015;28(2):343–349.
- Menéndez J, Guevara A, Arcia N, León Díaz EM, Marín C, Alfonso JC. Enfermedades crónicas y limitación funcional en adultos mayores: estudio comparativo en siete ciudades de América Latina y el Caribe. *Rev Panam Salud Publica*. 2005;17:353–361.
- Dionne CE, Dunn KM, Croft PR. Does back pain prevalence really decrease with increasing age? A systematic review. *Age Ageing*. 2006;35(3):229–234.
- Teixeira LF, Pereira LS, Silva SL, Dias JM, Dias RC. Factors associated with attitudes and beliefs of elders with acute low back pain: data from the study Back Complaints in the Elders (BACE). *Braz J Phys Ther*. 2016;20(6):553–560.
- Stubbs B, Binnekade T, Eggermont L, Sepehry AA, Patchay S, Schofield P. Pain and the risk for falls in community-dwelling older adults: systematic review and meta-analysis. *Arch Phys Med Rehabil*. 2014;95(1):175–187, e9.

19. Rosa NMB, Queiroz BZ, Lopes RA, Sampaio NR, Pereira DS, Pereira LSM. Risk of falls in Brazilian elders with and without low back pain assessed using the Physiological Profile Assessment: BACE study. *Braz J Phys Ther.* 2016.
20. Perracini MR, Teixeira LF, Ramos JL, Pires RS, Najas MS. Fall-related factors among less and more active older outpatients. *Braz J Phys Ther.* 2012;16(2):166–172.
21. Leong IY, Farrell MJ, Helme RD, Gibson SJ. The relationship between medical comorbidity and self-rated pain, mood disturbance, and function in older people with chronic pain. *J Gerontol A Biol Sci Med Sci.* 2007;62(5):550–555.
22. Scheele J, Enthoven WT, Bierma-Zeinstra SM, et al. Course and prognosis of older back pain patients in general practice: a prospective cohort study. *Pain.* 2013;154(6):951–957.
23. Fujiwara A, Lim TH, An HS, et al. The effect of disc degeneration and facet joint osteoarthritis on the segmental flexibility of the lumbar spine. *Spine.* 2000;25(23):3036–3044.
24. Schneider S, Mohnen SM, Schiltewolf M, Rau C. Comorbidity of low back pain: representative outcomes of a national health study in the Federal Republic of Germany. *Eur J Pain.* 2007;11(4):387–397.
25. Gore M, Sadosky A, Stacey BR, Tai KS, Leslie D. The burden of chronic low back pain: clinical comorbidities, treatment patterns, and health care costs in usual care settings. *Spine (Phila Pa 1976).* 2012;37(11):E668–E677.
26. Downie A, Williams CM, Henschke N, et al. Red flags to screen for malignancy and fracture in patients with low back pain: systematic review. *BMJ.* 2013;347:f7095.
27. Cecchi F, Debolini P, Lova RM, et al. Epidemiology of back pain in a representative cohort of Italian persons 65 years of age and older: the InCHIANTI study. *Spine (Phila Pa 1976).* 2006;31(10):1149–1155.
28. Bohannon RW. Comfortable and maximum walking speed of adults aged 20–79 years: reference values and determinants. *Age Ageing.* 1997;26(1):15–19.
29. Novaes RD, Miranda AS, Dourado VZ. Usual gait speed assessment in middle-aged and elderly Brazilian subjects. *Braz J Phys Ther.* 2011;15:117–122.
30. Leveille SG, Guralnik JM, Hochberg M, et al. Low back pain and disability in older women: independent association with difficulty but not inability to perform daily activities. *J Gerontol A Biol Sci Med Sci.* 1999;54(10):M487–M493.
31. Costa Lda C, Maher CG, McAuley JH, et al. Prognosis for patients with chronic low back pain: inception cohort study. *BMJ.* 2009;339:b3829.
32. Lima-Costa MF, Barreto S, Giatti L, Uchôa E. Desigualdade social e saúde entre idosos brasileiros: um estudo baseado na Pesquisa Nacional por Amostra de Domicílios. *Cad Saude Publica.* 2003;19:745–757.
33. Gornick ME, Eggers PW, Reilly TW, et al. Effects of race and income on mortality and use of services among Medicare beneficiaries. *N Engl J Med.* 1996;335(11):791–799.
34. Barros MBdA, Francisco PMSB, Lima MG, César CLG. Social inequalities in health among the elderly. *Cad Saude Publica.* 2011;27:s198–s208.
35. Kempen GI, Brilman EI, Ranchor AV, Ormel J. Morbidity and quality of life and the moderating effects of level of education in the elderly. *Soc Sci Med.* 1999;49(1):143–149.
36. Alves LC, Leite IdC, Machado CJ. Perfis de saúde dos idosos no Brasil: análise da Pesquisa Nacional por Amostra de Domicílios de 2003 utilizando o método grade of membership. *Cad Saude Publica.* 2008;24:535–546.
37. Alves LC, Leite IdC, Machado CJ. Fatores associados à incapacidade funcional dos idosos no Brasil: análise multinível. *Rev Saude Publica.* 2010;44:468–478.
38. Sangha O, Stucki G, Liang MH, Fossel AH, Katz JN. The Self-Administered Comorbidity Questionnaire: a new method to assess comorbidity for clinical and health services research. *Arthritis Rheum.* 2003;49(2):156–163.
39. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. *Med Care.* 1992;30(6):473–483.
40. Buysse DJ, Reynolds CF III, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry Res.* 1989;28(2):193–213.
41. Bush K, Kivlahan DR, McDonnell MB, Fihn SD, Bradley KA. The AUDIT alcohol consumption questions (AUDIT-C): an effective brief screening test for problem drinking. Ambulatory Care Quality Improvement Project (ACQUIP). Alcohol Use Disorders Identification Test. *Arch Intern Med.* 1998;158(16):1789–1795.
42. Childs JD, Piva SR, Fritz JM. Responsiveness of the numeric pain rating scale in patients with low back pain. *Spine (Phila Pa 1976).* 2005;30(11):1331–1334.
43. Nusbaum L, Natour J, Ferraz MB, Goldenberg J. Translation, adaptation and validation of the Roland-Morris questionnaire – Brazil Roland-Morris. *Braz J Med Biol Res.* 2001;34:203–210.
44. Bellamy N. Pain assessment in osteoarthritis: experience with the WOMAC osteoarthritis index. *Semin Arthritis Rheum.* 1989;18(4 Suppl. 2):14–17.
45. Escalante A, Lichtenstein MJ, White K, Rios N, Hazuda HP. A method for scoring the pain map of the McGill Pain Questionnaire for use in epidemiologic studies. *Ageing (Milano).* 1995;7(5):358–366.
46. Vincent HK, Seay AN, Montero C, Conrad BP, Hurley RW, Vincent KR. Kinesiophobia and fear-avoidance beliefs in overweight older adults with chronic low-back pain: relationship to walking endurance – part II. *Am J Phys Med Rehabil.* 2013;92(5):439–445.
47. Batistoni SST, Néri AL, Cupertino AP. Validade e confiabilidade da versão Brasileira da Center for Epidemiological Scale-Depression (CES-D) em idosos Brasileiros. *Psico-USF.* 2010;15:13–22.
48. Lopes RA, Dias RC, de Queiroz BZ, et al. Psychometric properties of the Brazilian version of the Pain Catastrophizing Scale for acute low back pain. *Arq Neuropsiquiatr.* 2015;73(5):436–444.
49. Camargos FFO, Dias RC, Dias JMD, Freire MTF. Adaptação transcultural e avaliação das propriedades psicométricas da Falls Efficacy Scale-International em idosos Brasileiros (FES-I-BRASIL). *Braz J Phys Ther.* 2010;14:237–243.
50. Urquhart DM, Bell RJ, Cicuttini FM, Cui J, Forbes A, Davis SR. Negative beliefs about low back pain are associated with high pain intensity and high level disability in community-based women. *BMC Musculoskelet Disord.* 2008;9:148.