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ORIGINAL ARTICLE

Prevalence and characteristics of chronic pain in Brazil: a national internet-based survey study

Prevalência e características da dor crônica no Brasil: um estudo nacional baseado em questionário pela internet

Ravena Carolina de Carvalho[1], Caio Bustamante Maglioni[1], Gabriel Barbosa Machado[1], João Eduardo de Araújo[2], Josie Resende Torres da Silva[1], Marcelo Lourenço da Silva[1]

ABSTRACT

BACKGROUND AND OBJECTIVES: The prevalence of chronic pain has been increasing in the world, and it is considered the most underestimated health care problem impacting the quality of life. Furthermore, there is little consensus regarding the burden of chronic pain in Brazil. The present study aimed to investigate the prevalence of chronic pain in the general Brazilian adult population, and the socio-demographic, clinical, medical conditions and pain locations on the body.

METHODS: A cross-sectional Internet-based survey was conducted in a nationally representative sample of Brazil adults to estimate the prevalence, sociodemographic correlates and characteristics of chronic pain in the Brazilian population. Twenty-seven-thousand and three hundred forty-five (27,345) representative residents were contacted.

RESULTS: From 27,345 individuals, 20,830 (76.17%) presented chronic, recurrent, or long-lasting pain, lasting for at least 6 months. Nearly half of the respondents were 65 years older (48.15%) and the prevalence was higher in females (84,60%) than males (16.40%). The prevalence of primary chronic lower back pain was 59.85%; of primary rheumatoid arthritis was (59.78%) and primary osteoarthritis pain was 69.02%. Half of the respondents with chronic pain experienced daily pain, and average (past 3 months) pain intensity was moderate at 57.28%.

CONCLUSION: Chronic pain affects more than two-thirds of the population of Brazil. Our findings revealed a high prevalence and severity of chronic pain and suggested that it is a public health problem in Brazil. Risk factors are being a woman, advanced age and low levels of household income. There is a need for improved health policies in Brazil for patients with chronic pain.

Keywords: Brazil, Chronic pain, Epidemiology, Pain, Prevalence.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A prevalência de dor crônica tem aumentado no mundo e é considerada o problema de saúde mais subestimado, com impacto na qualidade de vida. Além disso, há pouco consenso em relação à carga da dor crônica ao sistema de saúde no Brasil. O presente estudo teve como objetivo investigar a prevalência de dor crônica na população adulta geral brasileira e as condições sociodemográficas, clínicas, médicas e a localização corporal da dor.

METODOS: Foi realizado um estudo transversal, em questionário pela internet em uma amostra nacionalmente representativa de adultos do Brasil, para estimar a prevalência e características da dor crônica na população brasileira. Vinte e sete mil e trezentos e quarenta e cinco (27.345) residentes representativos foram contatados.

RESULTADOS: Dos 27.345 indivíduos, 20.830 (76,17%) apresentaram dor crônica, recorrente ou duradoura com duração de pelo menos 6 meses. Quase metade dos entrevistados tinham mais de 65 anos de idade (48,15%) e a prevalência era maior nas mulheres (84,60%) do que nos homens (16,40%). A prevalência de dor lombar crônica primária foi de 59,85%; de artrite reumatoide primária foi (59,78%) e dor primária oriunda de osteoartrite foi de 69,02%. Metade dos entrevistados com dor crônica apresentava dor diária e a intensidade da dor média (últimos 3 meses) era moderada em 57,28%.

CONCLUSÃO: A dor crônica afeta mais de dois terços da população do Brasil. Os resultados deste estudo revelaram alta prevalência da dor crônica. Os fatores de risco são ser mulher, idade avançada e baixos níveis de renda familiar. Há necessidade de melhores políticas de saúde para pacientes com dor crônica no Brasil.

Descritores: Brasil, Dor, Dor crônica, Epidemiologia, Prevalência

1. Universidade Federal de Alfenas, Instituto de Ciências da Motricidade, Alfenas, MG, Brasil.
2. Universidade de São Paulo, Faculdade de Medicina de Ribeirão Preto, Departamento de Biomecânica, Medicina e Reabilitação do Aparelho Locomotor, Ribeirão Preto, SP, Brasil.

Correspondence to:
Av. Jovino Fernandes Sales 2600
37130-000 Alfenas, MG, Brasil.
E-mail: lourencoms@uol.com.br

INTRODUCTION

Chronic pain (CP) is a common problem, as well as its high prevalence, treatment, and economic costs, generating a negative impact on physical and psychological health[1,2]. CP is commonly regarded as a multidimensional phenomenon that involves physical, psychological, and sociocultural aspects and impacts the individual's health and well-being, health care services, and the society[1]. Some research groups in different countries have attempted to improve the understanding of the multiple characteristics of CP, including its prevalence.

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Globally, it has been estimated that 25% of adults suffer from pain and that another 10% of adults are diagnosed with CP each year. While pain affects all populations, regardless of age, gender, income, race/ethnicity, or geography, it is not distributed equally across the globe[2]. Previous epidemiological studies of the general population have shown that the worldwide variability in the prevalence of pain could be partially explained by methodological, racial/ethnic, or cultural differences that ranged from 8.7% in Singapore[3] to 48% in the UK[4]. In addition, some countries, as Australia, the UK, and the USA, started to use the convening of Pain Summits because those national governments have started to recognize that CP represents one of the main challenges and priorities for public health[5-8].

In low-income and middle-income countries, the prevalence of pain is consistent with the Global Burden of Disease (GBD) data, with higher rates in the elderly general population and workers than in the general adult population. 28% of the GBD that could be averted by surgery and safe anesthesia might also be related to the CP burden. Trauma, cancer, birth complications, congenital defects, and other surgical diseases potentially lead to CP if not treated or if treated inadequately. This meta-analysis shows the range of CP in low-income and middle-income countries but has fallen short of revealing clear causes for the pain[9]. CP represented by conditions such as low back pain and osteoarthritis has recently been highlighted as one of the most prominent causes of disability worldwide by the GBD reviews[10].

There is limited information available on CP in Latin America. A community-based study conducted in Colombia reported that the prevalence of CP among the local adult population was 31%[11]. In Brazil, in Londrina city, the prevalence of CP in the elderly was 51.44%[12]. In Salvador city, the presence of CP was found in 41.4% of the population[13]. In São Luís city, a cross-sectional, population-based study, showed a predominance of CP of 50% in women, age bracket of 18 to 29 years, and brown skin color[14]. A São Paulo city population-based study showed that 28.7% of the surveyed reported pain lasting more than three months[15]. In the city of Florianópolis, 29.3% of older adults experienced CP[16]. Recently, in a cross-sectional study based on a population survey in the city of Bauru, a total number of 600 individuals were interviewed to determine the prevalence of neck pain and associated factors in adults and found the prevalence of 20.3%[17]. While these results are significant, it is hard to draw conclusions from the results due to the lack of representation in the studies' sample populations.

This cross-sectional study provided quantitative data on the prevalence and severity of various kinds of CP, the demographic characteristics of individuals with pain, the impact of pain on work, and the relationships with CP. This first national population-based study was needed to examine the prevalence of CP among the Brazilian population and to reconcile the widely variable estimates of the prevalence of CP in Brazil. We conducted a population-based survey of a representative sample of adults using an internet-administered survey[18].

The demonstration of the prevalence of CP is essential as the era of global surgery begins, to allow benchmarking of this prevalence in the future as emergency and essential surgery services are expanded in several countries.

This study aimed to investigate: (1) the prevalence of CP in the general Brazilian adult population, and (2) the socio-demographic, clinical, medical conditions responsible for the pain and body locations of pain.

METHODS

After reading and agreed to the term of Consent electronically, adults aged 18 years older or more were eligible to participate in the current study. Participants were recruited through social media and pain management specialists and associations. The survey was conducted from September 2015 to July 2016. The Raosoft software (Federal Way, Washington, USA) was used to calculate the number of people required to be screened to detect a 50% prevalence of pain, with a 3% margin of error (95% power at the 5% significant level). A total of 1,068 people was required. Considering that the study focused on factors associated with the prevalence of CP, the sample was increased to 2,136 adults.

Classification of chronic pain
Usually, pain is regarded as chronic when it lasts or recurs for more than 3 to 6 months[19]. We used a slightly more restrictive definition of CP as persistent or regularly recurrent pain with a duration of more than 6 months[18,20].

This study was conducted using a simple online questionnaire prepared as a Google Forms® survey asking up to 20 questions in Portuguese adapted from Johannes et al.[18]: (1)"Do you have any chronic, recurrent, or long-lasting pain, more than aches and pains that are fleeting and minor"?/and those with an affirmative response were asked: (2) How long the pain was experienced? Respondents with chronic, recurrent, or long-lasting pain lasting for at least six months met the study definition of CP and continued with the survey. In sequence, (3) Gender, (4) Age, (5) Race, (6) Education level, (7) Marital status, (8) Household income, (9) Region, (10) Employment status/ (11) Internet access, (12) Metropolitan area, (13) Checklist to capture self-reported physician-diagnosed medical conditions for the current CP, (14) Body locations of the pain. Those indicating more than one medical condition were asked to (15) Specify the primary pain concern. Finally, questions about (16) Duration of primary CP, (17) The frequency of pain, (18) Average pain intensity in the past three months, (19) Worst pain intensity in the past three months, (20) If they take medication for the condition. For all respondents, a table was constructed for age, sex, race/ethnicity, education, region, metropolitan area, Internet accessibility, the frequency of physician-diagnosed pain conditions.

Before the implementation of the survey, a pilot study was carried out using a random age-stratified sample of 100 persons over a 3-month period. The goal was testing the survey functionality to evaluate the length of time for questionnaire completion, and to estimate the response rate.

This study had the approval of the Research Ethics Committee of the Instituition (CAEE: 46727215.7.0000.5142), Process Number 1.189.406 of 2015.

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Statistical analysis

The questionnaire responses were entered into the Microsoft Excel, and the data were analyzed with SPSS (version 21.0 for Windows, IBM Corp., Armonk, NY, USA). χ^2 tests were used to test for associations between the sociodemographic variables and the questionnaire responses. To identify the sociodemographic factors that were associated with CP, odds ratios, 95% CI, and p values were calculated. Continuous data are reported as the median and interquartile range (IQR) because variables had abnormal distribution according to Kolmogorov Smirnov test. Categorical data are represented as a percentage.

RESULTS

CP was defined as a "yes" answer to the question, "Do you have any chronic, recurrent, or long-lasting pain, more than aches and pains that are fleeting and minor"? A total of 20,830 (76.16%) persons completed the first screening question indicating that they had chronic, recurrent, or long-lasting pain (Table 1).

Table 2 shows that nearly half of the respondents were 65 years old, women, white, with a bachelor's degree or higher education. CP prevalence significantly increased when respondents have never married, with a household income level of less than R$999 a month, from the South region of Brazil.

The criteria for CP were met by 17,553 respondents and low back pain condition, and rheumatoid arthritis diagnosis were the most cited, respectively (Table 3).

Table 4 shows that the CP site most cited was the lower back, followed by knee, hand, and shoulder. Additionally, the overall

Table 1. Prevalence rates of chronic pain

Characteristics	Groups	
	Number of participants	% of total
	27,345	100
No pain	6,515	23.83
Chronic, recurrent, or long-lasting pain	20,830	76.17
Pain with a duration of >6 months	17,553	64.19
Pain for less than six months	1,383	5.06
Pain for at least three months	413	1.51
Pain for less than two months	1,481	5.42

Table 2. Demographic characteristics of participants

Characteristics	Chronic pain	Without chronic pain	OR (95% CI)	p-value
Total sample	17,553 (100)	9,792 (100)		
Gender n (%)				
Male	2,879 (16.40)	1,768 (18.06)	Reference	
Female	14,674 (84.60)	8,024 (81.94)	1.23 (1.05-1.19)	<0.001
Age group (years) n (%)				
18–24	1,109 (6.32)	477 (4.87)	Reference	
25–34	1,062 (6.05)	481 (4.91)	0.94 (0.81-1.10)	0.500
35–44	1,546 (8.81)	659 (6.73)	1.01 (0.87-1.16)	0.900
45–54	1,727 (9.84)	738 (7.54)	1.01 (0.87-1.15)	0.092
55–64	3,658 (20.84)	2,843 (29.03)	1.80 (1.60-2.03)	<0,001
65 +	8,451 (48.15)	4,594 (46.92)	1.26 (1.12-1.41)	<0,001
Race n (%)				
White	14,071 (80.16)	7,923 (80.91)	Reference	
Brown	2,854 (16.26)	1,498 (15.30)	0.93 (0.87-0.99)	<0.001
Black	323 (1.84)	211 (2.15)	1.16 (0.97-1.38)	0.097
Yellow	182 (1.04)	93 (0.95)	0.90 (0.70-1.16)	0.448
Indigenous	123 (0.70)	67 (0.68)	0.96 (0.71-1.30)	0.827
Education level n (%)				
Some education	5,932 (33.79)	3,266 (33.35)	Reference	
High school	4,629 (26.37)	1,781 (18.19)	0.69 (0.65-0.74)	<0.001
Less than high school	1,898 (10.81)	1,451 (14.82)	1.38 (1.28-1.50)	<0.001
Bachelor's degree or higher	5,094 (29.02)	3,294 (33.64)	1.17 (1.10-1.24)	<0.001
Marital status n (%)				
Married	8,253 (47.02)	3,833 (39.14)	Reference	
Never married	5,826 (33.19)	4,471 (45.66)	1.65 (1.56-1.74)	<0.001
Divorced	1,077 (6.14)	579 (5.91)	1.15 (1.03-1.29)	<0.05
Living with a partner	2,397 (13.66)	909 (9.28)	0.81 (074-0.88)	<0.001

Table 2. Demographic characteristics of participants – continuation

Characteristics	Chronic pain	Without chronic pain	OR (95% CI)	p-value
Household income level n (%)				
Less than R$999	5,323 (30.33)	3,987 (40.72)	Reference	
R$1,000 to R$1,999	5,782 (32.94)	2,483 (25.36)	0.57 (0.53-0.61)	<0.001
R$2,000 to R$4,999	4,765 (27.15)	2,338 (23.88)	0.65 (0.61-0.69)	<0.001
R$5,000 or more	1683 (9.59)	984 (10.05)	0.78 (0.71-0.85)	<0.05
Region n (%)				
Southeast	1,3651 (77.77)	7,359 (75.15)	Reference	
North	232 (1.32)	103 (1.05)	0.82 (0.65-1.04)	0.103
Northeast	543 (3.09)	334 (3.41)	1.14 (0.99-1.31)	0.063
South	2,342 (13.34)	1,453 (14.84)	1.15 (1.07-1.23)	<0,001
Midwest	785 (4.47)	543 (5.55)	1.28 (1.14-1.43)	<0,001
Employment status n (%)				
Working–as a paid employee	5,732 (32.66)	3,431 (35.04)	Reference	
Working–self-employed	2,184 (12.44)	1,433 (14.63)	1.09 (1.01-1.18)	<0,05
Not working–on temporary layoff	2,856 (16.27)	1,846 (18.85)	1.08 (1.00-1.16)	<0,05
Not working–retired	2,167 (12.35)	1,483 (15.15)	1.14 (1.05-1.23)	<0,001
Not working–disabled	553 (3.15)	48 (0.49)	0.14 (0.10-0.19)	<0,001
Not working–other	4,061 (23.14)	1,551 (15.84)	0.63 (0.59-0.68)	<0,001
Internet access n (%)				
Yes	17,517 (99.79)	9,780 (99.88)	Reference	
No	36 (0.21)	12 (0.12)	0.59 (0.31-1.14)	0.118
Metropolitan area n (%)				
Non-metro	12,582 (71.68)	7,999 (81.69)	Reference	
Metro	4,971 (28.32)	1,793 (18.31)	0.56 (0.53-0.60)	<0,001

OR = Odds ratio; CI = confidence interval; p-value determined by X^2 test.

Table 3. Frequency of self-reported physician-diagnosed pain condition or body location of pain among respondents with chronic pain of at least 6 months duration

Pain category (condition or location)	No. with each pain category[†]	% of each category that was primary pain[‡]	% of each primary pain [†]category contributing to the overall point prevalence[§]
Physician-diagnosed pain condition			
Low back pain	5,343	59.85	18
Osteoarthritis	1,614	69.02	6
Rheumatoid arthritis	5,331	59.78	18
Migraine	2,792	35.60	6
Carpal tunnel syndrome	233	21.30	<1
Fibromyalgia	823	54.60	3
Chronic daily headaches or tension-type	833	24.65	1
Diabetic peripheral neuropathy	17	40.09	<1
Ankylosing spondylitis	22	40.12	<1
Cancer-related pain	23	50.13	<1
Psoriatic arthropathy	142	50.79	<1
Postherpetic neuralgia	43	15.24	<1
Trigeminal neuralgia	32	13.18	<1
Others	653	22.65	1
Body location of chronic pain			
Head	4,232	32	8
Face/mouth (includes jaw)	1,366	11	1
Neck	4,152	10	2
Upper back	4,564	43	11
Mid back	2,655	25	4
Lower back	7,613	35	15

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Table 3. Frequency of self-reported physician-diagnosed pain condition or body location of pain among respondents with chronic pain of at least 6 months duration – continuation

Pain category (condition or location)	No. with each pain category[†]	% of each category that was primary pain[‡]	% of each primary pain [†]category contributing to the overall point prevalence[§]
Body location of chronic pain			
Chest (includes angina pectoris)	937	12	1
Stomach/abdomen	2,044	10	1
Pelvis/groin	1,546	8	1
Joints			
Hip(s)	4,807	39	11
Knee(s)	6,026	39	13
Ankle	4,344	10	2
Feet	4,565	23	6
Shoulder	5,506	10	3
Elbow(s)	4,108	4	1
Wrist(s)	5,039	35	10
Hand(s)	5,985	19	6
Other joint	437	0	<1
Hip (other than joint pain)	1,478	1	<1
Leg(s) or feet (other than joint pain)	2,544	8	1
Shoulder (other than joint pain)	1,873	9	1
Arm(s) or hand(s) (other than joint pain)	1,878	25	3
Other	951	33	2

[†]Respondents could check multiple pain conditions and locations; [‡]Primary Pain is defined as the pain the respondent would most like to relieve that has lasted at least 6 months. Respondents could choose only 1 pain condition or location as primary pain; [§]Percentages were calculated using the number of respondents with CP for at least 6 months as a denominator.

Table 4. Duration, frequency, and severity of primary chronic pain

Characteristics	Number of participants	% total
Duration of primary chronic pain	17,553	100
At least 6 months but less than 1 year	3,562	20.29
1 year or more	13,991	79.71
Frequency of pain		
Daily	8,731	49.74
Not daily, but more days than not	5,282	30.09
2–3 times a week	221	1.26
Once a week	412	2.35
2–3 times a month	722	4.11
Once a month	1,016	5.79
Less than once a month	717	4.08
Others	452	2.58
Average pain intensity in the past 3 months		
Mild (0–3)	2,435	13.87
Moderate (4–6)	10,055	57.28
Severe (7–10)	5,063	28.84
Worst pain intensity in the past 3 months		
Mild (0–3)	925	5.27
Moderate (4–6)	7,656	43.62
Severe (7–10)	8,972	51.11
Use of medications for the last pain episode		
No	2,543	14.49
Painkiller	4,794	27.31
NSAIDs	7,065	40.25
Others	3,151	17.95

NSAIDs = Nonsteroidal anti-inflammatory drugs.

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average intensity of the primary pain in the past 3 months was moderate, followed by severe and mild. Furthermore, the respondents took more NSAIDs and analgesic medication for the previously experienced pain, respectively.

DISCUSSION

This study is the first population-based prevalence survey of CP using cross-sectional Internet-based survey and suggests that 76% of the Brazilian population suffer from chronic pain, and the most prevalent pain is in the lower back, followed by the knee, hand, and shoulder.

In comparing our results with other population-based surveys conducted in Brazil, our overall prevalence is higher to that reported in Salvador city (prevalence of 41.4%) by Sá et al.[13], in São Paulo city (prevalence of 28.7%) by Cabral et al.[15] and in elderly people in the city of Florianópolis (prevalence of 29.3%) by dos Santos et al.[16]. The different results from these studies could be attributed to data collection methods and CP definitions that were different in each of the three published city studies and differed from our Internet-based survey. Nevertheless, understanding the prevalence, causes and consequences of CP in the Brazilian population has the potential to improve the allocation and utilization of health care resources and federal and state public policies in promoting pain management[2].

Our results are higher than previous estimates of chronic-pain prevalence in general population studies. The prevalence of CP reported in different studies varies a great deal, potentially being influenced by differences in the survey method, country or the definition of CP used. In fact, our overall prevalence estimate is twice higher to that reported by Johannes et al.[18] in the U.S. (prevalence of 30.7%) and Denmark (prevalence of 26.8%)[21] with similar CP definition and survey. Higher to that reported in the Chinese population (prevalence of 35.9%) by Chen et al.[22] in Japan (prevalence of 39.3%) by Inoue et al.[20] and in Scotland (prevalence of 50%) by Elliot et al.[23] in China, Japan and Scotland they defined CP using three or more months duration, whereas the U.S. and Denmark used six or more months.

Although the International Association for the Study of Pain (IASP) definition of CP is 3 or more months duration, we used a slightly more restrictive definition of CP, as a persistent or regularly recurrent pain with a duration of >6 months[18,20]. Moreover, despite our survey of CP being of open access, our participants were recruited through social media and pain management specialists and associations, and therefore, more respondents with pain may have been influenced to answer the survey and may influence the response bias.

Similar to other published research, we observed that the overall prevalence of CP was higher in females than in males. Research evidence supports gender-based differences in pain experience, including a higher prevalence and severity of CP in women[24]. Similar results were found in all regional studies in the cities of São Paulo[15], Florianopolis[16] and Salvador[13].

The present findings provide more evidence that this trend is universal. The differences have often been explained as having to do with social and cultural factors and the varying effects of different male and female hormones on the body and, recently, the different types of immune cell to process CP, microglia in male and T-cell in female mice. This difference was linked to testosterone, which could make T cells less able to mediate pain in the males, leading to their use of microglia instead[25].

Consistent with other CP surveys[26-28]; we found an increase in the overall prevalence of CP with aging. In most studies, the larger increase in CP prevalence occurs during the fourth or fifth decade of life and might be associated with the progression of degenerative changes in the musculoskeletal system[29]. Even though, the evidence for an age-related decrease in pain tolerance threshold is much weaker than that for an increase in pain threshold[30]. The elderly population comprises the fastest growing segment of the world's population, and the complexity of pain assessment often requires a multidisciplinary approach to diagnosis and management. The pain physician should work together with a psychologist or psychiatrist; and the physical therapist should be part of the team as well, to help with functionality[31].

Interesting relationships between CP and family structure were observed. Previous studies have reported that individuals living alone, or who are divorced, have a higher prevalence of musculoskeletal pain[20,32,33]. We found that people living alone report more CP. Sá et al.[13] also found a higher prevalence of CP in divorced and widowed individuals basically because divorce and widowhood involve social factors that may aggravate the appearance of CP.

CP is more prevalent in less privileged segments of the population, and factors that are associated with a lower socioeconomic level are consistently associated with an increase in CP[14]. The relation of poorer socioeconomic status indicators with CP is a consistent theme in the literature, and in particular, strong correlations have been observed between unemployment because of disability or health reasons and the presence of CP[18,34,35]. In our data, the odds of CP were increased among those in the lowest level of household income (also reported by previous studies)[15,22,36,37]. Longitudinal data is necessary to explore the temporal association between work-related disability, income, and CP to determine whether these are risk factors for or consequences of CP.

CP prevalence was higher in the Midwest, South and Northeastern regions, although participants with CP in the Southeast region accounted for 77.77% of total CP patients of the Brazilian sample. The Northeastern region had the lowest CP prevalence rate.

Brazilian Northern and Northeastern regions are classified by human development index as less favored regions with regard to life expectancy, education level, and per capita income, as compared to the South and Southeastern regions. Despite this, the Northeastern region has lower pain prevalence. In a way, these data are conflicting with the epidemiologic results of the association of CP and socioeconomic factors, where low income and low education level are risk factors[38].

Unemployed showed a higher prevalence of CP, similarly to self-employed compared to paid-employee. The Brazilian constitution considers an employee as any individual providing services, depending on and receiving a salary from an employer on a regular basis. A self-employed individual is defined as a private person that provides services to one or more companies,

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without employment relations. Although employed people can suffer from CP, especially work-related lower back pain, unemployment generates concerns in people, especially in relation to family stability, thereby exacerbating CP[39]. This can explain the higher prevalence of CP among unemployed.

Moreover, self-employed means that the service being provided is sporadic, there is no hierarchical subordination, and there is no monthly salary. As a self-employed, the individual provides services at their own costs and risks, without fixed working hours or subordination, they have no rights to regular benefits, such as paid vacations, health insurance, meals or transportation. This can explain the higher prevalence of CP among self-employed.

The main causes of CP in Brazil were back pain, rheumatoid arthritis, headaches, and osteoarthritis and it is similar to other CP surveys[18,40,41]. Furthermore, in agreement with other studies[15,42,43], we found that the lower back (35%) is the most common pain location. About 80% of adults experience low back pain at some point in their life[44]. Additionally, low back pain is the most common cause of job-related disability and a leading contributor to missed work days[45]. Pain can begin abruptly as a result of an accident or by lifting something heavy, or it can develop over time due to age-related changes of the spine. Sedentary lifestyles also can set the stage for low back pain, especially when a weekday routine of getting too little exercise is punctuated by strenuous weekend workout[46].

Our results are consistent with other inquiries and suggest a considerable public health load of CP in Brazil, with about two-thirds of the population reporting CP that has lasted at least 6 months and about 85% individuals reporting pain of moderate-to-severe intensity in the past 3 months. The high prevalence of CP and its negative societal burden provide justification for regarding CP as a public health priority[47].

The undertreatment of pain, a persistent problem for underdeveloped countries, only can be reduced with better diagnosis and treatment applied from a public health framework. Understanding pain as a disease may reduce the burden and its co-morbid conditions as well as potentially decrease the undertreatment and misdiagnosis of pain[2,48].

Overall, the majority has taken nonsteroidal anti-inflammatory drugs (NSAIDs) (7,065, 40.25%) at the time of the survey for CP management. NSAIDs are not recommended for long-term use, and careful surveillance to monitor for toxicity and efficacy is critical[49]. Although NSAIDs use was most prevalent across Brazil, 91% in Finland[41] or 95% in India[50] survey's respondents were taking NSAIDs. Hence, the risks from chronic use of NSAIDs are significant in CP management. They can cause life-threatening ulcers and gastrointestinal bleeding, a side-effect that occurs more frequently and with greater severity as people age[51].

This study does have several limitations. The estimate of CP in the general population relies on recall of pain status during a defined period of time and is susceptible to recall bias. Moreover, pain data were self-reported which can be imprecise and subject to reporting bias, particularly in elderly respondents (69% were 55 years old or more) who may have communication difficulties and possible were helped by other members of the house, which may have influenced their responses. Another aspect is related to internet access among the Brazilian population of different social and economic conditions, living in the different geographical regions of the country. The questionnaire was online, and the participants used the internet to answer the questions. Therefore, 99.79% of CP responses was that they have "internet access". Furthermore, despite Brazil's continental dimension and wide climate diversification, influenced by its geographical configuration, we did not focus on the relationship between CP and the climate or environmental situation in this study. Finally, there are no validated tools for assessing self-reported pain, and because pain is a subjective experience, assessments of self-reported pain intensity, duration, and frequency are considered acceptable. Similarly, we relied on self-reports for diagnoses of medical conditions, and we were unable to check this information. Nevertheless, the Internet-based survey methodology was an efficient way to reach a large sample of Brazil´s population, with demographic information available for the entire panel allowing for comparison of people with and without CP.

CONCLUSION

Our results are generally consistent with other surveys and suggest a considerable public health burden of CP in Brazil, with two-thirds of the population reporting CP that has lasted at least 6 months and about a third of individuals reporting pain of severe intensity in the past 3 months. There is a need for improved pain management policies in Brazil to ensure that patients with CP receive effective treatment.

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