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Inequalities in the management of back pain care in Brazil – National Health Survey, 2019

Desigualdades no manejo da dor nas costas no Brasil – Pesquisa Nacional de Saúde, 2019

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Abstract *The aim was to assess the presence of socioeconomic inequalities in the management of back pain among Brazilians. Cross-sectional study with data from the National Health Survey (2019). The management of back pain care was assessed using five outcomes: regular exercise; physiotherapy; use of medications or injections; integrative and complementary practice; regular follow-up with a health professional. The magnitude of inequalities of each outcome in relation to exposures (education and income) was estimated using two indices: slope index of inequality (SII) and concentration index (CIX). Of the 90,846 interviewees, 19,206 individuals (21.1%) reported some chronic back problem. The most prevalent outcomes were use of medications and injections (45.3%), physical exercise (26.3%) and regular follow-up with a health professional (24.7%). The existence of inequalities in the management of back pain in the Brazilian population was evident. The adjusted analysis showed that the richest and most educated performed two to three times more physical exercise, physiotherapy, integrative and complementary practices (ICPS) and regular follow-up with a health professional than the poorest and least educated. Absolute (SII) and relative (CIX) inequalities were significant for all outcomes.*

Key words *Pain management, Back pain, Health inequity*

Resumo *O objetivo foi avaliar a presença de desigualdades socioeconômicas no manejo da dor nas costas em brasileiros. Estudo transversal com dados da Pesquisa Nacional de Saúde (2019). O manejo da dor nas costas foi avaliado por meio de cinco desfechos: exercícios regulares; fisioterapia; uso de medicamentos ou injeções; prática integrativa e complementar; acompanhamento regular com profissional de saúde. A magnitude das desigualdades de cada desfecho em relação às exposições (escolaridade e renda) foi estimada por meio de dois índices: slope index of inequality (SII) e concentration index (CIX). Dos 90.846 entrevistados, 19.206 indivíduos (21,1%) relataram algum problema crônico nas costas. Os desfechos mais prevalentes foram uso de medicamentos e injeções (45,3%), prática de exercícios físicos (26,3%) e acompanhamento regular com profissional de saúde (24,7%). Ficou evidente a existência de desigualdades no manejo da dor nas costas entre brasileiros. Análise ajustada mostrou que os mais ricos e com maior escolaridade realizavam duas a três vezes mais exercícios físicos, fisioterapia, práticas integrativas e complementares (ICPS) e acompanhamento regular com profissional de saúde do que os mais pobres e com menor escolaridade. Desigualdades absolutas (SII) e relativas (CIX) foram significativas para todos os desfechos.*

Palavras-chave *Manejo da dor, Dor nas costas, Iniquidade em saúde*

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Introduction

Back pain represents a widespread public health problem in the world, with no age restriction, which affects approximately 40% of the global population throughout life, leading to being considered one of the main causes of disability in the world[1,2]. In the last 30 years, there has been a 50% increase in the years lived with disability caused by back pain, specifically in the lower back, mainly in low and middle income countries, due to limited access to qualified health care and measures to promote and prevention, such as physical activity and reduced sedentary lifestyle[3,4].

Among the factors related to the occurrence and intensity of back pain are the socioeconomic characteristics[5]. National and international studies indicate greater back pain among the less educated and poor, reaching 30% higher prevalence when compared to those with higher levels of education[6-9]. This is due to the fact that these individuals are more exposed to behavioral risk factors, such as sedentary lifestyle, poor diet, repetitive movements in work activities, and also to less access to care for back pain[6,10]".

Currently, guidelines for the treatment of back pain, both in Brazil and in Europe and the United States, guide the prioritization of physical exercise, physical therapy, massage, acupuncture, spinal manipulation, electrotherapy, psychological therapies and other complementary medicine techniques such as tai chi and yoga. Drug treatment should be used only after an ineffective response to non-pharmacological treatments[11,12]. In this same sense, the clinical protocol and therapeutic guidelines for chronic pain in Brazil reinforce that regular physical activity, cognitive behavioral therapy, and physiotherapy should be alternatives inserted in the treatment of all types of back pain, indicated according to capacity physical condition of the patient and under the supervision of a trained professional[13].

Given the importance and impact of back pain, in 2017, the World Health Organization (WHO) launched the 2030 Rehabilitation Initiative, which aims to strengthen health services for the provision and management of rehabilitation care, as this condition is one of the most contributing to need for health services, and that in low and middle income countries, access to these services is less than 50%[14,15]. However, the literature has shown continuous management as an effective method for the care of people with back pain and with the potential to reduce the negative impact on their quality of life, functionality and health costs, and that the greatest effect of pain on back is in the most vulnerable populations and with less access to treatments, few researches have evaluated this relationship[5,9].

This study aims to assess the presence of socioeconomic inequalities in the management of back pain among Brazilians, based on data from the 2019 National Health Survey.

Methods

Study design

Cross-sectional population-based study using data from the National Health Survey (NHS) carried out in 2019, by the Brazilian Institute of Geography and Statistics (IBGE) in partnership with the Ministry of Health. Its sample was representative of residents of permanent households located in urban or rural areas of municipalities in the five geographic regions, distributed in the 26 Federation Units (UF) and the Distrito Federal.

Participants

The sampling process was done in three stages. First, the census tracts were selected, followed by households and, finally, individuals aged 18 or over. The sample consisted of 108,457 households, where 90,846 individuals answered the questionnaire on chronic diseases.

Data collection

Data collection was performed by trained interviewers who used handheld computers (*personal digital assistance* [PDA]) for data storage. The NHS questionnaire consisted of three parts: a) household variables; b) general characteristics of all residents of the residence; and c) questions about work and health addressed to a randomly selected resident. The sample of the present study consisted of adults aged 18 years or more who reported a chronic back problem, such as chronic back or neck pain, low back pain, sciatica, vertebrae or disc problems. More details about the sampling process and the instruments are available in the NHS methodological article[16].

Variables

Back pain was defined from the question "Do you have any chronic back problems, such as

chronic back or neck pain, low back pain, sciatica, vertebrae or disc problems?". The answer alternatives were dichotomous (Yes or No). Those with an affirmative answer were asked about: 1) "Do you exercise regularly because of your back problem"; 2) "Does physical therapy because of the problem in the spine"; 3) "Uses medications or injections"; 4) "Make use of acupuncture, medicinal plants and herbal medicine, homeopathy, meditation, yoga, tai chi chuan or some other integrative and complementary practice because of the spine problem", all with answers dichotomized in yes/no. For the outcome management of back pain care was assessed using five outcomes: regular exercise practice; do physiotherapy; use medications or injections; uses acupuncture, medicinal plants and herbal medicine, homeopathy, meditation, yoga, tai chi chuan or some other integrative and complementary practice; and do regular follow-up with a health professional through the question: "What are you currently doing because of the problem in your spine?". (Integrative and complementary practices in health – pics are: traditional Chinese medicine/acupuncture, anthroposophical medicine, homeopathy, medicinal plants and phytotherapy, social thermalism/crenotherapy, art therapy, ayurveda, biodanza, circle dance, meditation, music therapy, naturopathy, osteopathy, chiropractic, reflex therapy, reiki, shantala, community therapy integrative, yoga, apitherapy, aromatherapy, bioenergetics, family constellation, chromotherapy, geotherapy, hypnotherapy, laying on of hands, ozone therapy and floral therapy).

Exposure variables were education in five categories (no education; incomplete primary education; complete primary education/incomplete secondary education; complete secondary education/incomplete higher education and complete higher education) and income in quintiles. Potential confounders were: region (North; Northeast; Midwest; Southeast; South), gender (male, female), age in full years (18 to 29; 30 to 39; 40 to 49; 50 to 59 and 60 or more) and self-reported skin color (white; black; brown; yellow/indigenous).

Data analysis

Prevalence and 95% confidence intervals for each outcome were calculated and adjusted analysis was performed using Poisson regression with robust variance adjustment to estimate the prevalence ratios and their respective confidence intervals according to education and income categories.

In addition, the magnitude of inequalities of each outcome in relation to exposures (education and income) was estimated using two indices: *slope index of inequality* (SII) and *concentration index* (CIX). The SII shows the absolute difference, in percentage points, between the prevalence of the extreme categories of education, using a logistic regression model. The CIX is based on a scale ranging from -100 to +100, where zero represents an uneven distribution between the education categories and positive values indicate that the distribution is in favor of the more educated. The SII presents the absolute inequality while the CIX the relative inequality[17]. All analyzes were performed using the STATA 15.0 statistical package, considering the sample design.

Ethical aspects

The project was approved by the National Research Ethics Committee of the National Health Council in August 2019 under protocol number 3.529.376. All participants signed an informed consent form, safeguarding the ethical principles.

Results

Of the 90,846 respondents, 19,206 individuals reported a chronic back problem (21.1%), constituting the sample of this study. Regarding the characteristics of the individuals included, about half of the sample was located in the Southeast region (49.4%), 57.0% were female, 41.7% were 65 years or older, 45.2% reported white skin color and approximately one in two individuals had not completed elementary school (46.2%).

Figure 1 shows the prevalence of each of the outcomes studied. The most prevalent were the use of medication and injections (45.3%; CI95% 44,6-46,0), physical exercise (26.3%; CI95% 25,7-27,0), regular monitoring with a health professional (24.7%; CI95% 24,1-25,3), followed by physiotherapy (12,1%; CI95% 11,6-12,6) and use of integrative and complementary therapies (6,8%; CI95% 6,5-7,2).

Regarding the analysis of inequalities, the practice of physical exercise and physiotherapy showed higher proportions as the level of education and income increased. The use of medications and injections showed a decrease in prevalence with increasing education and income. The use of some integrative and complementary practice and regular follow-up with a health professional increased according to income quintiles (Figure 2).

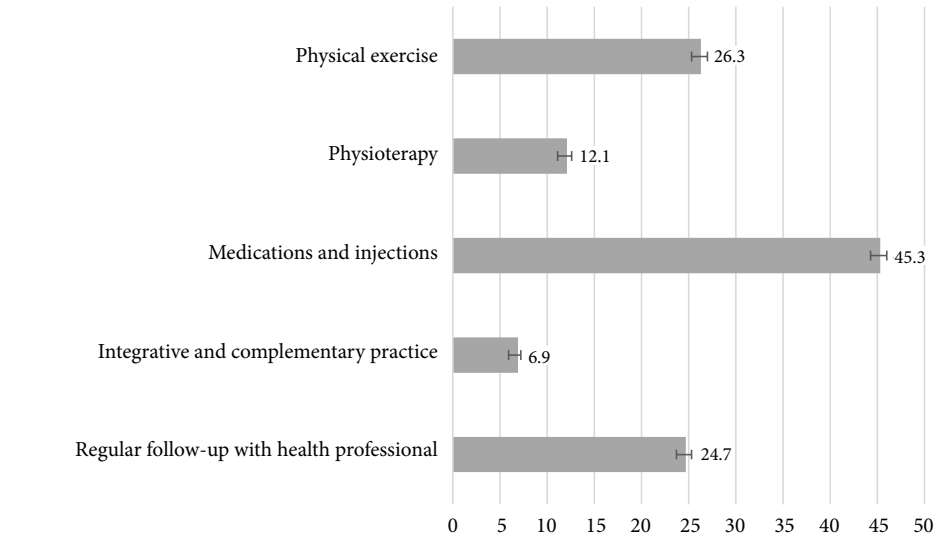


Figure 1. Prevalence of care for back pain management, National Health Survey, Brazil, 2019 (n = 19.206).

Source: Authors.

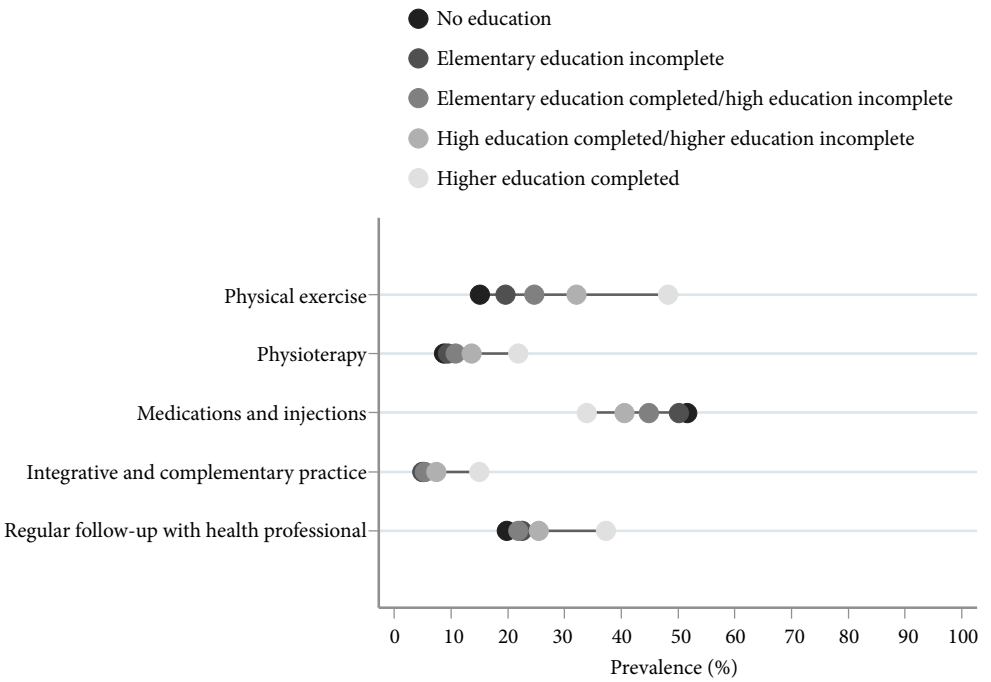
Tables 1 and 2 describe the outcome prevalence ratios according to the exposure variables. People from the highest income quintile (Q5) were about twice as likely to practice physical exercise, physiotherapy and use of integrative and complementary therapies compared to those from the first income quintile (Q1). The use of medications and injections was 21% lower in the richest people compared to those in the first quintile. When analyzing education as exposure, people with a higher level of education showed greater associations for most outcomes. The practice of physical exercise and physiotherapy were 3.1 and 2.8 times higher, respectively, in individuals with complete higher education compared to those without instruction. The use of medications and injections, on the other hand, showed an inverse association, as the association was 27.0% lower in those with complete higher education compared to those without education.

Positive relative inequalities (CIX) were greater in the practice of physical exercise, physiotherapy and the use of integrative and complementary practices, both for education and for income. The greatest absolute positive differences, represented by the SII, were identified in the practice of physical exercise (education: 34 percentage points [p.p.]; income: 27 p.p.) and regular monitoring (schooling: 15 p.p.; income: 21 p.p.) (Table 3).

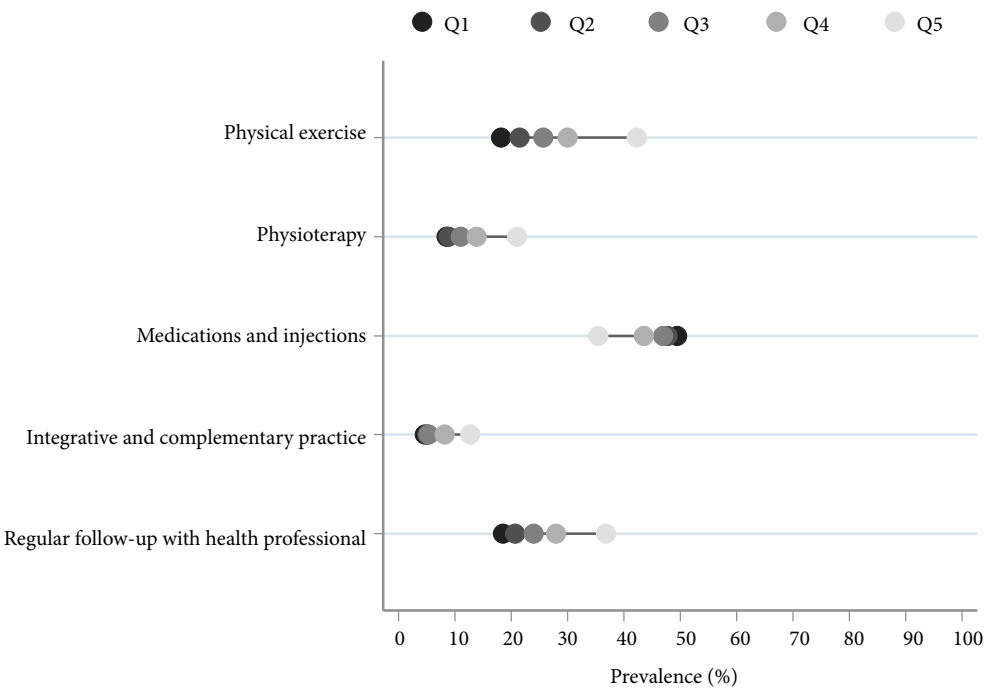
Discussion

The findings of this study reveal the existence of inequalities in the management of back pain among the Brazilian population, with greater performance of physical exercise, physiotherapy, PICS and regular monitoring with a health professional for the wealthier and more educated, while the use of drug treatment it was higher for the poorest and least educated.

Regarding the use of the treatments studied, it appears that approximately half of the individuals with back pain used medication or injections, while about a quarter of them had access to physical exercise and regular monitoring, and approximately one in ten performed physiotherapy or PICS for back pain. It is important to note that, comparing with a previous study, there was an apparent increase in the use of medication from 31.6% in 2013 to 45.3% in 2019 in Brazil, while physical therapy or PICS did not have this increase[9]. The high use of medications and injections and the low prevalence of access to non-pharmacological care services, recommended by national and international guidelines, may be related to the lack of knowledge of medical professionals about the new guidelines, lack of access and costs of services, beliefs of population on the use of medicines and also the interest of the pharmaceutical industry[18].



a) Prevalence of care for back pain management according to education, National Health Survey, Brazil, 2019 (n=19.206).



b) Prevalence of care for back pain management according to income, National Health Survey, Brazil, 2019 (n=19.206).

Figure 2. Prevalence of care for back pain management according education and income, National Health Survey, Brazil, 2019 (n = 19.206).

Source: Authors.

Table 1. Adjusted analysis of care for back pain management according income, National Health Survey, Brazil, 2019 (n=19.206)[a].

Variable	Prevalence ratio (CI 95%)				
	Q1[b]	Q2	Q3	Q4	Q5[b]
Physical exercise	1.00	1.15 (0.99;1.33)	1.35 (1.19;1.54)	1.59 (1.40;1.81)	2.01 (1.74;2.31)
Physiotherapy	1.00	1.00 (0.79;1.27)	1.08 (0.85;1.38)	1.42 (1.18;1.73)	2.02 (1.63;2.52)
Medications and injections	1.00	0.97 (0.90;1.04)	0.98 (0.90;1.06)	0.92 (0.85;1.00)	0.79 (0.72;0.87)
Integrative and complementary practice	1.00	0.83 (0.60;1.15)	0.89 (0.62;1.27)	1.32 (0.89;1.95)	1.97 (1.41;2.77)
Regular follow-up with health professional	1.00	1.02 (0.89;1.16)	1.09 (0.94;1.27)	1.24 (1.08;1.41)	1.44 (1.25;1.65)

[a] Adjust analysis for sex, age, skin color and geographic region. [b] lowest income quintile (Q1) to highest income quintile (Q5).

Source: Authors.

Table 2. Adjusted analysis of care for back pain management according education, National Health Survey, Brazil, 2019 (n = 19.206).

Variable	Prevalence ratio (CI95%)				
	No education	Elementary education incomplete	Elementary education completed/ high education incomplete	High education completed/ higher education incomplete	Higher education completed
Physical exercise	1.00	1.46 (1.20;1.76)	1.75 (1.40;2.18)	2.22 (1.83;2.68)	3.10 (2.54;3.78)
Physiotherapy	1.00	1.27 (0.97;1.65)	1.71 (1.23;2.37)	1.90 (1.43;2.53)	2.77 (2.11;3.63)
Medications and injections	1.00	1.01 (0.93;1.11)	0.94 (0.84;1.06)	0.85 (0.77;0.94)	0.73 (0.63;0.83)
Integrative and complementary practice	1.00	0.86 (0.60;1.26)	1.15 (0.72;1.81)	1.40 (0.97;2.02)	2.34 (1.63;3.36)
Regular follow-up with health professional	1.00	1.03 (0.88;1.21)	1.17 (0.96;1.42)	1.31 (1.10;1.55)	1.64 (1.38;1.96)

*Adjust analysis for sex, age, skin color and geographic region.

Source: Authors.

It is known that most individuals with back pain will not need health care, and their problem will only be resolved with proper management and guidance[11,19]. However, part of the population will demand specific care from health services, and it is estimated that about 50% of those who need it will not have access to these services[18,20].

The effectiveness of physical exercises for the management and treatment of back pain is a consensus in the literature, producing direct and indirect benefits, leading to the breaking of the vicious cycle of pain, improvement in motor function and prevention of worsening[12,21,22]. However, our results show that access to exercise as a treatment for back pain is greater for the richer and more educated, reinforcing the inequality, since the poor and less educated population is more often affected by the problem and also by its factors of risk, especially obesity and sedentary lifestyle, which have increased alarmingly in low and middle income countries, including Brazil[6,23].

Table 3. Adjusted analysis of care for back pain management according income, National Health Survey, Brazil, 2019 (n = 19.206).

Variable	Concentration index	CI95%	Slope index of inequality	CI95%
Physical exercise				
Education	20.0	19.0;21.0	34.0	31.0;36.0
Income	17.0	15.0;18.0	27.0	24.0;29.0
Physiotherapy				
Education	16.0	14.0;18.0	13.0	11.0;15.0
Income	19.0	16.0;21.0	14.0	12.0;16.0
Medications and injections				
Education	-7.0	-8.0;-6.0	-21.0	-23.0;-18.0
Income	-5.0	-6.0;-4.0	-15.0	-17.0;-12.0
Integrative and complementary practice				
Education	20.0	17.0;23.0	9.0	7.0;11.0
Income	20.0	17.0;23.0	8.0	7.0;10.0
Regular follow-up with health professional				
Education	9.0	8.0;11.0	15.0	12.0;17.0
Income	14.0	12.0;15.0	21.0	18.0;23.0

Source: Authors.

Physiotherapy is one of the non-pharmacological treatments of choice for back pain, given the variety of techniques with proven efficacy for the problem[11,22]. However, this service is not routinely provided by primary care, being considered a specialized method, which in most municipalities is offered in outsourced clinics and offices, which limits the population's access to this care[24]. It should be noted that from 2008 to 2019 there was an increase in the offer of rehabilitation care, including physiotherapy, due to the creation of the Family Health Support Centers, a federal government program. However, in 2020, together with the reduction in APS funding, the NASF came to an end, which could lead to worse access to rehabilitation care for the most vulnerable population[25].

Our results demonstrate a low prevalence of PICS for the treatment of back pain, especially among the poorest and least educated. The National Policy on Integrative and Complementary Practices (PNPIC) aims to ensure access to care known to be restricted to private services, such as acupuncture, meditation, osteopathy, chiropractic care, yoga, among others, which in turn are also indicated for effective treatment of back pain[26,27]. Includes Art Therapy, Ayurveda, Biodanza, Circle Dance, Meditation, Music Therapy, Naturopathy, Osteopathy, Chiropractic, Reflex Therapy, Reiki, Shantala, Integrative Community Therapy and Yoga to the National Policy on Integrative and Complementary Practices[27]. National studies found that approximately 25% of UBS reported offering PICS, mainly acupuncture (15%), distributed in 30% of Brazilian municipalities and in 100% of capitals, demonstrating that the availability of services is still low and higher in richer municipalities, reinforcing our findings[28,29].

The inequality in the regular monitoring by health professionals identified in this study reinforces the gap, which still exists, in health access and monitoring in Brazilian health services[30,31]. Monitoring back pain is essential for the treatment of complications and prevention of incapacities and loss of function, as well as to avoid an increase in inequalities, due to added costs, absence from work, loss of productivity, which contributes to impoverishment of the families[32]. Under the SUS, this monitoring should be carried out in the APS, which in turn, due to its underfunding and the reduction in its work teams, may have difficulty in receiving, treating and monitoring these patients[33,34].

Unlike other health care, the use of medications and injections was higher among the poorest and least educated. Drug therapy for back pain is indicated in conjunction with non-pharmacological treatments[11,27]. However, the cost of medicines is lower, access is quicker and the result is immediate pain relief, making them the most viable alternative for the vulnerable pop-

ulation. However, this population group will be susceptible to recurrence and chronicity of the problem, since the drugs have a short-term effect[35]. In line with this, the literature mentions that one of the great challenges for back pain care today, especially in low- and middle-income countries, is the expansion in the availability of health services that offer non-pharmacological care, and at a higher cost, for the poorest population, avoiding overmedicalization and reducing social disparities[23].

As strengths of the study we have the uniqueness of the topic, as we did not identify a similar study of national scope, contributing to fill gaps in the literature, in addition to collecting information for the construction of public policies aimed at improving access to treatments for back pain across the country. In addition, specific analyzes of inequalities were performed, using two proxy variables of socioeconomic status, which reinforced the consistency of our findings. However, as a limitation, one has to think about the recall bias regarding the filter question about back pain, since as it is not a medical diagnosis, its prevalence may have been overestimated, but we believe that it did not represent an important effect in the analysis of inequalities. In addition, it should be mentioned as a possible limitation the recognized higher proportion of illiterates and lower educational level among the Brazilian elderly.

Therefore, it is concluded that there are socioeconomic inequalities in the management of back pain among Brazilians. The richest and best educated are the ones who have more access to physical therapy, physical exercise and use of integrative and complementary therapies, in addition to having professional care and, consequently, achieving the best results. While the poorest and least educated tend to seek medications and injections for immediate pain relief and for being cheaper, it is not the most effective treatment, but complementary as non-pharmacological treatments are not sufficient to reduce the back pain[11].

In view of the above, the importance of expanding the offer of non-pharmacological care, especially in PHC, is verified, aiming at equitable access to proven effective health care for those who need it most, so that it is possible to control and manage pain in back, one of the fastest growing chronic non-communicable diseases and causes disabilities in the Brazilian population.

Collaborations

MO Saes conducted, drafted and critically reviewed; E Saes-Silva drafted and critically reviewed; SMS Duro drafted and critically reviewed; RG Neves conducted and performed the analysis.

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