Frequency of chronic low back pain and quality of life in faculty at a public university

Frequência da lombalgia crônica e a qualidade de vida em docentes de uma universidade pública

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ABSTRACT | INTRODUCTION: Chronic low back pain is the most prevalent musculoskeletal symptom in modern society and is associated with physical disability that interferes with quality of life and economic well-being, including absenteeism and early retirement. **OBJECTIVE:** To analyze the frequency of chronic low back pain among university professors and its correlation with quality of life. **METHODOLOGY:** This is a cross-sectional, quantitative study with bivariate data analysis. Clinical and demographic data were collected, and participants completed the following instruments: Visual Analogue Scale (VAS), the Roland-Morris Disability Questionnaire for Low Back Pain, and the 12-Item Short Form Health Survey (SF-12). **RESULTS:** The frequency analysis of low back pain showed that 59.74% of the professors had chronic low back pain. There was a high prevalence of herniated discs among them (43.48%). Only 10.39% of the sample had physical disability related to low back pain. The greater the physical disability, the lower the quality of life (r = -0.725 and p <0.001). **CONCLUSION:** Although faculty had a high frequency of chronic low back pain, low physical disability related to pain and lower quality of life were identified when compared to teachers without low back pain.

KEYWORDS: Low Back Pain. Chronic Pain. Faculty. Quality of Life.

RESUMO | INTRODUÇÃO: A lombalgia crônica é o sintoma osteomuscular mais prevalente, na sociedade moderna, e está associada à incapacidade física que interfere na qualidade de vida e na economia, em termos de absenteísmo no trabalho e aposentadoria precoce. **OBJETIVO:** Analisar a frequência da lombalgia crônica entre os professores universitários e a sua correlação com a qualidade de vida. **METODOLOGIA:** Trata-se de um estudo transversal, quantitativo, com análises bivariadas dos dados. Foram coletados dados clínicos demográficos e os participantes responderam aos instrumentos: Escala Analógica Visual de Dor — EVA, Questionário de Incapacidade específica para dor lombar: Roland-Morris e questionário 12-Item Short Form Health Survey (SF-12). **RESULTADOS:** A análise de frequência de dor lombar mostrou que 59,74% dos professores apresentaram lombalgia crônica. Houve uma elevada prevalência de hérnia de disco nos professores (43,48%). Apenas 10,39% da amostra apresentou incapacidade física relacionada à dor lombar. Quanto maior a incapacidade física, menor a qualidade de vida (*r* = -0,725 e *p* <0,001). **CONCLUSÃO:** Apesar dos docentes apresentarem alta frequência de dor lombar crônica, foi identificado baixa incapacidade física relacionada à dor e menor qualidade de vida quando comparados aos professores sem lombalgia.

PALAVRAS-CHAVE: Lombalgia. Dor Crônica. Professores. Qualidade de Vida.

1. Introduction

Low back pain refers to pain, muscle tension, or stiffness located in the lower posterior region of the spine, between the last costal arch and the gluteal fold, with or without radiating pain to the lower limbs[1]. It is the most prevalent musculoskeletal symptom in modern society and is associated with physical disability that significantly affects quality of life, resulting in an economic burden due to frequent medical leave, work absenteeism, and early retirement[2].

Low back pain can be classified as acute, subacute, or chronic. The acute phase lasts up to one month; the subacute phase lasts between two and three months; and the chronic phase refers to pain episodes lasting more than three months. Chronic pain is considered to have a poor prognosis and can be divided into four types: (1) specific spinal pathology, such as herniated disc, scoliosis, ankylosing spondylitis, or osteoarthritis; (2) radiating pain, associated with lesions or diseases of the somatosensory nervous system; (3) mechanical pain, caused by physical strain, overload, or poor posture affecting muscles, ligaments, and joints; and (4) nonspecific chronic pain, which is statistically the most common type, associated with musculoskeletal and psychological factors[1,3].

According to data from the Instituto Brasileiro de Geografia e Estatística (Brazilian Institute of Geography and Statistics) — IBGE, based on the 2019 National Health Survey, approximately 21.6% of the Brazilian population reported chronic spinal pain, with the lower back being the most frequently affected region[4]. The literature shows that chronic low back pain can affect 75% to 85% of people at some point in their lives, particularly among the economically active population[1].

Given the high prevalence and increasing incidence of chronic low back pain — as well as its impact on work absenteeism, healthcare costs, social security expenditures, and overall quality of life — it is important to monitor this health issue among faculty members[5]. University professors are prone to developing and reporting low back pain due to occupational factors such as maintaining a head-down posture while reading, standing for long periods during lectures, mental fatigue, and repetitive movements when grading papers or daily computer use[2].

Studies suggest that between 60% and 80% of professors experience work-related low back pain, which significantly impacts quality of life by reducing physical and mental performance[5,6]. In this context, the present study aims to analyze the prevalence of chronic low back pain among professors at the Universidade Federal do Oeste da Bahia (UFOB), identify factors associated with its occurrence, and assess its correlation with quality of life.

2. Methodology

2.1 Study design

This was a cross-sectional study with a quantitative approach, using descriptive analysis of data through absolute and relative frequencies, prevalence rates, and percentages.

2.2 Study setting and period

The study was conducted from September 5, 2023, to October 20, 2024, at the Universidade Federal do Oeste da Bahia (UFOB), across campuses in Barreiras, Luís Eduardo Magalhães, Santa Maria da Vitória, Barra, and Bom Jesus da Lapa.

2.3 Population and eligibility criteria

Participants were active professors at UFOB, of both sexes, aged 25 to 65 years, regardless of color, race, ethnicity, sexual orientation, gender identity, or socioeconomic status. Inclusion criteria: being an active faculty member at UFOB during data collection, aged between 25 and 65, and signing the Informed Consent Form (ICF). Exclusion criteria: professors with rheumatic diseases or inconclusive diagnoses explaining the back pain. Out of 81 eligible professors, 77 met the criteria and voluntarily participated. The sampling was non-probabilistic.

2.4 Data collection

Data were collected via an electronic questionnaire sent by email and WhatsApp, using the university's institutional mailing list and professor WhatsApp groups. After signing the ICF, participants provided information on sex, age, weight, height, teaching field, medical diagnosis of low back pain, presence of back pain, diagnosis of herniated disc or other spinal conditions, presence of rheumatic disease, and engagement in physical activity (type and frequency). Three validated instruments were then applied: the Visual Analogue Scale (VAS) for pain, the Roland-Morris Disability Questionnaire, and the 12-Item Short-Form Health Survey (SF-12).

Pain intensity was measured using the VAS, represented by a numerical line from 0 to 10, where 0 means "no pain" and 10 means "worst imaginable pain." Participants were asked to mark the number that best represented their level of low back pain[7].

Functional Disability: The Roland-Morris Questionnaire is a validated and widely used tool for assessing functional disability in individuals with low back pain. It contains 24 statements related to daily activities, pain, and physical function. Each "yes" response scores 1 point, and each "no" scores 0. The total score ranges from 0 to 24, with values above 14 indicating functional disability[8,9].

Quality of Life Assessment: Quality of life was measured using the 12-Item Short-Form Health Survey (SF-12), a well-established instrument that evaluates eight health-related dimensions over the previous four weeks: physical functioning, physical limitations, bodily pain, general health, vitality, social functioning, emotional limitations, and mental health. Using a standardized algorithm, two summary scores are calculated: the Physical Component Summary (PCS) and the Mental Component Summary (MCS), both ranging from 0 to 100. A cutoff score of 50 is used, with higher scores indicating better quality of life[10].

2.5 Data analysis

Collected data were organized in Microsoft Excel and analyzed using SPSS® for Windows. Descriptive analyses were performed to obtain absolute, relative, and percentage frequencies.

For statistical testing, Student's t-test for independent samples, Fisher's exact test, One-Way ANOVA, Chi-square, and Pearson's correlation were applied to assess associations between chronic low back pain–related disability and quality of life. The significance level was set at $p < 0.05$.

2.6 Ethical considerations

In accordance with Resolution Nº 466/2012 of the Ministério da Saúde do Brasil (Brazilian Ministry of Health), the study was reviewed and approved by the Research Ethics Committee of the Universidade Federal do Oeste da Bahia, under approval number 6.530.155. Data collection began after approval was granted.

3. Results

This study analyzed data from 77 professors at the Universidade Federal do Oeste da Bahia (40 women and 37 men), aged 25 to 65, representing diverse academic fields — health sciences, exact sciences, biological sciences, and humanities. The overall prevalence of chronic low back pain among participants was 59.74%. Professors were categorized as having or not having chronic low back pain based on a positive response to the question "Have you been medically diagnosed with low back pain?" and having symptoms lasting three months or more.

There was no significant difference between men and women regarding pain prevalence, indicating no gender association. The group with chronic low back pain had statistically higher age and BMI values, with age emerging as the most influential variable associated with pain presence. There was no significant association between physical activity and low back pain. Among those with chronic low back pain, 43.48% had herniated discs, and 39.13% had nonspecific chronic pain. Regarding disability (Roland-Morris), only 10.39% of participants with chronic pain showed functional disability (scores above 14). When comparing functional capacity (SF-12) between groups, a relationship was observed between chronic low back pain and physical quality of life (PCS), but no association was found with the mental component (MCS) (Table 1).

Table 1. Clinical and demographic characteristics of professors at the Universidade Federal do Oeste da Bahia in the groups with chronic low back pain and without low back pain

Variable	Chronic Low Back Pain *n* (%)	Without Low Back Pain *n* (%)	*p*-value
Sex			
Female	24 (60.0%)	16 (40.0%)	0.573
Male	22 (59.45%)	15 (40.54%)	
Physical Activity			
Active	36 (60.0%)	24 (40.0%)	0.930
Sedentary	10 (58.82%)	7 (41.17%)	
Spinal Disorders			
Herniated Disc	20 (100%)	0	—
Scoliosis	7 (87.5%)	1 (12.5%)	—
Lumbosciatica	1 (100%)	0	—
Nonspecific	18 (100%)	0	—
Total	46	31	—
Variable	Chronic Low Back Pain Mean (SD)	Without Low Back Pain Mean (SD)	*p*-value
Age	42,07 (8.15)	37.65 (4.72)	0.004
BMI	26.18 (4.20)	25.13 (3.88)	0.220
Disability (Roland-Morris)	6.07 (6.03)	0.00 (0.00)	<0.001
PCS	48.61 (9.15)	54.90 (4.69)	<0.001
MCS	44.24 (10.17)	48.32 (9.18)	0.483

Source: authors (2024).
Legend: *n* – sample size; % – relative frequency; SD – standard deviation; BMI – Body Mass Index; PCS – physical component; MCS – mental component. Chi-square test and Student's t-test.

Comparisons were made between physical disability (Roland-Morris), pain intensity (VAS), functional capacity (PCS), and the mental health domain (MCS) of the SF-12. The results revealed a strong, statistically significant negative correlation between PCS (SF-12) and disability (Roland-Morris). In contrast, the emotional, mental health, and social domains (MCS) showed no significant correlation with disability.

A moderate to strong significant correlation was also found between disability (Roland-Morris) and pain intensity (VAS). When examining the relationship between pain intensity (VAS) and functional capacity (PCS), a significant negative correlation of moderate to strong magnitude was observed.

No significant correlations were identified between pain intensity (VAS) and the mental health domain (MCS), nor between the physical (PCS) and mental (MCS) components of the SF-12.

In the analysis of the group without low back pain, a moderate to strong correlation was observed between pain intensity (VAS) and physical capacity (PCS). However, pain intensity and mental state (MCS) showed no statistically significant correlation. On the other hand, a moderate to strong correlation was found between PCS (SF-12) and MCS (SF-12) (Table 2).

Table 2. Relationship between specific disability for low back pain (Roland-Morris), Visual Analog Scale for Pain (VAS), and Quality of Life (SF-12) using Pearson's correlation coefficient for participants with chronic low back pain and without low back pain

Group	Related Items		Correlation	Significance
Chronic Low Back Pain	Physical disability (Roland-Morris)	Pain intensity (VAS)	0.651	<0.001
		PCS	-0.725	<0.001
		MCS	-0.246	0.1
	Pain intensity (VAS)	PCS	-0.613	<0.001
		MCS	-0.80	0.596
Without Low Back Pain	Pain intensity (VAS)	PCS	-0.560	<0.001
		MCS	-0.145	0.437
	PCS	MCS	-0.405	0.024

Source: authors (2024).
Legend: PCS – physical component; MCS – mental component.
Pearson's correlation.

4. Discussion

The high prevalence of chronic low back pain among professors found in this study (59.74%) may be attributed to biomechanical factors — such as poor ergonomic posture and repetitive movements — and external factors, including inadequate furniture, excessive workload, and the way professors conduct their classes[5,11]. However, the result was higher than in a Brazilian study (32%) and an international one (40.3%)[11,12]. Such variation may result from differences in data collection methods, sampling techniques, and sample size. For instance, the Brazilian study was a systematic review that included both public and private university professors[12].

The findings of this research, which did not identify a significant association between gender and chronic low back pain, differ from those of other authors who reported a higher prevalence among women[11,13]. This discrepancy may be related to sample characteristics and local sociocultural factors that influence pain perception and reporting[12]. Hormonal influences, such as menstrual cycle variations and contraceptive use, have been identified as modulators of pain sensitivity in women. Additionally, the combination of professional and domestic responsibilities may increase the risk of low back pain in this group[12].

The absence of gender association in the present study suggests that other determinants — ergonomic, psychosocial, and environmental — may have a greater impact on the development of low back pain among UFOB professors.

Regarding age, participants over 40 years were more likely to experience chronic low back pain, a finding consistent with previous Brazilian studies. A study conducted in Brazil in 2023 showed that university professors over 36 have a higher incidence of low back pain[14]. The presence of low back pain in this age group may be related to long teaching careers, extended working hours, prolonged poor posture, and lack of appropriate work materials[5]. These factors contribute to degenerative processes in the spine, leading to tissue overload and decreased strength of lumbar and abdominal muscles[5]. According to studies done in Ethiopia, teachers with more than 20 years of work experience were the most likely to develop musculoskeletal pain[2].

Among professors experiencing pain, this study found a 43.48% prevalence of herniated disc, consistent with findings from previous research. The prolonged sitting posture typical of academic work places tension on the hamstring and gluteal muscles, whose stiffness compromises lumbopelvic alignment. This leads to excessive loading of lumbar tissues and increased intradiscal pressure, which can result in herniated discs — one of the major causes of chronic low back pain[3,15].

The moderate prevalence of scoliosis found among professors in this study may be explained by age-related degenerative changes, consistent with the participants' average age[16]. Plus, about 60% to 80% of patients with this condition have lower back pain[16]. This study also revealed a high prevalence of nonspecific chronic low back pain among professors with symptoms. Nonspecific pain is believed to be related to musculoskeletal factors, such as reduced disc strength, nerve root compression, and bone or joint damage resulting from poor posture, physical strain, and repetitive movements — combined with psychological factors such as stress, anxiety, and depression[1,5]. Institutional demands, job insecurity, inadequate compensation, and student pressure may also contribute to the onset and chronicity of pain[11]. This can be explained by the association between pain duration and structural brain changes, particularly in regions involved in emotional pain processing. In this sense, teachers who weren't satisfied with their profession were more likely to have low back pain[2].

A sedentary lifestyle is one of the many risk factors linked to low back pain in teachers[5]. However, the present study did not find a significant association between physical activity and chronic low back pain. This may be due to individuals with back pain adopting exercise as a therapeutic strategy, or to the heterogeneity of physical activities — not all of which are effective in preventing or managing low back pain[17]. However, in a study conducted in Ethiopia, researchers found a higher chance of low back pain among physically inactive teachers compared to those who were physically active. They explain that this difference happens because weak and shortened muscles can lead to spinal misalignment, while regular physical exercise can strengthen the muscles that support and keep the spine properly aligned for optimal function[2].

Another relevant finding in this study, based on the Roland-Morris Disability Questionnaire, was that participants did not present significant physical disability, with mean scores below the cutoff value (14). Similar to what's reported in the literature, they also didn't find functional disability among university professors with low back pain[14]. The most affected quality-of-life domain in this study was the physical

component among participants with chronic low back pain. This finding reflects the limitation of movement caused by pain, which compromises physical performance[18]. However, in the mental component score (MCS), the group with chronic low back pain didn't show significant differences compared to the group without pain[14]. This aligns with Brazilian studies, which also found no impact of low back pain on teachers' mental health[14]. On the other hand, pain perception can be influenced by emotional and affective factors, since negative emotional states tend to intensify the pain experience, while a resilient and tolerant mindset can help reduce pain sensitivity[11].

This study also revealed a significant association between the physical component (PCS) of the SF-12 and disability due to low back pain, as assessed by the Roland-Morris Questionnaire through Pearson's correlation. Results indicated that individuals with higher levels of disability exhibited lower PCS scores, reflecting difficulty in performing daily activities and, consequently, reduced quality of life[8,19]. Another relevant finding was the moderate to strong correlation between the physical component (PCS) and pain intensity (VAS), indicating that higher pain levels impair individual functionality[8,19].

The correlation between functional disability and pain intensity (VAS) was classified as moderate to strong, suggesting that severe low back pain contributes to the progression and worsening of disability[8]. A Brazilian study conducted in 2024 reinforces that people with severe chronic low back pain tend to have greater functional impairment, which negatively affects their social interactions and leisure activities[19].

Among this study's limitations, the lack of information on the teachers' career length and their use of painkillers or anti-inflammatory medications stands out, as these factors could have influenced the intensity of the pain they reported. In addition, the low participation rate among some of the faculty is also an important limitation — whether due to the heavy workload typical of academic careers, which limits the time available to complete research questionnaires, or concerns about privacy and how the data would be used, which may have discouraged participation. Finally, the sample size may have contributed to the lack of statistical significance in some of the associations analyze.

5. Conclusion

Although university professors showed a high frequency of chronic low back pain, they demonstrated low levels of pain-related physical disability according to the Roland-Morris Questionnaire, as well as reduced quality of life due to functional limitations assessed by the SF-12.

Participants with chronic low back pain, even in the absence of significant physical disability, also showed poorer quality of life compared to those without pain, since pain negatively affects functional performance. Therefore, the findings of this study suggest that while chronic low back pain reduces the performance of university professors, in some cases it does not completely prevent them from carrying out their daily activities.

Authors' contributions

The authors declare that they made substantial contributions to this work in terms of the conception or design of the study; the acquisition, analysis, or interpretation of data; and the drafting or critical revision of the manuscript for important intellectual content. All authors approved the final version to be published and agree to be accountable for all aspects of the work.

Competing interest

No financial, legal, or political conflicts of interest involving third parties (such as government agencies, companies, or private foundations) were reported in any aspect of the submitted work, including but not limited to grants and funding, advisory board participation, study design, manuscript preparation, or statistical analysis.

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