

## The impact of chronic neuropathic low back pain: a cross-sectional analysis of pain, disability, kinesiophobia, anxiety, depression, and quality of life

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### Abstract

**Background:** This cross-sectional analysis investigated the impact of chronic neuropathic low back pain (CNLBP) on pain, disability, kinesiophobia, anxiety, depression, and quality of life, the level of each factor's implication, and attempted to identify key predictors of disability.

**Methods:** Seventy individuals diagnosed with chronic neuropathic low back pain were enrolled. We assessed pain intensity using the short form McGill pain questionnaire (SF-MPQ), disability using the Roland-Morris disability questionnaire (RMDQ), kinesiophobia using the fear-avoidance belief questionnaire during physical activity/work (FABQPA/W), depression using the patient health questionnaire (PHQ-9), anxiety using the generalized anxiety disorder scale (GAD-7), and quality of life (QoL) using the World Health Organization QoL scale (WHOQOL-BREF). We analyzed relationships between the measures using Pearson's correlation coefficients and conducted multiple regression analyses to examine any confounding variables. We defined statistical significance as a p-value of less than 0.05.

**Results:** We observed significant correlations among various clinical outcomes. SF-MPQ demonstrated a strong positive correlation with RMDQ ( $r = 0.561$ ,  $p < 0.001$ ), FABQPA ( $r = 0.338$ ,  $p = 0.004$ ), FABQW ( $r = 0.381$ ,  $p = 0.026$ ) and PHQ-9 ( $r = 0.430$ ,  $p < 0.001$ ). Conversely, SF-MPQ negatively correlated with WHOQOL-BREF Q1 ( $r = -0.386$ ,  $p = 0.001$ ). RMDQ was significantly positively correlated with PHQ-9 ( $r = 0.427$ ,  $p < 0.001$ ), FABQPA ( $r = 0.442$ ,  $p < 0.001$ ), and GAD-7 ( $r = 0.322$ ,  $p = 0.007$ ), while it exhibited a negative correlation with WHOQOL-BREF Q1 ( $r = -0.482$ ,  $p < 0.001$ ). Multiple regression analysis identified key predictors of RMDQ, with a statistically significant model [ $F(3.66) = 17.975$ ,  $p < 0.001$ ] and an  $R^2$  of 0.450, explaining 45 % of the variance in RMDQ scores. Higher scores on SF-MPQ ( $B = 0.373$ ,  $p = 0.001$ ) and FABQPA ( $B = 0.245$ ,  $p = 0.015$ ) were significant positive predictors of increased RMDQ scores, while higher WHOQOL-BREF Q1 scores ( $B = -0.275$ ,  $p = 0.008$ ) were associated with lower RMDQ scores.

**Conclusion:** The results indicate that pain, kinesiophobia, and depressive symptoms are significantly positive predictors of increased disability in chronic neuropathic low back pain, while better QoL is associated with reduced disability. HIPPOKRATIA 2025, 29 (1):25-31.

**Keywords:** Neuropathic pain, chronic low back pain, kinesiophobia, quality of life, disability

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### Introduction

Neuropathic pain (NP) affects 6.9 to 10 % of the general population and is estimated to impact 17 % of adults with chronic pain<sup>1-5</sup>. Up to 30 % of adults attending pain clinics experience this condition, with lumbar radiculopathies being one of the most frequent causes of chronic NP<sup>1-2,6-10</sup>. Chronic NP is characterized by elevated levels of initial pain intensity and associated disability<sup>11-14</sup>.

NP often also leads to significant distress and disability, profoundly affecting the patient's quality of life

(QoL), sleep, and mental health. Numerous studies indicate that chronic NP has a more substantial impact on anxiety, depressive symptoms, and healthcare utilization compared to non-NP<sup>6,10,15-21</sup>. The severity of neuropathic symptoms, as measured by the Douleur Neuropathique 4 (DN4) questionnaire, is strongly correlated with decreased QoL (similar to individuals with severe cardiovascular or psychiatric conditions<sup>22-23</sup> and sleep difficulties<sup>24</sup>). Such findings underscore the severe impact of NP, highlighting the troubling nature of the symptoms

and the complexities involved in their treatment<sup>24-26</sup>. Despite a growing body of evidence regarding NP, no study has comprehensively examined all facets of this intricate condition so that innovative therapeutic approaches can address these gaps and enhance pain management.

This cross-sectional study aims to investigate the association of chronic neuropathic low back pain (CNLBP) with pain, disability, kinesiophobia, anxiety, depression, and QoL, the level of each factor's implication, as well as to identify the key predictors of disability. This study was conducted based on the hypothesis that CNLBP exerts a severe impact on these factors, leading to significant impairments in daily functioning, increased psychological distress, and reduced overall QoL. By exploring these dimensions, the study attempts to provide a comprehensive understanding of how CNLBP affects various aspects of patient's lives, enhancing the clinical approach.

## Material and Methods

### Study design

We conducted this cross-sectional study (clinicaltrials.gov No: NCT05322811) at the Department of Physiotherapy of the International Hellenic University and obtained Ethical approval from the Ethics Committee of the International Hellenic University (No. EC-52/2024). The study adhered to the guidelines of the Declaration of Helsinki; all subjects were fully informed, and consent was obtained before the study.

### Sample

Eligible participants were adults with CNLBP [ $\geq 3$  months, DN4  $> 4$ , short-form McGill pain questionnaire (SF-MPQ)  $> 0$ ] who consented and complied with all aspects of the study protocol, methods, and providing data during contact. Exclusion criteria were previous surgeries in the lower back region, severe spinal pathology (e.g., infection, fracture, or cancer), being pregnant or within a year after having given birth, inadequate Greek literacy, body mass index (BMI) greater than 40 kg/m<sup>2</sup>, history of mental health disorder (diagnosed anxiety disorder, depression, psychogenic illness or manic episode), history of other neuromuscular condition.

### Sample size

The *a priori* power analysis conducted using the G\*Power program, Version 3.1.9.7, specified that was necessary a minimum sample size of 64 subjects to achieve sufficient statistical power for detecting significant effects ( $r = 0.30$ ,  $\alpha = 0.05$ ,  $1 - \beta = 0.80$ )<sup>27</sup>. The study ultimately included 70 subjects to enhance the robustness of the findings and the potential attrition.

### Outcomes

The clinical outcomes included pain intensity using the SF-MPQ<sup>28</sup>, disability using the Roland-Morris disability questionnaire (RMDQ)<sup>29</sup>, kinesiophobia using the fear-avoidance belief questionnaire during physical activity/work (FABQPA/W)<sup>30</sup>, anxiety using the gener-

alized anxiety disorder scale (GAD-7)<sup>31</sup>, depression using the patient health questionnaire (PHQ-9)<sup>32</sup>, and QoL using the World Health Organization QoL scale (WHO-QOL-BREF) (permission authorization ID: 388953)<sup>33</sup>. All variables were considered primary clinical outcomes.

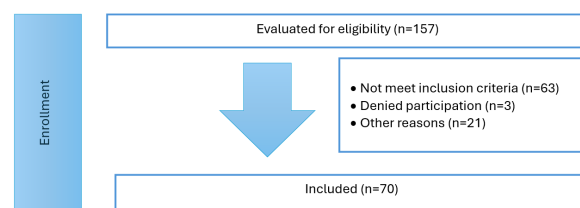
### Statistical analysis

Statistical analysis was conducted with the IBM SPSS Statistics for Windows, Version 25.0 (IBM Corp., Armonk, NY, USA). Demographic details of the study participants are summarized with descriptive statistics, providing a comprehensive profile of the sample population. We investigated the variables' associations using the Pearson correlation analysis and used the predictive associations to perform the regression analysis. We utilized a two-step approach to examine the most relevant predictors for the final regression models. First, we regressed each independent variable against the dependent variable in a simple linear regression. We performed this first step of the analysis to identify variables with potential predictive value, from which we selected those correlating with  $p \leq 0.2$  at univariate testing for entry into multivariable analysis<sup>34</sup>. This threshold prevented us from missing any important predictors. Then, we used stepwise regression to reduce the predictors, keeping only those variables that were significant after controlling for other variables, and used variance inflation factors to measure multicollinearity among the predictors. These two method combinations allowed for an exhaustive initial variable selection. As the analysis focused only on single-based predictors, it also enabled the optimization of a more parsimonious final model. We set statistical significance at a p-value less than 0.05.

## Results

A total of 70 individuals met the inclusion criteria and were included in the study, as shown in Figure 1. All participants completed SF-MPQ, RMDQ, FABQPA/W, WHOQOL-BREF, GAD-7, and PHQ-9. No participants were excluded from the analysis.

The demographic characteristics of the sample are presented in Table 1. Of the participants, 31.4 % ( $n = 22$ ) were male and 68.6 % ( $n = 48$ ) were female. The mean age of participants was  $45.67 \pm 19.02$  years. The average BMI was  $27 \pm 5.45$  kg/m<sup>2</sup>. Participants reported a mean pain duration of  $132.10 \pm 142.82$  months. Regarding marital status, 45.6 % ( $n = 32$ ) of the participants were



**Figure 1:** Flow diagram of recruitment of the 70 individuals diagnosed with chronic neuropathic low back pain who met the inclusion criteria and were included in the study.

**Table 1:** Demographic characteristics of the seventy individuals with chronic neuropathic low back pain enrolled in this cross-sectional study.

<b>Sex</b>	
Male	22 (31.4)
Female	48 (68.6)
Age (years)	45.67 ± 19.02
BMI (kg/m <sup>2</sup> )	27 ± 5.45
Duration of pain (months)	132.10 ± 142.82
<b>Marital status</b>	
Married	32 (45.6)
Unmarried	34 (45.7)
Widow	4 (5.7)
<b>Educational level</b>	
Primary education	34 (48.6)
Secondary education	24 (34.3)
Postgraduate studies	10 (14.3)
Additional education	2 (2.9)
<b>Occupation</b>	
Private employees	19 (27.1)
Pensioners	15 (21.4)
Students	11 (15.7)
Freelancers	9 (12.9)
Public servants	8 (11.4)
Unemployed	8 (11.4)
<b>History of pain</b>	
Never	4 (5.7)
Once	4 (5.7)
More than once in the past	62 (88.6)
<b>Previous physiotherapy treatments</b>	
Yes	56 (80)
No	14 (20)

Values are presented as number with percentage in brackets or as mean ± standard deviation.

married, 45.7 % (n =34) were unmarried, and 5.7 % (n =4) were widowed. Educational attainment varies, with 48.6 % (n =34) having completed primary education, 34.3 % (n =24) secondary education, 14.3 % (n =10) holding postgraduate degrees, and 2.9 % (n =2) having additional education. Regarding occupation, 27.1 % (n =19) were private employees, 12.9 % (n =9) were pensioners, 15.7 % (n =11) were students, 12.9 % (n =9) were freelancers, and 11.4 % (n =8) were public servants and unemployed. Regarding pain history, the majority, 88.6 % (n =62), had experienced this type of pain multiple times, while the remaining percentage was divided into equal percentages of 5.7 % (n =4) that had experienced it once before and never before. Notably, 80 % (n =56) reported having undergone previous physiotherapy treatments.

#### Key statistics and distributions

The key statistics and distributions for SF-MPQ,

RMDQ, FABQPA/W, GAD-7, PHQ-9, and WHOQOL-BREF in the sample are presented in Table 2. SF-MPQ showed a mean value of  $3.09 \pm 1.02$ . The level of RMDQ within the sample reported a mean value of  $10 \pm 5.33$ , indicating that participants could perform approximately 14 of the 24 activities assessed. FABQPA/W showed a mean value of  $16.9 \pm 4.25$ , while FABQW  $21.44 \pm 8.59$ . GAD-7 indicated a mean value of  $9.9 \pm 4.97$ , suggesting moderate anxiety within the sample, and PHQ-9 showed a mean value of  $9.24 \pm 5.25$ , falling within the borderline range that distinguishes minor depression, dysthymia, and major depression. This level of depression caused partial difficulty in daily life for a sizable portion of the sample, affecting 57 % of participants. WHOQOL-BREF Q1 (“How would you rate your QoL?”) presented a mean value of  $3.31 \pm 0.81$ , indicating a neutral perception of QoL, while WHOQOL-BREF Q2 (“How satisfied are you with your QoL?”) reported a mean value of  $3.21 \pm 0.98$ , suggesting neither satisfaction nor dissatisfaction with overall QoL.

#### Correlation between the different variables

The paired sample correlations for the analyzed variables are presented in Table 3. The results demonstrate a strong positive correlation between the SF-MPQ and RMDQ scores ( $r = 0.561$ ,  $p < 0.001$ ), indicating that high pain scores are associated with elevated levels of disability. In contrast, a significant negative correlation emerged between SF-MPQ and WHOQOL-BREF Q1 scores ( $r = -0.386$ ,  $p = 0.001$ ), reflecting that increased pain intensity is linked to reduced QoL. Additionally, SF-MPQ showed positive correlations with FABQPA ( $r = 0.338$ ,  $p = 0.004$ ), FABQW ( $r = 0.381$ ,  $p = 0.026$ ), and PHQ-9 ( $r = 0.430$ ,  $p < 0.001$ ), suggesting associations between higher pain intensity and fear-avoidance behaviors (physical activity and work) as well as depressive symptoms.

The RMDQ score also demonstrated significant correlations, including a strong negative association with WHOQOL-BREF Q1 ( $r = -0.482$ ,  $p < 0.001$ ) and WHOQOL-BREF Q2 ( $r = -0.372$ ,  $p = 0.002$ ), emphasizing the impact of disability on QoL. Additionally, RMDQ showed a positive relationship with FABQPA ( $r = 0.442$ ,  $p < 0.001$ ) and PHQ-9 ( $r = 0.427$ ,  $p < 0.001$ ), highlighting the interplay between disability, fear-avoidance behaviors, and depressive symptoms.

Among psychological factors, the GAD-7 was positively correlated with both SF-MPQ ( $r = 0.289$ ,  $p = 0.015$ ) and RMDQ ( $r = 0.322$ ,  $p = 0.007$ ), demonstrating that anxiety is associated with increased pain intensity and disability. GAD-7 and PHQ-9 shared a strong positive correlation ( $r = 0.628$ ,  $p < 0.001$ ), further reinforcing the link between anxiety and depression.

Lastly, QoL indicators, as measured by WHOQOL-BREF Q1 and Q2, showed significant negative correlations with several variables. WHOQOL-BREF Q1 was negatively correlated with FABQPA ( $r = -0.261$ ,  $p = 0.029$ ), GAD-7 ( $r = -0.259$ ,  $p = 0.030$ ), and PHQ-9 ( $r = -0.326$ ,  $p = 0.006$ ), indicating that lower QoL is associated with fear-avoidance behaviors, anxiety, and depressive symp-

**Table 2:** The key statistics and distributions (range, central tendency, and variation of values) for the questionnaires used in this cross-sectional study.

	<b>n</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std.Dev</b>
SF-MPQ	70	1.00	5.00	3.09	1.02
RMDQ	70	2.00	22.00	10.00	5.33
FABQPA	70	7.00	24.00	16.90	4.25
FABQW	34	6.00	39.00	21.44	8.59
GAD-7	70	1.00	20.00	9.90	4.97
PHQ-9	70	1.00	20.00	9.24	5.25
Difficulty PHQ-9	70	0.00	6.00	1.37	1.05
WHOQOL-BREF Q1	70	1.00	5.00	3.31	0.81
WHOQOL-BREF Q2	70	1.00	5.00	3.21	0.98

n: number, Std.Dev: standard deviation, SF-MPQ: short form McGill pain questionnaire, RMDQ: disability using the Roland-Morris disability questionnaire, FABQPA/W: kinesiophobia using the fear-avoidance belief questionnaire during physical activity/work, GAD-7: anxiety using the generalized anxiety disorder scale, PHQ-9: depression using the patient health questionnaire, WHOQOL-BREF: World Health Organization quality of life scale.

**Table 3:** Analysis of correlations between measurable variables (pain, disability, kinesiophobia, anxiety, depression, quality of life) in the sample of the cross-sectional study.

<b>Pair</b>	<b>n</b>	<b>Correlation</b>	<b>p-value</b>
SF-MPQ / RMDQ	70	0.561	<b>&lt;0.001</b>
SF-MPQ / WHOQOL-BREF Q1	70	-0.386	0.001
SF-MPQ / WHOQOL-BREF Q2	70	-0.340	0.004
SF-MPQ / FABQPA	70	0.338	0.004
SF-MPQ / FABQW	34	0.381	0.026
SF-MPQ / GAD-7	70	0.289	0.015
SF-MPQ / PHQ-9	70	0.430	<b>&lt;0.001</b>
RMDQ / WHOQOL-BREF Q1	70	-0.482	<b>&lt;0.001</b>
RMDQ / WHOQOL-BREF Q2	70	-0.372	0.002
RMDQ / FABQPA	70	0.442	<b>&lt;0.001</b>
RMDQ / FABQW	34	0.122	0.491
RMDQ / GAD-7	70	0.322	0.007
RMDQ / PHQ-9	70	0.427	<b>&lt;0.001</b>
WHOQOL-BREF Q1 / WHOQOL-BREF Q2	70	0.574	<b>&lt;0.001</b>
WHOQOL-BREF Q1 / FABQPA	70	-0.261	0.029
WHOQOL-BREF Q1 / FABQW	34	-0.023	0.897
WHOQOL-BREF Q1 / GAD-7	70	-0.259	0.030
WHOQOL-BREF Q1 / PHQ-9	70	-0.326	0.006
WHOQOL-BREF Q2 / FABQPA	70	-0.202	0.094
WHOQOL-BREF Q2 / FABQW	34	-0.078	0.663
FABQPA / FABQW	34	0.282	0.106
FABQPA / GAD-7	70	0.218	0.070
FABQPA / PHQ-9	70	0.205	0.089
FABQW / GAD-7	34	0.601	<b>&lt;0.001</b>
FABQW / PHQ-9	34	0.508	0.002
GAD-7 / PHQ-9	70	0.628	<b>&lt;0.001</b>

n: number, SF-MPQ: short form McGill pain questionnaire, RMDQ: disability using the Roland-Morris disability questionnaire, FABQPA/W: kinesiophobia using the fear-avoidance belief questionnaire during physical activity/work, GAD-7: anxiety using the generalized anxiety disorder scale, PHQ-9: depression using the patient health questionnaire, WHOQOL-BREF: World Health Organization quality of life scale.

toms. Similarly, WHOQOL-BREF Q2 showed negative correlations with FABQPA ( $r = -0.202$ ,  $p = 0.094$ ), GAD-7 ( $r = -0.220$ ,  $p = 0.067$ ), and PHQ-9 ( $r = -0.443$ ,  $p < 0.001$ ), further suggesting that decreased QoL is linked to higher levels of fear-avoidance behaviors, anxiety, and depressive symptoms. Overall, these correlations illustrate the interconnectedness of pain, disability, psychological factors, and QoL within the sample.

#### Regression analysis

The factors of the multiple regression analysis model are presented in Table 4. The overall regression analysis model presented statistical significance,  $F(3,66) = 17.975$ ,  $p < 0.001$ , indicating that the combination of predictors effectively explains a sizable portion of RMDQ scores. The model yielded an R value of 0.671, reflecting a strong positive correlation between the independent variables (SF-MPQ, WHOQOL-BREF Q1, and FABQPA scores)

**Table 4:** Summary of the multiple regression analysis predicting the Roland-Morris disability questionnaire score.

Source	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error	F	p-value
Regression	0.671	0.450	0.425	4,044	17.975	0.000

**Table 5:** Results of the analysis of variance (ANOVA) for the multiple regression model.

Regression weights	Beta coefficient	t-value	p-value
RMDQ ® SF-MPQ	0.373	3.631	0.001
RMDQ ® FABQPA	0.245	2.492	0.015
RMDQ ® WHOQOL-BREF Q1	-0.275	-2.743	0.008

SF-MPQ: short form McGill pain questionnaire, RMDQ: disability using the Roland-Morris disability questionnaire, FABQPA: kinesiophobia using the fear-avoidance belief questionnaire during physical activity, WHOQOL-BREF: World Health Organization quality of life scale.

and the dependent variable (RMDQ score). The R<sup>2</sup> value was 0.450, meaning that these predictors account for approximately 45 % of the variance in RMDQ scores. The adjusted R<sup>2</sup> of 0.425 suggests that the model retains substantial explanatory power, even after adjusting for the number of predictors and sample size. The standard error of the estimate was 4.04, indicating the average deviation of observed RMDQ values from the predicted values.

The regression analysis revealed significant associations between SF-MPQ, FABQPA, and WHOQOL-BREF Q1 scores with RMDQ score (Table 5). Among the individual predictors, SF-MPQ (B =0.373, p =0.001) and FABQPA (B =0.245, p =0.015) were significant positive predictors, indicating that high scores in these areas were associated with increased RMDQ scores. Conversely, WHOQOL-BREF Q1 was a significant negative predictor (B =-0.275, p =0.008), suggesting that increased values of this variable were linked to lower RMDQ scores.

## Discussion

This cross-sectional study aimed to assess the effect of CNLBP on general health and determine the independent predictors of disability using regression analysis. This study attempted to provide a more nuanced analysis by combining multiple dimensions of impact (pain, disability, kinesiophobia, anxiety, depression, and QoL) than other studies that adopted a similar approach to the overall assessment of CNLBP<sup>5-6,10,15-17</sup>. Previous studies have mainly examined isolated characteristics of CNLBP, while this study aimed to address these gaps by simultaneously evaluating these interrelated factors. This approach provides a more comprehensive understanding of CNLBP's impact and allows for further contemplation of the relationships between the various aspects of the condition.

The sample's demographic characteristics (age, gender, BMI) align with current epidemiological data, confirming the sample's homogeneity. The gender ratio of 2:1 reflects established prevalence patterns of CNLBP, where females are more commonly affected than males. Marital status and type of occupation have an insignificant impact on the development of CNLBP. Notably, despite not being employed (due to unemployment, being a student, or being retired), nearly half of the participants still presented with CNLBP. The high percentage of indi-

viduals being retreated with no successful management of their condition highlights the severity of CNLBP and the need for new therapeutic approaches.

Regarding the physical domain, the sample reported mild and bothersome levels of pain, and a moderate degree of disability. These findings align with prior research indicating significant functional impairments in the NP population<sup>16,35-37</sup>. Kinesiophobia during physical activity exceeded the threshold, whereas it is recorded slightly below it during work. Furthermore, the sample showed moderate levels of anxiety, and a range of alternative depressive conditions (minor depression, dysthymia, and major depression). The psychological comorbidities were similarly consistent with research highlighting the strong association between NP, anxiety, and depression<sup>14,16,24,36-37</sup>. Additionally, the QoL assessment revealed a neutral perception of overall QoL, with participants neither expressing satisfaction nor dissatisfaction, suggesting a balanced or indifferent outlook on their life satisfaction in relation to their health condition. These findings agree with previous research, highlighting that individuals with NP often report a complex relationship with their QoL<sup>14,23,37</sup>. This study differs by incorporating multiple dimensions -pain, disability, anxiety, depression, and QoL- along with kinesiophobia, a factor that has not been previously examined in the NP population.

In terms of correlations, the analysis revealed a significant relationship between pain and disability, highlighting these as the primary components of the physical aspects of CNLBP. Pain intensity was found to be positively associated with kinesiophobia and psychological factors, such as depression, indicating that elevated levels of pain often coincide with increased depressive symptoms. Disability demonstrates a strong correlation with kinesiophobia, anxiety, and depression, reflecting the complex interaction between physical limitations and psychological distress. Additionally, kinesiophobia noted a strong relationship with anxiety and depression, further highlighting the interconnectedness of these mental health variables. Notably, QoL exhibited a negative correlation with all the variables measured, suggesting the reduction of QoL as levels of pain, disability, kinesiophobia, anxiety, and depression elevate. These findings highlight the importance of addressing both physical and psychological aspects in the treatments of CNLBP.

Focusing on only one factor -whether physical or psychological- limits improvement, as the untreated aspect will hinder progress, potentially leading to overlapping symptoms and suboptimal recovery. A comprehensive, multi-dimensional approach that targets both pain, disability, and psychological factors like kinesiophobia, anxiety, and depression is essential for optimal patient outcomes.

Regression analysis identified several key factors that significantly predict disability scores, highlighting the complicated relationships between physical, and QoL factors. In more detail, increased scores for pain and kinesiophobia in physical activities were positively correlated with increased levels of disability. Conversely, high scores of QoL were correlated with lower levels of disability, indicating the importance of general health on physical condition. These findings highlight the importance of physical, behavioral, and psychological factors in determining disability outcomes, emphasizing the need to evaluate these aspects comprehensively and address them in the treatment protocol.

Several limitations were encountered in this study. The main obstacle arises from the design of the cross-sections in which the data are collected at a single time, limiting the ability to determine a causal relationship between CNLBP and related physical, mental, and QoL factors. Also, reliance on a self-reported questionnaire may introduce subjective bias due to an individual's perceptions or recognition of patterns. This issue was resolved using rigorously validated questionnaires to comprehensively assess the multidimensional aspects of CNLBP quantitatively and qualitatively, ensuring the robustness and reliability of the data.

### Conclusion

This study reveals the significant impact of CNLBP on physical (pain, disability), mental health (kinesiophobia, anxiety, and depression), and QoL, reflected in correlations between all variables measured. Pain, kinesiophobia, and depressive symptoms were identified as significant positive predictors of increased disability, while QoL scores were negatively associated with disability. The prevalence of kinesiophobia and psychological distress underscores the complex, multifaceted nature of CNLBP. These findings indicate that conventional treatment approaches may be inadequate, as many patients continue to experience CNLBP despite previous interventions. Effective management strategies should integrate physical rehabilitation with mental health interventions to improve functional outcomes and enhance patient's QoL. The rehabilitation strategies should combine physical and mental health treatment techniques to improve functional outcomes and enhance patient's QoL.

### Conflict of interest

The authors declare no conflicts of interest.

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