# Disability and disability benefit seeking in chronic low back pain

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| **Background** | Numerous studies suggest psychosocial factors contribute to functional disability in patients with chronic low back pain (CLBP). However, less is known about the association of psychosocial factors, such as depression, with seeking medical disability benefits and their prevalence in benefit seekers compared with patients already receiving such payments. |
| **Aims** | To determine if characteristics of disability benefit seekers differ from patients receiving disability benefits and if both differ from patients not dependent on such payments. |
| **Methods** | Questionnaire data on pain, health-related quality of life, depression, social support, substance abuse, adverse childhood experiences and disability seeking were obtained from CLBP respondents recruited at 10 primary care clinics throughout Texas. A multinomial logistic regression model was computed using variables significantly associated with disability status and pain severity in univariate models. |
| **Results** | There were 213 participants. In full models, compared with those not on disability benefits, only depression symptoms were significantly associated with seeking disability benefits (odds ratio [OR] = 1.13; 95% confidence interval [CI] 1.01–1.26) and only duration of pain was significantly associated with being on such benefits (OR = 1.05; 95% CI 1.01–1.09). |
| **Conclusions** | Patient characteristics differ between disability benefit seekers and those established on disability benefit payments. Depression may be a modifiable correlate of disability benefit seeking that if treated may reduce the number of patients who eventually come to depend on disability benefits. Additional data collection involving other pain syndromes is warranted to determine if these results are unique to CLBP or apply to other painful conditions. |
| **Key words** | Depression; disability benefits; disability; insurance; low back pain; mental ill-health. |

## Introduction

Low back pain (LBP) is one of the most common reasons for patients to present to their primary care physician. In the USA, this complaint accounts for 15% of primary care consultations, resulting in costs of $3 billion per year in outpatient visits, $2 billion per year in hospital admissions and $11 billion per year for surgical treatment [1,2]. A small subset of this patient population, those with chronic low back pain (CLBP), account for the majority of costs associated with LBP [2]. This includes not only healthcare costs but also those of lost time and productivity at work.

Given these high costs, several studies have investigated what risk factors contribute to LBP patients becoming CLBP patients and becoming disabled. The most dominant factors are often psychosocial, rather than biomechanical [3]. Tait and Chibnall [4] found that certain attitudes toward pain are associated with different disability outcomes; for instance, self-reliant attitudes were inversely associated with disability. Demographic factors positively associated with receiving social security disability payments include black race, older age and longer time since injury [5]. A prospective cohort study following patients with acute LBP noted that the strongest risk factors for CLBP disability

were gender, race and litigation [3]. High pain scores were also linked to high risk for disability; however, there was no correlation between initial severity of injury and risk of subsequent disability [3]. Pincus *et al.* [6] conducted a review of prospective cohort studies of personality and psychological risk factors and back pain prognosis. They identified depression or distress as a significant predictor for developing CLBP [6]. Several other studies identified mood disorders, such as anxiety and depression [6–10] as correlates of disability. Predictive models to identify which patients will return to work have pointed to the importance of psychosocial factors as contributors to improved function and eventual return to work [11,12]. Therefore, substantial evidence supports the importance of psychosocial factors in determining which patients will develop CLBP or medical disability.

This study sought to expand this literature by focusing on medical disability as an outcome, to determine if psychosocial factors which contribute to functional disability may be identified while patients are still in the process of seeking disability benefits but have not become dependent on medical disability benefits. Understanding what factors determine disability may help clinicians in assisting patients to stay employed and potentially enjoy a better health-related quality of life (HRQL) associated with employment [13,14]. This study of CLBP patients was designed as an exploratory hypothesis-generating analysis focused on identifying patient characteristics that may differ between those who do not seek disability compensation, those who are seeking and those who are receiving it. The analysis may generate hypotheses allowing interventions to reduce the number of disability seekers who progress to depending on medical disability benefits.

## Methods

Data were collected from patients with CLBP who were being seen for any reason, not limited to back pain, in 10 geographically diverse primary care clinics throughout Texas. The clinics tend to provide care for economically disadvantaged respondents, many of whom are from Latino and African-American minorities. Institutional review board approval was obtained for each clinic.

A convenience case-series sample was recruited by pooling participating subjects from each clinic. Medical students under the supervision of faculty enrolled respondents and administered questionnaires. The students reviewed the appointment schedule on days of data collection and recruited patients attending in connection with CLBP. These potential subjects were invited to participate if they had a diagnosis of CLBP, had symptoms lasting 3 months or longer and could speak either Spanish or English. Patients with a cancer diagnosis, pregnant or first-time users of the clinic were excluded.

Approximately, 30–60 respondents were recruited from each clinic. No participant incentives were given.

After providing informed consent, respondents completed a 106-item paper questionnaire at the clinic. Medical students read questions to respondents who had reading, eyesight or other communication problems. The following domains were assessed: disability status, socio-demographic characteristics, pain severity, duration of pain, treatments tried, use of opioids, HRQL, co-morbidity, mental health, substance use, social support and social stress and adverse childhood events (ACEs).

Respondents were asked if they were currently employed. If respondents said, 'no', they were then asked to circle one or more of the following: 'on disability', 'applying for disability', 'on paid sick leave', 'on sick leave, with no pay', 'homemaker', 'retired' or 'student'. We used responses to create a three-level disability variable defined as (i) on disability benefits, (ii) applying for disability benefits and (iii) not on disability benefits. Respondents assigned to the 'not on disability' category included students, homemakers, respondents on sick leave and those who were employed part-time or full-time.

Because pain is the posited factor behind patients' inability to work, we modelled pain severity as the primary predictor. Pain severity was derived from patient's response to a Likert pain scale ranging from 0 to 10, where $0 = $ no pain, $5 = $ moderate pain and $10 = $ severe pain. Pain was modelled as a continuous variable in regression analysis and also as a three-level categorical variable for descriptive statistics, in which mild pain $= 0$–$3.5$, moderate pain $= 4$–$6.5$ and severe pain $= 7$–$10$. Covariates were selected if they were likely confounders of pain and disability. Covariates included pain characteristics, socio-demographic characteristics, HRQL, co-morbidity, depression and anxiety symptoms, substance use and abuse, social support and ACEs. Pain characteristics included duration of pain, measured as a continuous variable for self-report of the number of years lived with LBP. The narcotic addiction risk scale consisted of eight items, adapted from the Screener and Opioid Assessment for Patients with Pain items [15]. Respondents reported the number of treatments tried from a list of 14 pain therapies (e.g. medicines, injections, massage etc.). Narcotic addiction risk and number of treatments tried were both treated as continuous variables. Socio-demographic characteristics included age, gender, race (white versus other), education (fewer or more than 12 years of education) and marital status (married or living with partner versus single, separated, divorced and never married). HRQL was measured by the SF-36 subscales for pain, physical limitations, general health and role function-physical [16]. SF-36 scores range from 0 to 100 and higher scores on the SF-36 indicate better HRQL. The SF-36 pain subscale was computed without the Likert pain severity measure to avoid co-linearity with the main predictor in the study, that is,

pain severity. Co-morbidity was a continuous variable created by summing the number of co-morbid physical health problems (e.g. arthritis, cancer, diabetes, heart disease etc.) respondents reported 'having now'. Obesity was modelled as a binary variable with obese patients defined by BMI ≥ 30. BMI was determined by measurements performed by clinic nurses or medical students. Depression symptoms were measured using the Patient Health Questionnaire (PHQ)-8, a valid measure of Diagnostic and Statistical Manual IV (DSM-IV) depression with the exception that suicidal thinking is not queried [17]. Anxiety symptoms were assessed using a modified version of the Beck Anxiety Inventory [18,19]. Depression and anxiety were treated as continuous scores with larger values on each measure indicating more depression and more anxiety. Substance use included smoking (never, past, present), any past month binge drinking and any past month use of illicit drugs. Psychosocial stress and support were measured by summing the number of people identified as a cause of stress and the number of people identified as supportive. Lastly, ACEs were measured by a 17 question version of the Centers for Disease Control and Prevention ACE questionnaire (http://www.cdc.gov/ace/) covering childhood physical and sexual abuse, exposure to domestic violence, exposure to a household member with alcohol or substance abuse and experience of a household member attempting suicide or going to prison.

Bivariate associations were computed for each variable by the three-level disability measure (i.e. not on, applying for and on disability benefits). The significance of bivariate associations was determined by chi-squared for categorical variables and analysis of variance for continuous measures. Variables significantly associated with the outcome, disability status and primary predictor variable, pain severity, were included in the multinomial logistic regression models. Multinomial logistic regression models were built by first adjusting for pain, then adding pain characteristics, then SF-36 physical subscales and lastly adding SF-36 role-emotional, Beck Anxiety Inventory - Primary Care (BAI-PC) anxiety scores and PHQ-8 depression scores. 'Not on disability' was the common reference group in multinomial models.

## Results

Of those approached, 18 refused participation giving a total sample of 254 adults of whom 40 were retired and excluded from analysis because they were past working age and hence past eligibility for disability benefits. One subject was excluded because of missing disability status, resulting in a final sample size of 213. Subjects were on average aged 49 (standard deviation [SD] ±12.1) and mostly female (66%). Approximately 55% were non-white and 70% had a high school education or more (Table 1). Regarding disability benefit status, 41% (*n* = 88) were not on disability benefits, 14% (*n* = 29) were

seeking or applying for benefits and 45% (*n* = 96) were receiving them. Table 1 shows the distribution of patient characteristics by disability status. Pain severity was significantly associated with disability status ($P < 0.001$). The overall mean pain score was 6.4 (SD ±2.6) and the highest pain scores were observed in respondents applying for disability benefits (mean = 7.6, SD ±1.7) followed by those on benefits (mean = 6.8, SD ±2.2). Duration of pain was significantly associated with disability status with the shortest duration (mean 5.5 years, SD ±5.0) among those seeking disability benefits and the longest duration among those on benefits (mean 14.5 years, SD ±11.6). Narcotic addiction risk scores ($P < 0.05$) and number of treatments tried ($P < 0.01$) were higher among respondents seeking disability.

HRQL was significantly associated with disability status. Respondents seeking disability benefits and those on benefits had significantly ($P < 0.001$) lower mean SF-36 subscale scores (i.e. lower scores indicating worse functioning) for pain, physical functioning, general health, role-physical and role-emotional compared with respondents not on benefits. Respondents seeking and those receiving disability benefits reported, on average, significantly more depression and anxiety symptoms ($P < 0.001$ and $P < 0.05$, respectively) compared with those not on benefits. Illicit drug use, binge drinking and smoking status were not significantly associated with disability status. Social support but not social stress was significantly associated with disability status such that persons not on disability benefits reported more sources of social support. Lastly, the average number of ACEs was significantly ($P < 0.05$) higher in people seeking or on disability benefits compared with those not on benefits.

The distribution of patient characteristics by pain severity groups is shown in Table 2. Demographic factors were not significantly associated with pain severity. Longer duration of pain was associated with moderate and severe pain ($P < 0.05$) and narcotic addiction risk and number of treatments tried were both associated with being in a higher pain category ($P < 0.05$). All subscales of the SF-36 were significantly ($P < 0.001$) associated with pain severity with worse functioning among those with higher pain scores. The mean numbers of both depression and anxiety symptoms were significantly and positively associated with higher pain scores ($P < 0.01$). The number of co-morbid conditions, obesity, substance use and abuse, number of people identified as sources of social stress and social support and number of ACEs were not associated with pain severity.

Results from multivariate multinomial logistic regression models are shown in Table 3. Models comparing patients applying for disability benefits to those not on benefits are shown first, and second, a separate set of models in the right half of the table are shown contrasting patients on disability benefits to those not. In unadjusted

**Table 1.** Associations between socio-demographic characteristics, pain, functioning, mental health and psychosocial characteristics by disability status among CLBP patients

| n (%) | Total (n = 213) | Not on disability (n = 88) | Applying for disability (n = 29) | On disability (n = 96) | Significance |
|---|---|---|---|---|---|
| Age (mean, SD) | 49.1 (12.1) | 46.4 (12.5) | 42.8 (10.2) | 53.4 (10.6) | *** |
| Male | 73 (34) | 23 (26) | 15 (52) | 35 (36) | * |
| White race | 95 (46) | 42 (48) | 11 (39) | 42 (46) | |
| Married/partnered | 96 (46) | 45 (52) | 12 (41) | 39 (42) | |
| ≥12th-grade education | 145 (70) | 66 (78) | 19 (68) | 60 (64) | |
| Pain characteristics | | | | | |
| Pain score (mean, SD) | 6.4 (2.6) | 5.6 (2.9) | 7.6 (1.7) | 6.8 (2.2) | *** |
| Pain level severity | | | | | *** |
| Mild | 31 (15) | 24 (27) | 0 (0) | 7 (7) | |
| Moderate | 65 (31) | 25 (28) | 7 (24) | 33 (35) | |
| Severe | 116 (55) | 39 (44) | 22 (76) | 55 (58) | |
| Duration of pain in years (mean, SD) | 10.7 (10.3) | 8.3 (8.5) | 5.5 (4.9) | 14.5 (11.6) | *** |
| Narcotic addiction risk score (mean, SD) | 10.3 (2.4) | 9.7 (2.1) | 11.0 (2.8) | 10.6 (2.3) | ** |
| Sum of past treatments tried (mean, SD) | 4.5 (2.5) | 3.8 (2.2) | 5.2 (2.6) | 4.9 (2.6) | ** |
| Functioning and co-morbidity | | | | | |
| SF-pain interfere (mean, SD) | 30.7 (27.3) | 44.3 (28.5) | 15.5 (18.2) | 22.6 (22.6) | *** |
| SF-physical function (mean, SD) | 37.1 (27.3) | 48.9 (27.2) | 25.7 (25.7) | 29.3 (23.6) | *** |
| SF-general health (mean, SD) | 43.0 (22.9) | 49.0 (23.3) | 38.1 (21.8) | 39.0 (21.7) | ** |
| SF-role physical (mean, SD) | 15.0 (28.4) | 27.6 (36.0) | 1.8 (6.6) | 6.9 (17.5) | *** |
| SF-role emotion (mean, SD) | 60.0 (44.3) | 73.1 (39.7) | 46.4 (46.6) | 51.8 (45.0) | *** |
| Number of co-morbid conditions (mean, SD) | 4.6 (2.5) | 3.8 (2.2) | 4.5 (2.4) | 5.4 (2.5) | *** |
| Obese | 118 (59) | 45 (54) | 19 (65) | 54 (61) | NS |
| Mental health and substance use/abuse | | | | | |
| PHQ-8 sum (mean, SD) | 10.0 (6.7) | 7.8 (5.9) | 13.3 (7.6) | 11.1 (6.5) | *** |
| BAI sum (mean, SD) | 6.0 (5.4) | 4.8 (4.8) | 7.6 (6.6) | 6.6 (5.3) | * |
| Illicit drug use in past 30 days | 8 (4) | 2 (2) | 2 (7) | 4 (4) | |
| Binge drinking past 30 days | 25 (17) | 15 (17) | 3 (10) | 7 (7) | |
| Smoking status | | | | | |
| Never | 83 (39) | 44 (51) | 9 (32) | 30 (32) | |
| Past | 47 (22) | 14 (16) | 7 (25) | 26 (27) | |
| Current | 80 (38) | 29 (33) | 12 (43) | 39 (41) | |
| Psychosocial stress/resource | | | | | |
| Sum of persons in life who cause stress (mean, SD) | 1.3 (1.6) | 1.4 (1.9) | 1.4 (1.7) | 1.2 (1.2) | |
| Sum of persons in life who are supportive (mean, SD) | 2.8 (2.0) | 3.3 (2.2) | 2.5 (1.5) | 2.5 (1.8) | * |
| Sum of ACEs (mean, SD) | 1.9 (1.9) | 1.5 (1.7) | 2.4 (2.1) | 2.1 (2.1) | * |

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

analysis, each unit increase in the Likert scale pain score was significantly associated with applying for disability benefits compared with not being on benefits (odds ratio [OR] = 1.43; 95% confidence interval [CI] 1.16–1.77). The magnitude of this association decreased after adjusting for pain characteristics and further decreased after adjusting for SF-36 subscales. In the full model, each unit increase in pain severity was no longer statistically significantly associated with applying for disability benefits compared with not being on benefits (OR = 1.24; 95% CI 0.95–1.63). In the full model, a longer duration of pain was inversely associated with applying for disability benefits (OR = 0.89; 95% CI 0.82–0.98) and each unit increase in depression symptoms was positively associated with applying for, compared with not being on benefits (OR = 1.13; 95% CI 1.01–1.26).

In unadjusted analysis, each unit increase in the Likert scale pain score was significantly associated (OR = 1.22; 95% CI 1.08–1.37) with being on disability benefits compared with not. The magnitude of this association decreased after adjusting for pain characteristics and further decreased after adjusting for SF-36 subscale scores. In the full model, pain severity was no longer significantly associated with disability status (receiving disability benefits versus not being on benefits). All covariates were non-significant in the full model except for pain duration. Longer pain duration was significantly associated with being on disability

**Table 2.** Associations between socio-demographic characteristics, pain factors, functioning, mental health and psychosocial characteristics by pain severity among CLBP patients

| n (%) | Mild pain (n = 31) | Moderate pain (n = 65) | Severe pain (n = 116) | Significance |
|---|---|---|---|---|
| Age (mean, SD) | 47.4 (14.7) | 51.3 (11.7) | 48.3 (11.4) | |
| Male | 8 (26) | 25 (38) | 39 (34) | |
| White race | 11 (38) | 36 (57) | 48 (42) | |
| Married/partnered | 15 (48) | 32 (51) | 49 (43) | |
| ≥12th-grade education | 23 (79) | 43 (68) | 78 (68) | |
| Pain characteristics | | | | |
|     Duration of pain in years (mean, SD) | 7.8 (7.4) | 13.6 (12.3) | 10.0 (9.4) | * |
|     Narcotic addiction risk score (mean, SD) | 9.1 (1.6) | 10.3 (2.8) | 10.5 (2.2) | ** |
|     Sum of past treatments tried (mean, SD) | 3.2 (2.0) | 4.5 (2.5) | 4.8 (2.5) | ** |
| Functioning and co-morbidity | | | | |
|     SF-pain interfere (mean, SD) | 56.5 (27.4) | 33.5 (25.9) | 21.9 (23.3) | *** |
|     SF-physical function (mean, SD) | 54.2 (30.1) | 40.1 (26.1) | 30.7 (25.2) | *** |
|     SF-general health (mean, SD) | 56.3 (19.3) | 46.9 (23.7) | 37.3 (21.6) | *** |
|     SF-role physical (mean, SD) | 31.5 (39.2) | 16.7 (27.7) | 9.6 (23.3) | *** |
|     SF-role emotion (mean, SD) | 81.7 (30.8) | 63.0 (45.3) | 52.9 (45.0) | ** |
|     Number of co-morbid conditions (mean, SD) | 3.7 (2.6) | 4.7 (2.3) | 4.8 (2.5) | |
|     Obese | 17 (57) | 40 (64) | 60 (56) | |
| Mental health and substance use/abuse | | | | |
|     PHQ-8 sum (mean, SD) | 6.7 (4.3) | 10.0 (6.9) | 10.9 (6.9) | ** |
|     BAI sum (mean, SD) | 3.2 (3.1) | 5.1 (5.1) | 7.2 (5.7) | *** |
|     Illicit drug use in past 30 days | 0 (0) | 5 (8) | 2 (2) | |
|     Binge drinking past 30 days | 5 (16) | 11 (17) | 8 (7) | |
| Smoking status | | | | |
|     Never | 15 (48) | 24 (37) | 43 (38) | |
|     Past | 9 (29) | 17 (26) | 21 (19) | |
|     Current | 7 (23) | 24 (37) | 49 (43) | |
| Psychosocial stress/resource | | | | |
|     Sum of persons in life who cause stress (mean, SD) | 0.8 (1.1) | 1.2 (1.7) | 1.5 (1.5) | |
|     Sum of persons in life who are supportive (mean, SD) | 3.4 (2.1) | 2.6 (1.8) | 2.8 (2.0) | |
|     Sum of ACEs (mean, SD) | 1.2 (1.4) | 2.0 (2.0) | 2.0 (2.0) | |

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

benefits compared with not being on disability benefits (OR = 1.05; 95% CI 1.01–1.09).

## Discussion

In this primary care cohort with CLBP, we observed significant differences between respondents who were receiving, seeking and not on disability benefits. In multivariate models, the psychosocial factors we expected to account for disability benefit seeking were limited to depression and did not include poor HRQL. Although several subscales of the SF-36 approached significance, only the depression severity remained significantly associated with seeking disability benefits. Similar trends toward significance were observed for factors associated with being on disability benefits; however, depression symptoms were not significantly associated with this status. In summary, the factor(s) significantly associated with seeking and being on disability benefits were limited to depression in the former and duration of pain in the latter.

Notably in all multivariate models, the strength of association was modest with ORs all less than 1.5. The lack of large associations is consistent with recent findings [20] that patients with CLBP perceive increasing disability compared with patients with chronic upper or lower extremity pain despite evidence of improved functioning in those with CLBP. If CLBP patients' perceptions of functioning is resistant to pain therapy or improvements in biomechanical well-being then it is not surprising that the present measured predictors of disability have a small impact on whether CLBP patients seek or obtain disability benefits. Research with different pain populations is warranted to determine if psychosocial factors have a larger impact on disability benefit seeking among patients with fibromyalgia or rheumatoid arthritis pain.

Our unadjusted results are largely consistent with other studies that predict chronicity of back pain and functional disability [7] and expand the literature by identifying patient characteristics that uniquely differ in persons seeking compared with already on disability benefits. Although the lack of association between HRQL

**Table 3.** Multinomial logistic regression results measuring association between disability status and pain score, adjusting for demographics, pain characteristics, HRQL, mental health and psychosocial characteristics (OR: 95% CI)

| Variable | Applying for ($n = 29$) versus not on disability ($n = 88$) | | | | On disability ($n = 96$) versus not on disability ($n = 88$) | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 1 | Model 2 | Model 3 | Model 4 |
| Pain level | 1.43 (1.16–1.77) | 1.36 (1.09–1.69) | 1.20 (0.93–1.54) | 1.24 (0.95–1.63) | 1.22 (1.08–1.37) | 1.16 (1.02–1.32) | 1.04 (0.89–1.22) | 1.06 (0.90–1.24) |
| Pain duration | | 0.91 (0.8–0.99) | 0.90 (0.83–0.98) | 0.89 (0.82–0.98) | | 1.06 (1.02–1.09) | 1.05 (1.01–1.09) | 1.05 (1.01–1.09) |
| Narcotic addiction risk | | 1.23 (1.01–1.49) | 1.18 (0.95–1.47) | 1.14 (0.90–1.43) | | 1.13 (0.97–1.30) | 1.08 (0.91–1.27) | 1.07 (0.90–1.27) |
| Sum of treatments tried | | 1.26 (1.03–1.53) | 1.16 (0.92–1.46) | 1.17 (0.92–1.49) | | 1.10 (0.96–1.27) | 1.06 (0.89–1.25) | 1.06 (0.89–1.26) |
| SF-pain interfere | | | 0.98 (0.95–1.01) | 0.98 (0.95–1.01) | | | 0.99 (0.97–1.01) | 0.99 (0.97–1.01) |
| SF-physical function | | | 0.98 (0.96–1.01) | 0.99 (0.97–1.02) | | | 0.99 (0.97–1.00) | 0.99 (0.97–1.01) |
| SF-general health | | | 1.00 (0.98–1.03) | 1.02 (0.99–1.04) | | | 0.99 (0.98–1.01) | 1.00 (0.98–1.02) |
| SF-role physical | | | 0.96 (0.90–1.01) | 0.95 (0.90–1.01) | | | 0.99 (0.97–1.00) | 0.99 (0.97–1.01) |
| SF-role emotional | | | | 1.00 (0.99–1.02) | | | | 1.00 (0.99–1.01) |
| Depression score, PHQ-8 sum | | | | 1.13 (1.01–1.26) | | | | 1.03 (0.95–1.10) |
| Anxiety score, BAI-PC sum | | | | 1.00 (0.88–1.13) | | | | 0.98 (0.89–1.08) |

and disability may be due to low statistical power, it is evident from descriptive data shown in Table 1 that depression symptoms are more common in disability benefit seekers compared with those already receiving them. It is well established that pain and depression are correlated; a pain-depression syndrome has been described in which each component worsens the other [21]. Depression has been shown to increase sensitivity to pain [22] and depression is correlated with pain catastrophizing [23]. Greater sensitivity to pain, catastrophizing and hopelessness due to depression are all plausible motivations for seeking disability benefits. Another potential explanation of our findings could be that depressed patients do not engage in rehabilitation due to symptoms such as lack of interest, apathy and poor motivation. The observed association between depression and disability benefit seeking offers an intriguing possibility that disability may be avoided if providers are able to identify and treat depression. Though speculative, longitudinal studies are warranted to determine what factors account for the transition from seeking disability benefits to obtaining them, and given evidence of persistent perceived disability in patients with CLBP [20], additional research is needed to compare disability benefit seeking across varying types of painful conditions.

Duration of pain remained associated with disability in multivariate models. The average number of years spent in pain was longest among respondents on disability benefits and shortest among those seeking them. However, in both groups, the average duration was in years not weeks or months, indicating the population is not seeking compensation for transient pain. Previous reports of workers' compensation status in the National Spine Network indicate longer pain duration among patients who had workers' compensation compared with patients who did not [14].

The reference group of respondents not on disability benefits included a heterogeneous population from working adults to homemakers and students. Results should not be considered predictive of return to work as some respondents in the 'not on disability' group were not seeking employment. Participants represented a case-series convenience sample and may not resemble other populations seeking disability benefits. Details of non-responders were not collected and we can only speculate that participants could be more likely to have less severe pain and depression, which would reduce generalizability. It is not possible in this study to know how non-responders influenced results. The geographic range was limited to Texas and results may differ in other regions of the USA. The sample size was small for multinomial regression and additional research is warranted with a larger cohort as several point estimates approached statistical significance. The small sample size, paired with many small ORs, limits our ability to make strong conclusions and we emphasize this is an exploratory

hypothesis-generating study that supports the need for additional data collection. Lastly, the cross-sectional design does not permit us to draw conclusions about the temporal relationships between pain, social support and functioning and may be vulnerable to recall bias. Future longitudinal analysis is called for to determine if psychosocial factors influence whether patients seeking disability benefits return to work or obtain benefits. Strengths of this study include sampling from a patient population, which increases its clinical relevance and the validity of subjects' current morbidity compared with a community-based sample in which subjects are likely to be less severely affected.

The study adds to the growing body of evidence demonstrating the importance of psychosocial factors in recovery and adaptation to chronic pain. Pending confirmation of these results, clinical approaches that target depression may reduce the number of patients eventually dependent on long-term disability benefits.

## Key points

- Depression was more prevalent among disability benefit seekers compared with people already receiving these benefits in this sample of chronic low back pain patients in Texas.
- Intervention for depression may limit the number of disability benefit seekers who eventually depend on long-term disability benefits.
- Pain severity was not significantly associated with disability benefit status in this sample.

## Funding

## Conflicts of interest

None declared.

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