HHS Public Access

Author manuscript

J Occup Environ Med. Author manuscript; available in PMC 2022 February 22.

Published in final edited form as:

J Occup Environ Med. 2019 October ; 61(10): 836–840. doi:10.1097/JOM.0000000000001673.

Relationship Between Opioid Use and Pain Severity Ratings in Workers With Low Back Pain

Melissa Cheng, MD, MOH, MHS[1], **Matthew S. Thiese, PhD, MSPH**[1], **Eric M. Wood, MD, MPH**[1], **Jay Kapellusch, PhD**[2], **James Foster, MD, MPH**[3], **David Drury, MD, MPH**[1], **Andrew Merryweather, PhD, CPE**[1], **Kurt T. Hegmann, MD, MPH**[1], **BackWorks Study Team**

[1]Rocky Mountain Center for Occupational & Environment Health, Department of Family and Preventive Medicine, School of Medicine, University of Utah, 391 Chipeta Way, Suite C, Salt Lake City, UT 84108

[2]Occupational Science & Technology Department, College of Health Sciences, University of Wisconsin-Milwaukee, PO Box 413, Milwaukee, WI 53201

[3]School of Rural Public Health, Texas A&M University Health Science Center, College Station, TX 77843-1266

Abstract

Objective: The primary goal of this cross-sectional analysis was to determine the relationships between self-reported low back pain (LBP) ratings and use of opioid medications.

Methods: At baseline, subjects completed a computerized questionnaire. Structured interviews were conducted by residents or certified therapists under the direction of board-certified physicians.

Results: There was a statistically significant non-linear relationship between lifetime prevalence of worst LBP rating (0–10) and lifetime prevalence of opioid use. Those with a low pain rating for worst lifetime LBP and those with high LBP ratings were significantly more likely to have been prescribed opioids. Surprisingly, those with moderate pain ratings were the least likely to have used opioids.

Conclusions: This study found a higher use of opioids between workers with low and high severe pain rating then those with moderate pain. We also found an increase of opioid use for severe pain.

Keywords

Opioids; pain; pain scale; low back pain

Corresponding author: Melissa Cheng, 391 Chipeta Way Suite C, SLC, UT 84108 , 801-585-5509, Melissa.cheng@hsc.utah.edu.

Conflict of Interest: None Declared

Background

Low back pain (LBP) is a common and costly health condition, accounting for an estimated 12 billion dollars in direct and indirect costs a year in the US alone[1, 2]. At least one in every three adults suffer from LBP at any given time throughout the world, also known as point prevalence[3]. Lifetime prevalence estimates range from 65–78%[2, 4], although underestimation is likely considering that some studies included younger individuals who may have not yet experienced pain as well as older individuals who may have not recalled prior pain. In the U.S., approximately 20% of all worker's compensation claims are for back pain[5]. Multiple treatment options, ranging from over-the-counter medication to exercise to invasive surgical procedures, exist for LBP [6]. One frequent treatment for LBP is opioid medication[6], with LBP being the most common reason for prescribing opioids in the US [7]. Starting in 2000, when the Veterans Health Administration, the Joint Commission, and other organizations adopted the idea that "pain is the fifth vital sign," opioid prescription rates for the treatment of pain dramatically increased. Between 2002–2005, 42% workers in Washington State with an acute low back pain injury were treated with opioids[7]. Yet, the use of opioid medication is accompanied by risks such as dependence, addiction, and poor health outcomes up to and including death[8–10]. Furthermore, opioid use is reportedly associated with worse outcomes including increased medical costs, lower rates of return to work, and worse surgical outcomes[2, 7–25]. Recently, many professional organizations, including the Centers for Disease Control and Prevention (CDC), the American College of Occupational and Environmental Medicine (ACOEM), and various countries and states have created guidelines that recommend more stringent and judicious use of opioids[14, 17, 20, 26, 27]. However, to our knowledge, there has not been a population-based study correlating pain severity rating and prescription opioid use. Little is known about how self-perceived pain levels help guide opioid medication use. This study will evaluate the potential relationship between patients' low back pain ratings and prescribed opioid use for treatment of low back pain. The aim of this study is to determine if pain rating scores are related to prescribed opioids pain medication for treatment of LBP. We hypothesize there is a monotonic linear relationship between opioid use and pain score; such that patients with each increase in one unit pain rating will have a linear increase in probability of having used of opioid medications.

Methods

This study analyzed data from the BackWorks Study, a large, multi-center prospective cohort study evaluating risk factors for LBP in workers from 2003–2011. The Institutional Review Boards of the University of Wisconsin- Milwaukee, University of Utah and Texas A&M University approved the study (#03.02.059 and 11889 respectively). Detailed methods of the parent study are available elsewhere[5, 28–30]; thus, abbreviated methods follow. The parent study evaluated potential risk factors for LBP including job task analysis, personal factors, and psychosocial factors. Workers from 27 employers within 34 diverse facilities located in Illinois, Texas, Utah and Wisconsin were recruited to participate. The majority of the job tasks were manual material handling and manufacturing. The participants were paid their regular wage and no additional incentives were given.

Data Collection and Outcome Measures

All participants underwent baseline computerized questionnaires and structured interviews. The baseline questionnaire was self-administered under the direction of trained research assistants and queried past medical history items such as previous episodes of LBP, psychosocial factors, and job satisfaction. Occupational medicine residents or physical therapists conducted computerized structured interviews that queried LBP history, including past LBP episodes, current LBP, and treatments. Subjects were asked to describe the pain as well as its location and duration. Pain ratings were collected using a numerical rating scale from 0–10, with 0 being no pain and 10 being the worst pain imaginable. If a worker had experienced prior LBP, the worker was cued by the structured interview to provide a pain rating for three different timeframes: i) intensity of worst LBP in his/her lifetime, ii) intensity of LBP in the last month, and iii) current pain intensity for LBP on the day of enrollment.

Analytically, we evaluated each pain score individually and also grouped them into categories based on the pain rating. Pain rating of 0 remained as a single group, and pain ratings were then grouped in 5 categories: pain 1–2, 3–4, 5–6, 7–8, and 9–10. This was done to provide adequate sample size to assess for potential relationships while retaining distribution of responses.

Opioid Use for the Treatment of Low Back Pain

The structured interview also included questions about medication use for treatment of LBP. This included any and all prescription medications, including opioid medications as well as over-the-counter medications used to treat the LBP, including all medications they may have used in the past with no cut-off time. If use of medication was reported, the computer program prompted the interviewer to obtain and record the medication type and dosage. The medication use was assessed for lifetime prevalence, which is congruous with lifetime prevalence of LBP.

Statistical Analysis

All data were analyzed using SAS 9.4 (Cary, NC, USA). Mean and standard deviations were calculated for continuous data. Frequencies and percentages were calculated for categorical data. Assessment of normality was performed on all continuous data used and if normality was not met, Wilcoxon signed-rank tests were used to compare continuous variables. Logistic regression was used to calculate crude and adjusted odds ratio (OR) for opioid use.

Results

A total of 828 study participants had completed baseline health data and were included in these analyses. As a cohort, participants without LBP tended to have fewer health problems and associated risks (e.g., fewer instances of hypertension, hyperlipidemia and reported tobacco use) when compared to workers who have low back pain. 64% of participants (n=525) had at least one lifetime episode (lifetime prevalence) of LBP, and most of those

had an episode of LBP within the past month (1-month period prevalence) (n= 364, 69.2%). Almost one-fifth of those who had ever experienced LBP had used opioids to treat their LBP (n= 98, 18.6%). See Table 1 for participant demographics.

Opioid Use

Participants who had used opioids for their LBP were significantly younger than those with LBP who had not used opioids (mean age = 38.5 years old vs. 43.0, P=0.001). A comparison of participants who had used opioids with those who had not used opioids for treatment of LBP showed that opioid users trended towards being more likely to have chronic medical problems, such as hypertension (20.4% vs. 15.7%, P=0.26), diabetes mellitus (7.1% vs. 4.2%, P=0.29), and elevated cholesterol (25.5% vs. 21.3%, P=0.37). In addition, the opioid using group trended towards more use of tobacco (32.7% vs. 22.7%, P=0.11). See Table 1 for participant opioid use.

Table 2 illustrates the relationships between opioid use and LBP ratings separately for both lifetime and past month pain ratings. There was a wide distribution across the span of pain scale ratings in those workers who did not take any opioids. Among workers who took opioids for LBP, there was a higher proportion of severe pain ratings, with the majority reporting they had experienced 9 or 10/10 LBP.

For workers with LBP in the past month who did not take opioids, the distribution of pain was largely in the mild to moderate pain ratings. When compared to workers who did take opioids, pain ratings were skewed toward higher scores. While it is anticipated that those with pain scores of 9 or 10/10 are more likely to be taking opioids, we were surprised that more than half (n=50, 51.0%) of the opioid users with any LBP in their lifetime reported 10/10 worst pain rating.

For workers with LBP in the last month, there was a fairly even distribution of opioid use across the spectrum of pain ratings.

Table 3 shows the odds ratio of opioid use and pain ratings after adjusting for age, BMI, gender, diabetes mellitus, tobacco use, feelings of depression, and low job satisfaction. Statistically significant relationships between opioid use and higher lifetime LBP pain ratings were found. The adjusted odds ratios for opioid use for workers with high pain ratings of 8, 9, or 10/10 compared to those with a moderate pain rating of 4/10 were much higher (OR=15.36, 23.62 and 46.45, respectively). There was also an increased adjusted odds ratio for workers with a mild pain rating of 2/10 when compared to those with a moderate pain rating of 4/10 (OR=11.49); 3/10 was elevated but not significant (OR=4.44). This suggests a non-linear distribution with a moderate pain rating of 4 as the bottom of the curvilinear relationship. Similar relationships were seen between LBP and the categorized pain ratings, although the magnitude of the relationships were not as strong, ranging from 6.01 at the lowest pain rating category (1 or 2/10) to 21.14 in the highest category (9 or 10/10).

In opioid-users who had experienced LBP in the past month, there was no statistically significant relationship; however, there is not evidence of a consistent relationship across

pain ratings. This may be due to a meaningfully smaller sample size and therefore less statistical power. Categorized LBP ratings in the past month show no statistically significant relationships between rating and opioid use.

Age and tobacco use were both statistically significantly related to opioid use. Per year increase in age resulted in a statistically significant increase in odds of using opioids (OR=1.05, 95% CI 1.02, 1.07). Among those with LBP in the past month, current smokers were statistically significantly more likely to use opioids (OR=3.25, 95% CI 1.62, 6.54) as compared to never smokers. Diabetes mellitus, feelings of depression, gender, BMI and low job satisfaction were not statistically significantly related to opioid use, but were trending toward statistical significance and meaningfully changed the OR estimate between pain rating and opioid use, and were therefore retained in the adjusted models.

Discussion

In our study we found a smaller percentage of workers who used opioids to treat their low back pain (18%) than the general population. This may be due, in part, to a healthy worker effect. We also found our study participants to be generally healthier than the general population for many metrics, including better BMI and lower blood pressure.

However, we did find significant opioid use in workers with mild low back pain. In contrast to the guidance from many medical societies to prescribe opioids for severe pain only, this population-based study found significantly increased opioid use among workers with both high and low lifetime worst pain ratings. The workers with severe levels of pain (8, 9, and 10/10) were more likely to report opioid use when compared to moderate pain levels for lifetime prevalence of LBP. However, there was also a tendency for statistically significantly higher opioid use in mild pain levels as well. This would imply a non-linear distribution for opioid use, meaning that the odds of the subject receiving opioids for a numerical pain rating of 2 or 8 is higher than if the participant had a pain rating of 4. These findings suggest that opioids are used despite recommendations from several organizations that they be used for severe pain only [17, 27, 28, 31].

The US is currently facing a public health epidemic of prescription opioid abuse and prescription opioid related deaths. In 2013, an estimated two million Americans abused prescription opioids and slightly more than 16,000 Americans died from a prescription opioid-related overdose[27]. We speculate that the data in this study could explain some of the epidemic.

The strengths of this study include having a relatively large, multi-state study population from which to evaluate relationships between self-reported pain and opioid use for treatment of LBP. Another strength is the use of structured interviews for all study participants, including computerized instruments that standardized interviews and assured data capture completeness.

There is a possibility of recall bias, although differential recall of opioid use seems unlikely. It is possible that those with more severe pain are more likely to recall taking opioid medication for their pain, which would suggest an overestimate of the magnitude of the

relationship between high pain rating and opioid use. Potential recall bias in lifetime prevalence may lead to a type-2 error among the high pain rating; that is, those with high pain are more likely to recall taking opioids and therefore are more likely to find a difference between opioid use among participants with high pain ratings as compared to participants with moderate or mild pain ratings. A study by Thiese et al. (2014) suggests there is limited application for self-reported pain ratings, with workers reporting high pain ratings while on their normal job performing their regular job tasks[(2)].

Enrollment in this study was voluntary and may result in selection bias; however, this is unlikely given that the participation rate is greater than 75%, and the reported 65% of lifetime prevalence of low back pain in this population is similar to prior studies. Also, while the study sample as a whole is large, the number of workers prescribed opioids in the last month is relatively small, which can limit the study's power. Furthermore, individual pain rating categories had a small sample size, resulting in wide confidence intervals and the possibility of statistical imprecision. Grouped pain categories allowed for increased precision due to greater sample size.

Conclusion

These data demonstrate a complex and statistically significant relationship between lifetime prevalence of worst LBP rating and lifetime prevalence of opioid use. As compared to moderate pain ratings, these analyses found statistically significant and clinically meaningful relationships between high lifetime worst LBP pain ratings of 8, 9, and 10/10 and opioid use. Additionally, relatively low lifetime worst LBP ratings were significantly more likely to have been prescribed opioids, as compared to those with a moderate pain rating of lifetime worst pain rating. These results remained after adjustment for age, BMI, gender, diabetes mellitus, tobacco use, depression and job satisfaction. Further investigation into the potential impacts that psychosocial factors, personal factors and occupational factors have on the observed non-linear relationship between LBP rating and opioid use may provide additional insight.

Additional source of support: N/A

The authors wish to acknowledge the unwavering efforts of Arun Garg, PhD, CPE, who led this effort since its inception and mentored many in the field of occupational safety and health. Also the contributions from numerous individuals, many of whom perform volunteer, or only partially compensated work on this project. Additional sources of funding include the authors' universities and other, non-commercial resources.

Source of Funding:

This study has been funded, in part, by grants from the National Institute for Occupational Safety and Health (NIOSH/CDC), 1 U 01 OH008083-01 and NIOSH Education and Research Center training grant T42/CCT810426-10. The CDC/NIOSH is not involved in the study design, data analyses or interpretation of the data.

References

1. Dagenais S, Caro J, and Haldeman S: A systematic review of low back pain cost of illness studies in the United States and internationally. Spine J 8(1): 8–20 (2008). [PubMed: 18164449]

2. Thiese MS, Hegmann KT, Wood EM, Garg A, Moore JS, Kapellusch JM et al. : Low-back pain ratings for lifetime, 1-month period, and point prevalences in a large occupational population. Hum Factors 56(1): 86–97 (2014). [PubMed: 24669545]

3. Hoy D, Bain C, Williams G, March L, Brooks P, Blyth F et al. : A systematic review of the global prevalence of low back pain. Arthritis Rheum 64(6): 2028–2037 (2012). [PubMed: 22231424]

4. Heliovaara M, Sievers K, Impivaara O, Maatela J, Knekt P, Makela M et al. : Descriptive epidemiology and public health aspects of low back pain. Ann Med 21(5): 327–333 (1989). [PubMed: 2532521]

5. Garg A, Hegmann KT, Moore JS, Kapellusch J, Thiese MS, Boda S et al. : Study protocol title: A prospective cohort study of low back pain. BMC Musculoskelet Disord 14: 84 (2013). [PubMed: 23497211]

6. Hegmann KT: Low Back Disorders. In ACOEM Practice Guidelines 3rd edition. Westminster Colorado: Reed, 2010.

7. Franklin GM, Rahman EA, Turner JA, Daniell WE, and Fulton-Kehoe D: Opioid use for chronic low back pain: A prospective, population-based study among injured workers in Washington state, 2002–2005. Clin J Pain 25(9): 743–751 (2009). [PubMed: 19851153]

8. Prevention Cf.D.C.a.: Unintentional and undetermined poisoning deaths−−11 states, 1990–2001. MMWR Morb Mortal Wkly Rep 53(11): 233–238 (2004). [PubMed: 15041950]

9. Cheng M, Sauer B, Johnson E, Porucznik C, and Hegmann K: Comparison of opioid-related deaths by work-related injury. Am J Ind Med 56(3): 308–316 (2013). [PubMed: 23143851]

10. Paulozzi LJ, and Annest JL: US data show sharply rising drug-induced death rates. Inj Prev 13(2): 130–132 (2007). [PubMed: 17446255]

11. Control C.f.D.: Physicians are a leading source of prescription opioids for the highest risk users.

12. Atluri S, Sudarshan G, and Manchikanti L: Assessment of the trends in medical use and misuse of opioid analgesics from 2004 to 2011. Pain Physician 17(2): E119–128 (2014). [PubMed: 24658483]

13. Birnbaum HG, White AG, Schiller M, Waldman T, Cleveland JM, and Roland CL: Societal costs of prescription opioid abuse, dependence, and misuse in the United States. Pain Med 12(4): 657–667 (2011). [PubMed: 21392250]

14. Cantrill SV, Brown MD, Carlisle RJ, Delaney KA, Hays DP, Nelson LS et al. : Clinical policy: critical issues in the prescribing of opioids for adult patients in the emergency department. Ann Emerg Med 60(4): 499–525 (2012). [PubMed: 23010181]

15. Chaparro LE, Furlan AD, Deshpande A, Mailis-Gagnon A, Atlas S, and Turk DC: Opioids compared with placebo or other treatments for chronic low back pain: An update of the Cochrane Review. Spine (Phila Pa 1976) 39(7): 556–563 (2014). [PubMed: 24480962]

16. Cifuentes M, Webster B, Genevay S, and Pransky G: The course of opioid prescribing for a new episode of disabling low back pain: Opioid features and dose escalation. Pain 151(1): 22–29 (2010). [PubMed: 20705393]

17. Hegmann KT, Weiss MS, Bowden K, Branco F, DuBrueler K, Els C et al. : ACOEM Practice Guidelines: opioids for treatment of acute, subacute, chronic, and postoperative pain. J Occup Environ Med 56(12): e143–159 (2014). [PubMed: 25415660]

18. Jones CM, Paulozzi LJ, and Mack KA: Sources of prescription opioid pain relievers by frequency of past-year nonmedical use United States, 2008–2011. JAMA Intern Med 174(5): 802–803 (2014). [PubMed: 24589763]

19. Kidner CL, Mayer TG, and Gatchel RJ: Higher opioid doses predict poorer functional outcome in patients with chronic disabling occupational musculoskeletal disorders. J Bone Joint Surg Am 91(4): 919–927 (2009). [PubMed: 19339577]

20. Manchikanti L, Hirsch JA, and Smith HS: Evidence-based medicine, systematic reviews, and guidelines in interventional pain management: Part 2: Randomized controlled trials. Pain Physician 11(6): 717–773 (2008). [PubMed: 19057624]

21. Prevention Cf.D.C.a.: Adult use of Prescription Opioid Pain Medications- Utah 2008. . MMWR Morb Mortal Wkly Rep 59(6): 153–157 (2010). [PubMed: 20168293]

22. Strassels SA: Economic burden of prescription opioid misuse and abuse. J Manag Care Pharm 15(7): 556–562 (2009). [PubMed: 19739878]

23. Turner JA, Franklin G, Fulton-Kehoe D, Egan K, Wickizer TM, Lymp JF et al. : Prediction of chronic disability in work-related musculoskeletal disorders: A prospective, population-based study. BMC Musculoskelet Disord 5: 14 (2004). [PubMed: 15157280]
24. Volinn E, Fargo JD, and Fine PG: Opioid therapy for nonspecific low back pain and the outcome of chronic work loss. Pain 142(3): 194–201 (2009). [PubMed: 19181448]
25. Webster BS, Verma SK, and Gatchel RJ: Relationship between early opioid prescribing for acute occupational low back pain and disability duration, medical costs, subsequent surgery and late opioid use. Spine (Phila Pa 1976) 32(19): 2127–2132 (2007). [PubMed: 17762815]
26. Tournebize J, Gibaja V, Muszczak A, and Kahn JP: Are physicians safely prescribing opioids for chronic noncancer pain? A systematic review of current evidence. Pain Pract (2015).
27. Control C.f.D.: Prescription Drug Time and Dosage Limit Laws: 10 (2015).
28. Garg A, Boda S, Hegmann KT, Moore JS, Kapellusch JM, Bhoyar P et al. : The NIOSH lifting equation and low-back pain, Part 1: Association with low-back pain in the backworks prospective cohort study. Hum Factors 56(1): 6–28 (2014). [PubMed: 24669540]
29. Garg A, Kapellusch JM, Hegmann KT, Moore JS, Boda S, Bhoyar P et al. : The NIOSH lifting equation and low-back pain, Part 2: Association with seeking care in the backworks prospective cohort study. Hum Factors 56(1): 44–57 (2014). [PubMed: 24669542]
30. Thiese MS, Hegmann KT, Wood EM, Garg A, Moore JS, Kapellusch J et al. : Prevalence of low back pain by anatomic location and intensity in an occupational population. BMC Musculoskelet Disord 15: 283 (2014). [PubMed: 25146722]
31. Rolfs RT, Johnson E, Williams NJ, and Sundwall DN: Utah clinical guidelines on prescribing opioids for treatment of pain. J Pain Palliat Care Pharmacother 24(3): 219–235 (2010). [PubMed: 20718642]

TABLE 1:

Participant Demographics stratified by opioid use.

Demographics	All Participants (N= 828)	Ever having had low back pain (N = 525)		
Characteristics		**Hx of LBP without using opioids N= 427**	**Hx of LBP and had used opioids as treatment N= 98**	**P-value***
Age (mean ± SD)	**38.8± 12**	**43.0 ± 10.9**	**38.5 ± 12.4**	**0.001**
BMI (mean)	29.3±6.5	29.7 ± 7.0	29.2 ± 6.7	0.459
Gender				0.706
Male	529	279 (65.3)	66 (67.4)	
Female	299	148 (34.7)	32 (32.7)	
Medical History	Frequency (%)			
Diagnosed with High Blood Pressure	119 (14.4)	67 (15.7)	20 (20.4)	0.258
Diagnosed with High Cholesterol >200 mg/dl	155 (18.7)	91 (21.3)	25 (25.5)	0.366
Diagnosed with Diabetes	37 (4.5)	18 (4.2)	7 (7.1)	0.288
Feelings of Depression				0.777
Never	305 (36.8)	141 (33.0)	31 (31.6)	
Seldom	393 (47.5)	219 (51.3)	48 (49.1)	
Often	112 (13.5)	61 (14.3)	18 (18.2)	
Always	18 (2.2)	6 (1.4%)	1 (1.0)	
Job Satisfaction				0.072
Very Satisfied	265 (32.0)	112 (26.2)	31 (31.6)	
Satisfied	397 (48.0)	218 (51.1)	47 (48.0)	
A little satisfied	121 (14.6)	75 (17.6)	10 (10.2)	
Not Satisfied	45 (5.4)	22 (5.2)	10 (10.2)	
Tobacco Use				
Never	458 (55.3)	225 (52.7)	43 (43.9)	0.110
Yes, but I smoked in the past	192 (23.2)	106 (24.8)	23 (23.5)	
Yes, currently	178 (21.5)	97 (22.7)	32 (32.7)	

*P-value comparing workers with back pain who have used opioids with those who have not.

TABLE 2:

Distribution of opioid use and Pain Ratings

Worst lifetime low back pain rating (N= 525)					Low back pain in the last month (N= 364)			
Pain Rating	**No Opioids N=427**	**Treated with opioids N= 98**	**Proportion using opioid**		**Pain Rating**	**No Opioids N= 298**	**Treated with opioids N= 66**	**Proportion using opioids**
1	1	0	0/1		1	12	2	2/14 (0.14)
2	16	3	3/19 (0.16)		2	32	7	7/39 (0.18)
3	25	2	2/27 (0.07)		3	53	10	10/63 (0.16)
4	53	1	1/54 (0.02)		4	52	7	7/59 (0.12)
5	60	5	5/65 (0.08)		5	48	14	14/62 (0.23)
6	60	7	7/67 (0.10)		6	43	6	6/49 (0.12)
7	56	4	4/60 (0.07)		7	22	5	5/27 (0.19)
8	69	16	16/85 (0.19)		8	20	9	9/29 (0.31)
9	26	10	10/36 (0.29)		9	9	1	1/10 (0.10)
10	61	50	51/111 (0.46)		10	7	5	5/12 (0.42)

TABLE: 3

Adjusted Odds Ratio Estimates for Relationships Between Opioid Use and Both Lifetime LBP Pain Ratings and 1-Month Period LBP Pain Ratings

Lifetime Prevalence of LBP		LBP in the Past Month	
Pain Rating	**Odds Ratio and 95% CI**	**Pain Rating**	**Odds Ratio and 95% CI**
1	NA	1	1.36 (0.23 , 8.13)
2	**11.49 (1.09, 121.49)** *	2	1.26 (0.36 , 4.47)
3	4.44 (0.37, 52.68)	3	1.79 (0.58 , 5.57)
4	1.00 (Reference)	4	1.00 (Reference)
5	4.99 (0.55, 44.96)	5	**3.04 (1.03 , 9.01)** *
6	7.17 (0.84, 61.39)	6	0.92 (0.26 , 3.27)
7	4.87 (0.52, 45.94)	7	1.49 (0.37 , 5.99)
8	**15.36 (1.94, 121.97)** *	8	2.01 (0.58 , 6.92)
9	**23.62 (2.80, 199.54)** *	9	1.09 (0.11 , 10.95)
10	**46.45 (6.07, 355.72)** *	10	3.94 (0.83 , 18.65)
Pain Rating Category	**Odds Ratio and 95% CI**	**Pain Rating Category**	**Odds Ratio and 95% CI**
1–2	**6.01 (1.06 , 34.06)** *	1–2	0.94 (0.36 , 2.48)
3–4	1.00 (Reference)	3–4	1.00 (Reference)
5–6	3.12 (0.83 , 11.71)	5–6	1.40 (0.65 , 3.02)
7–8	**5.27 (1.44 , 19.28)** *	7–8	1.31 (0.55 , 3.13)
9–10	**21.14 (6.10 , 73.26)** *	9–10	1.87 (0.58 , 6.02)

Adjusted for age, BMI, gender, diabetes mellitus, tobacco use, feelings of depression and job satisfaction

* $p<0.05$