Drug and Alcohol Dependence 128 (2013) 161–165

Contents lists available at SciVerse ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep

Short communication

Epidemiology of pain among outpatients in methadone maintenance treatment programs☆

Lara Dhingra[a,b,c,*], Carmen Masson[d], David C. Perlman[e,f,g], Randy M. Seewald[f], Judith Katz[h], Courtney McKnight[e,g], Peter Homel[i], Emily Wald[j], Ashly E. Jordan[e], Christopher Young[e], Russell K. Portenoy[a,b,k]

[a] Department of Pain Medicine and Palliative Care, Beth Israel Medical Center, First Avenue at 16th Street, New York, NY 10003, United States
[b] Department of Neurology, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, NY 10461, United States
[c] Department of Psychiatry and Behavioral Sciences, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, NY 10461, United States
[d] Department of Psychiatry, University of California at San Francisco, 1001 Potrero Avenue, San Francisco, CA 94110, United States
[e] Baron Edmond de Rothschild Chemical Dependency Institute, Beth Israel Medical Center, First Avenue at 16th Street, New York, NY 10003, United States
[f] Department of Medicine, Beth Israel Medical Center, First Avenue at 16th Street, New York, NY 10003, United States
[g] Center for Drug Use and HIV Research, New York University College of Nursing, 726 Broadway, New York, NY 10003, United States
[h] New York University School of Medicine, 550 First Avenue, New York, NY 10016, United States
[i] Maimonides Medical Center, 4802 Tenth Avenue, Brooklyn, NY 11219, United States
[j] Columbia Teacher's College, 525 West 120th Street, New York, NY 10027, United States
[k] Department of Anesthesiology, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, NY 10461, United States

ARTICLE INFO

Article history:
Received 18 April 2012
Received in revised form 1 August 2012
Accepted 3 August 2012
Available online 27 August 2012

Keywords:
Pain
Epidemiology
Methadone maintenance
Addiction
Pain management

ABSTRACT

Background: This analysis explored the prevalence and correlates of pain in patients enrolled in methadone maintenance treatment (MMT).
Methods: Patients in two MMT programs starting a hepatitis care coordination randomized controlled trial completed the Brief Pain Inventory Short-Form and other questionnaires. Associations between clinically significant pain (average daily pain ≥ 5 or mean pain interference ≥ 5 during the past week) and sociodemographic data, medical status, depressive symptoms, and health-related quality of life, and current substance use were evaluated in multivariate analyses.
Results: The 489 patients included 31.8% women; 30.3% Hispanics, 29.4% non-Hispanic Blacks, and 36.0% non-Hispanic Whites; 60.1% had hepatitis C, 10.6% had HIV, and 46.8% had moderate or severe depressive symptomatology. Mean methadone dose was 95.7 mg (SD 48.9) and urine drug screening (UDS) was positive for opiates, cocaine, and amphetamines in 32.9%, 40.1%, and 2.9%, respectively. Overall, 237 (48.5%) reported clinically significant pain. Pain treatments included prescribed opioids (38.8%) and non-opioids (48.9%), and self-management approaches (60.8%), including prayer (33.8%), vitamins (29.5%), and distraction (12.7%). Pain was associated with higher methadone dose, more medical comorbidities, prescribed opioid therapy, and more severe depressive symptomatology; it was not associated with UDS or self-reported substance use.
Conclusions: Clinically significant pain was reported by almost half of the patients in MMT programs and was associated with medical and psychological comorbidity. Pain was often treated with opioids and was not associated with measures of drug use. Studies are needed to further clarify these associations and determine their importance for pain treatment strategies.

1. Introduction

Pain is highly prevalent in populations with substance use disorders (SUDs; Larson et al., 2007; Passik et al., 2006; Potter et al., 2008a,b; Rosenblum et al., 2003; Caldeiro et al., 2008; Sheu et al., 2008) and has been reported in 37–61% of patients receiving methadone maintenance treatment (MMT; Barry et al., 2009a; Jamison et al., 2000; Peles et al., 2005; Rosenblum et al., 2003, 2007). Poorly controlled pain is associated with distress and disability (Portenoy et al., 2004), and some (Brennan et al., 2005; Larson

☆ Supplementary material can be found by accessing the online version of this paper at http://dx.doi.org/10.1016/j.drugalcdep.2012.08.003.

* Corresponding author at: Department of Pain Medicine and Palliative Care, Beth Israel Medical Center, 120 East 16th Street, 12th Floor, New York, NY 10003, United States. Tel.: +1 212 844 1429; fax: +1 212 844 1503.
E-mail address: Ldhingra@chpnet.org (L. Dhingra).

0376-8716/$ – see front matter © 2012 Elsevier Ireland Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.drugalcdep.2012.08.003

et al., 2007; Peles et al., 2005; Potter et al., 2008a,b; Rosenblum et al., 2003; Sheu et al., 2008), but not all (Barry et al., 2009a,c) studies suggest that pain is associated with poorer addiction-related outcomes. More information about pain in MMT populations is needed to guide pain management strategies while preserving positive substance abuse outcomes.

A hepatitis care coordination trial provided an opportunity for a secondary analysis of pain-related data from two MMT programs. The aims were to identify the prevalence and correlates of pain. The Institutional Review Boards at Beth Israel Medical Center and the University of California in San Francisco approved the analysis.

2. Methods

2.1. Patient selection and procedures

Outpatients participating in two MMT programs in a hepatitis prevention trial provided the data. These programs, in New York and San Francisco, serve 8000 and 400 patients, respectively. The trial used a random number table to select patients from methadone dosing lines for eligibility screening between February 2008 and June 2011. Eligibility criteria included age >18 years and no prior medical care for hepatitis C virus (HCV). Patients were excluded if they were enrolled in another study, unlikely to be available for 12 months, or had uncontrolled psychosis. Consenting patients completed a questionnaire; those with >1 affirmative responses to screening questions for pain ("pain other than ... everyday kinds of pain during the last week," the use of "pain medications in the last 7 days," and the experience of "some form of pain now that requires medication each and every day") also completed the Brief Pain Inventory-Short Form (BPI-SF; Daut et al., 1983).

2.2. Measures

The BPI-SF measures pain intensity and pain interference in function during the past week (Cleeland, 2009; Daut et al., 1983; Keller et al., 2004; Mendoza et al., 2006). Intensity is measured on a 0–10-numeric scale for pain "right now", "at its worst", "on average", and "at its least", and interference is measured on a 0–10-numeric scale across 7 functional domains. The latter items are averaged to create a pain interference subscale (Cleeland, 2009). Traditional and complementary and alternative medicine pain treatments were assessed (National Center for Complementary and Alternative Medicine, 2010).

Sociodemographics, medical and psychosocial status, and SUD outcomes were evaluated (Caldeiro et al., 2008; Novak et al., 2009; Peles et al., 2005; Rosenblum et al., 2003; Tsui et al., 2011). Self-reported comorbid conditions were summed to create a medical status variable.

Current substance use was assessed by urine drug screening (UDS) and by self-report using the drug use subscale (Zanis et al., 1994) of the Fifth Edition of the Addiction Severity Index (ASI) (McLellan et al., 1992). The Beck Depression Inventory-II (BDI-II) (Beck et al., 1996) measured depressive symptoms and the Medical Outcomes Survey-Short Form (MOS-SF-12) (Ware et al., 1996) assessed health status.

2.3. Statistical analyses

"Clinically significant pain" was defined by an average pain intensity during the past week of >5 or an average pain interference score during the past week of >5. Patients with pain who did not meet these criteria were considered to have "non-clinically significant pain." Patients who screened negatively for pain or indicated on the BPI-SF that they had "0" pain "on average" during the past week were considered to have "no pain." The "no pain" and "non-clinically significant pain" groups had no significant differences and were combined for subsequent analyses.

"Current substance use" was defined as a positive UDS result for opiates if the patient did not report using a prescribed opioid for pain, a positive UDS result for cocaine or amphetamines, or self-reported use of heroin, cocaine or amphetamines on any of the past 30 days. The MOS-SF-12 mental and physical summary scores were recalculated to eliminate the single "bodily pain" item; residualized *t*-scores were used in the analyses.

Associations among categorical variables and continuous outcomes were determined using Chi-square tests, Student's *t*-tests, one-way analysis of variance or Pearson product–moment correlation coefficients. Skewness was corrected using log transformation. Factors significant in univariate analyses were included in a multivariate logistic regression model, with fixed entry of all factors to determine which independently predicted pain. Statistical significance was defined as $p < 0.05$. All analyses were performed using SPSS (Version 18.0, SPSS, Inc., Chicago, IL) and SAS software (Version 9.1, SAS Inc., Cary, NC).

3. Results

3.1. General characteristics

The mean age of the 489 patients was 45.1 years (SD 10.0) and 31.8% were women; 36.0% were Non-Hispanic White; 60.1% and 10.6% had HCV and HIV infection, respectively, and 52.3% had >1 other comorbidities. Mean methadone dose was 95.7 mg/day (SD, 48.9; range, 4–430).[1]

3.2. Significant pain characteristics

Overall, 237 patients (48.5%) had clinically significant pain (95% CI = 44–53%), 76 (15.5%) had non-clinically significant pain, and 176 (36.0%) had no pain. Of those with clinically significant pain, mean average pain was 5.9 (SD, 1.9; range, 0–10) and mean worst pain was 7.9 (SD, 1.8; range, 1–10); 46.7% had worst pain >7, a value consistent with severe pain (Serlin et al., 1995; Table 1).

3.3. Psychological and substance use disorder characteristics

UDS was positive in 285 patients (58.3%), including opiates (32.9%), cocaine (40.1%) and amphetamines (2.9%). Of those patients positive for opiates, 10.2% reported using prescribed opioids for pain. Self-reported drug abuse paralleled the UDS results. Approximately half (46.8%) had moderate or severe depressive symptomatology on the BDI-II, and the mental (38.9, SD, 13.2) and physical components summary scores (46.6, SD, 8.8) were lower than the mean of 50 in the general population (Ware et al., 1996) (see footnote 1).

3.4. Associations with pain

In univariate analyses, neither UDS nor self-reported drug use on the ASI was statistically associated with clinically significant pain. A sensitivity analysis evaluating different intensities of substance use in the past 30 days confirmed this. Clinically significant pain was associated with age ($p = 0.011$), being married ($p = 0.009$), current use of prescribed opioid therapy for pain ($p < 0.001$), higher methadone dose ($p = 0.003$), higher number of comorbid medical conditions ($p < 0.001$), more severe depressive symptoms ($p < 0.001$), and poorer physical HRQL ($p < 0.001$) (Table 2).

Variables associated with clinically significant pain were entered simultaneously into a multivariate logistic regression model. The mental components score on the MOS-SF-12 was added given perceived clinical relevance. Using a dependent variable of presence or absence of clinically significant pain, the model was significant (Wald score $\chi^2(8, N = 480) = 85.55$, $p < 0.0001$) and four variables remained independently associated with pain: current use of prescribed opioid therapy for pain, higher methadone dose, higher level of comorbid medical conditions, and more severe depressive symptoms. Based on pseudo-*R* squared estimates of the coefficient of determination, the model explained 24% (Cox and Snell) to 32% (Nagelkerke) of the variance in clinically significant pain and correctly classified 78% of cases. The strongest predictor of clinically significant pain was current use of prescribed opioid therapy (odds ratio [OR] = 7.74) followed by depressive symptoms (OR = 2.25; Table 2).

[1] A Supplementary Table with detailed characteristics can be found by accessing the online version of this paper at http://dx.doi.org/10.1016/j.drugalcdep.2012.08.003.