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Screening for Addictive Disorders Within a Workers' Compensation Clinic: An Exploratory Study

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Abstract

We conducted a cross-sectional study investigating the extent of addictive disorders within a workers' compensation (WC) clinic. We also examined the feasibility of substance abuse screening within the same clinic. In 2009, 100 patients were asked to complete the World Health Organization's Alcohol, Smoking, Substance Involvement Screening Test (WHO-ASSIST) and the Current Opioid Misuse Measure (COMM). According to the WHO-ASSIST, we found that 46% of WC patients required intervention for at least one substance-related disorder (25% tobacco, 23% sedatives, 8% opioids), and according to the COMM, 46% screened positive for prescription opioid misuse. Importantly, the addition of this screening was brief, economical, and well accepted by patients. Further research should analyze the costs and benefits of detection and intervention of substance-related disorders in this setting.

Keywords

workers' compensation; substance-related disorders; opioid-related disorders; aberrant drug behaviors; gambling; substance abuse detection; current opioid misuse measurement; World Health Organization's alcohol smoking substance involvement screening test

INTRODUCTION

Workers' compensation (WC) providers see patients for occupation-related symptoms that require absence from work and an evaluation by the patient's insurance company. According to the US Department of Labor, over 380,000 cases, or almost one-third of all work injuries that required absence from work, were caused by musculoskeletal disorders in 2007 (Bureau of Labor Statistics, 2009). Musculoskeletal disorders, including sprains, strains, and tears, cause acute pain and are the most common disabling conditions for the United States workforce (Stewart, Ricci, Chee, Morganstein, & Lipton, 2003).

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Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

The authors have no competing interests to declare.

For some WC patients, this acute pain may transform into chronic pain (Casey, Greenberg, Nicassio, Harpin, & Hubbard, 2008; Reid, Haugh, Hazard, & Tripathi, 1997) defined as pain lasting for 3 months or more (Pain, 1986). Chronic pain is often managed with long-term use of opioids, such as oxycodone or codeine, which are highly effective analgesics (Reid et al., 2002). However, the long-term use of opioids is associated with adverse effects such as dependence, tolerance, abnormal pain sensitivity, hormonal change, immune modulation (Ballantyne & Mao, 2003), and death due to accidental overdose (Dunn et al., 2010).

Acutely, opioids affect cerebral reward pathways, which mediate addiction, inducing intense euphoria that can reinforce abuse (Cicero, Surratt, Inciardi, & Munoz, 2007; Fields, 2007). The Substance Abuse and Mental Health Services Administration's (SAMHSA) national survey found that over 5 million people reported using pain relievers nonmedically in 2007 (SAMHSA, 2009b). The widespread misuse of opioids has been widely documented for patients with chronic pain. In a review of 17 studies, Fishbain, Cole, Lewis, Rosomoff, and Rosomoff (2008) found that 11.5% of 2,466 patients engaged in aberrant drug-related behavior. In a different study, Ives et al. (2006) examined 196 chronic pain patients on prescription opioids and found approximately one-third of these patients misused opioids based on urine tests, information from multiple providers, and documented forged prescriptions. Patients who misuse prescription opioids are more likely to use illicit drugs or have a comorbid psychiatric disorder (Fishbain et al., 2008; Haller & Acosta, 2010; Manchikanti et al., 2006). This comorbidity can affect management and prognosis for patients with pain-related disorders (Baldacchino, Gilchrist, Fleming, & Bannister, 2010; Fishbain, 1999).

Since many WC patients experience chronic pain, and patients with chronic pain are more likely to use illicit drugs, we suspect that many WC patients may be at risk for substance abuse disorders. One well-known study by Franklin et al. (2005) examined death certificates from 1995 to 2002 in the Washington State WC system and found that 32 deaths were definitely or probably related to accidental overdose of opioids. Another study that looked at patients with chronic work-related musculoskeletal pain found a higher prevalence of substance-related and psychiatric disorders among these patients compared to the community (Dersh, Gatchel, Polatin, & Mayer, 2002).

WC providers, similar to physicians from other specialties, may have difficulty detecting substance-related disorders (CASA National Advisory Committee on the Diversion and Abuse of Controlled Prescription Drugs, 2005). In a national survey of 979 physicians from various specialties, the National Center of Addiction and Substance Abuse concluded that physicians rarely screen or accurately diagnose substance abuse in patients presenting with clear substance-abuse-related symptoms. The survey also found that 74% of physicians refrained from prescribing controlled drugs because they were concerned that their patients might become addicted to them. Such lapses in detection or treatment of substance-related disorders in WC patients may hinder management and make effective treatment difficult to achieve (Savage, 2002).

The societal impact of substance abuse disorders is substantial. Economically speaking, substance-related disorders have an impact of up to half a trillion dollars (considering combined medical, fiscal, criminal, and social factors) and are associated with over 100,000 deaths in the US (Adhikari, Kahende, Malarcher, Pechacek, & Tong, 2008; Executive Office of the President, 2004; Harwood, 2000). Furthermore, in 2009, 23.5 million persons (or 9.3% of persons aged 12 or older) required treatment for a substance-related disorder (SAMHSA, 2009a).

Estimates of the prevalence of substance-related disorders in WC patients in the literature are limited. To bridge this gap, we will conduct a cross-sectional exploratory study investigating substance-related disorders in WC patients. Because chronic pain is so prevalent among WC patients, and patients with chronic pain are more likely to experience substance-related disorders, we hypothesize that substance-related disorders occur more frequently in the WC population. Additionally, we expect that a substantial number of WC patients require intervention for these disorders, especially prescription opioid misuse. The primary objective of this study is to provide evidence for this hypothesis and demonstrate the practicalities of screening patients for substance-related disorders within private WC clinics.

METHODS

Participants and Treatment Setting

From May 2009 to July 2009, every new patient ($N = 100$) presenting to a private WC provider in Los Angeles was given an opportunity to participate in this study. No incentives were provided to participants and the only inclusion criterion was being 18 years of age or older. Patients were referred to this clinic for a WC assessment if they claimed any injury or illness acquired occupationally. Most patients were referred by either their employment insurance company or legal representative for evaluation. The study was planned to span a window of 3 months, and the sample size was predetermined at 100 subjects, which we estimated to be a characteristic 3-month patient load at this WC clinic. One hundred patients would also maintain a valid and statistically meaningful sample representative of a typical WC clinic. The WC provider (MH) is a certified WC claim professional and has over 20 years of WC experience.

Assessments

Identification of substance-related disorders was accomplished using the World Health Organization Alcohol, Smoking, Substance Involvement Screening Test Version 3.0 (WHO-ASSIST) and the Current Opioid Misuse Measure (COMM).

The WHO-ASSIST was chosen to screen for substance abuse in participants because it is a quick, valid, and reliable questionnaire. It is a brief interview intended to be used in a primary care setting (Humeniuk et al., 2008; WHO-ASSIST Working Group, 2002) and is composed of eight questions, each inquiring about the frequency of substance use in the past 3 months. Information about 10 different substances is ascertained (tobacco, alcohol, cannabis, cocaine, amphetamine-type stimulants, inhalants, sedatives, hallucinogens, opioids, and other drugs). Based on the participants' responses and their pattern of substance use, the WHO-ASSIST classifies patients into one of three categories. The WHO-ASSIST categorizes respondents by the degree of intervention recommended for substance use (no intervention, brief intervention, or more intensive intervention). For all substances except alcohol, scores of 0–3 indicate that no intervention is necessary (low risk), scores of 4–26 indicate that a brief intervention is recommended (moderate risk), and scores greater than 26 indicate that a more intensive intervention is recommended (high risk). For alcohol, the equivalent cutoffs are 0–10, 11–26, and greater than 26 for no intervention, brief intervention, and intensive intervention, respectively. These interventions are designed for use in the primary care setting and are described elsewhere (WHO, 2010). Compared to another validated, reliable, and frequently used diagnostic tool (Sheehan et al., 1998), the sensitivity/specificity of the WHO-ASSIST in detecting substance-related disorders was 0.80/0.71 for tobacco, 0.83/0.79 for alcohol, 0.91/0.90 for cannabis, 0.92/0.94 for cocaine, 0.97/0.87 for amphetamines, 0.94/0.91 for sedatives, and 0.94/0.96 for opioids (Humeniuk et al., 2008).

The COMM is a quick, easy, valid, and reliable 17-item self-questionnaire that is used to identify potential prescription opioid abuse in chronic pain patients (Butler, Budman, Fanciullo, & Jamison, 2010; Butler et al., 2007). The total COMM scores range from 0 to 17 and higher scores correlate with an increased likelihood of aberrant drug-related behavior. The authors of the COMM used a cutoff score of nine or higher to indicate opioid misuse (sensitivity = 0.77, specificity = 0.66, and area under curve = 0.81). The COMM has also been shown to be consistently valid and reliable in a primary care setting (Meltzer et al., 2011).

In addition to screening for substance-related disorders, a screen for pathological gambling was included because recent studies have shown that substance abusers and individuals with disabilities experience gambling-related disorders at higher rates than the general population (Morasco & Petry, 2006; Petry, 2007). Gambling-related disorders were assessed using the DSM-IV Pathological Gambling Checklist, a brief 10-question interview based on the DSM-IV criteria for pathological gambling (American Psychiatric Association [APA], 2004). Participants screen positive for pathological gambling if they meet five or more of the criteria. Additionally, the number of criteria met is associated with the severity of gambling problems (Strong & Kahler, 2007; Toce-Gerstein, Gerstein, & Volberg, 2003).

Data Collection

Subjects completed the COMM and clinic intake forms in the waiting room. A brief interview was conducted by a nurse in the examination room to obtain the WHO-ASSIST and Pathological Gambling Checklist prior to seeing the physician. The time spent by participants in the waiting room was not lengthened by the two self-administered questionnaires, suggesting that they were completed quickly. The brief interview conducted by the nurse was completed in under 15 minutes. The nursing staff was provided training via manuals administered by Dr. Fong. Certified interpreters were available for patients who did not speak or read English, but this service was not utilized. After each participant completed the self-administered questionnaire and brief interview, staff members reviewed the patient's medical chart to record the patient's demographics (sex, age, race, employment status, and occupation), to document whether the patient had a reported DSM-IV Axis I psychiatric disorder, and to record the patient's relevant prescription drug history (antidepressants, sedatives, muscle relaxants, or opioids). Chart information was either self-reported to the nursing staff or diagnosed by the WC provider (MH). Demographic information was pre-categorized in the charts of the WC clinic. Once this information was recorded, all patient identifiers were removed from the collected documents to ensure confidentiality. The UCLA Institutional Review Board granted ethical approval for this study as patient data were acquired and used in aggregate without patient identifiers.

Analysis

The results of the WHO-ASSIST were reported for each substance as the recommended degree of intervention (none, brief, or more intensive). The mean, range, and standard deviation of WHO-ASSIST scores were also calculated and reported for all substances. Opioid misuse screening results (scoring nine or higher on the COMM) and the presence of pathological gambling (meeting five or greater DSM-IV criteria for pathological gambling) were also reported. Preliminary analysis (chi-square and independent sample *t*-tests) was conducted to determine if any significant differences ($p < .05$) existed based on demographic variables for the WHO-ASSIST and COMM.

To examine the relationship between opioid misuse (based on the COMM) and psychiatric disorders, prescription drug use, and results from the WHO-ASSIST, we calculated odds

ratios (ORs) with 95% confidence intervals (95% CIs). Significance (p) was determined using chi-square analysis. SPSS 18.0 was used for all data entry and analysis.

RESULTS

One hundred consecutively presenting patients were invited to participate in this study. Data were excluded for five patients who did not fully complete the COMM and three patients who declined to participate in the brief interview. The remaining 92 patients reported no concerns or complaints regarding either assessment. Sixty-nine percent of the participants ($N = 62$) were male and the mean age was 49.7 years (range = 22–83, standard deviation = 10.8). Forty-one percent of the participants ($N = 38$) were Caucasian, 33% ($N = 30$) were Hispanic, 19% ($N = 17$) were African-American, and 8% ($N = 7$) were Asian. The majority of the participants were unemployed (69%, $N = 63$). Most participants belonged to the following occupations during their employment: protective services (25%, $N = 23$); personal care services (22%, $N = 20$); installation, maintenance, and repair services (14%, $N = 13$); and transportation industries (13%, $N = 12$). Preliminary analysis with ANOVA did not reveal any significant differences in WHO-ASSIST or COMM scores based on race, sex, age, or occupation (data not shown).

According to their medical records, the majority of participants had a current documented psychiatric disorder (53%, $N = 49$), and many participants had a documented prescription for opioids (45%, $N = 41$), muscle relaxants (26%, $N = 24$), antidepressants (21%, $N = 19$), and sedatives (20%, $N = 18$).

Intervention for Substance-Related Disorders

Assessment based on the WHO-ASSIST identified nearly half of the participants (46%, $N = 42$) as requiring brief or intensive intervention for abuse of one or more substances. A noteworthy number of participants (17%, $N = 16$) required intervention for abuse of two or more substances (data not shown). Just over a quarter of the participants ($N = 25$) were recommended intervention for tobacco use by the WHO-ASSIST while intervention was indicated for 23% ($N = 21$) of participants for sedatives and 8% ($N = 7$) for opioids (Table 1).

Prescription Opioid Misuse

Nearly half of the participants (46%, $N = 42$) scored nine or higher on the COMM indicating a high probability of prescription opioid misuse (Table 2). The average COMM score was 11.83 (range = 0–46, standard deviation = 11.8; data not shown). Participants who screened positive for prescription opioid misuse were found to be significantly more likely to have a documented antidepressant prescription (OR = 3.29, 95% CI = 1.12–9.63) or require intervention for sedative use (OR = 3.07, 95% CI = 1.10–8.56) compared to participants who did not screen positive for opioid misuse (Table 2). Surprisingly, participants who screened positive for prescription opioid misuse were not more likely to have a documented prescription for opioids (OR = 1.26, 95% CI = 0.55–2.87) or require intervention for opioid use (OR = 1.65, 95% CI = 0.35–7.82) than participants who did not screen positive for opioid misuse (Table 2).

Pathological Gambling

One participant met one criterion on the DSM-IV Pathological Gambling Checklist, indicative of problem gambling. None of the participants screened positive for pathological gambling (data not shown).

DISCUSSION

Despite the exploratory nature and limited scope of this study, some meaningful results were able to be drawn from it. Our findings suggest that a substantial number of patients presenting to WC clinics may be suffering from substance-related disorders. Compared to substance-related disorders in the general public where 9.3% screened positive by the WHO-ASSIST (SAMHSA, 2009a), the WHO-ASSIST recommended some form of intervention for 46% of this sample. Similarly, a large epidemiological study found high comorbid substance-related disorder rates among a population with chronic work-related pain (Dersh et al., 2002).

While we acknowledge that the WHO-ASSIST serves primarily as a screening instrument, it reports outcomes as a recommendation for no intervention, brief intervention, or more intensive intervention. This format allows providers to conveniently make inferences about required interventions and possibly adjust management to include treatment (brief or more intensive) for substance-related disorders.

Besides tobacco (25%), the largest proportion of participants screened positive for sedative abuse (23%) (Table 1). A high incidence of sedative use disorders has been previously reported in chronic pain patients (Kouyanou, Pither, & Wessely, 1997) and specifically in opioid-dependent patients (Chutuape, Brooner, & Stitzer, 1997). It is therefore not surprising to find that WC patients, who have a higher frequency of both chronic pain and opioid dependence, may also suffer from inappropriate sedative use. Exactly why and how this relationship originates is uncertain and beyond the scope of this study, but is a critical issue to examine. Sedative use disorders are concerning chiefly because of their association with high rates of psychopathology and suicide (Goodwin & Hasin, 2002).

Interestingly, we found that only 8% of participants screened positive for opioid misuse according to the WHO-ASSIST (requiring some form of intervention), while the COMM found that 46% of our sample misused prescription opiates. This difference indicates a significant degree of disagreement between the measures, and that one, or possibly both, may not be accurate for this sample. While the WHO-ASSIST is a systematic brief interview directly asking about substance use, the COMM is a self-administered questionnaire indirectly inquiring about the symptoms of prescription opioid misuse. Differences in the way these measures obtain data are likely key to this discrepancy. Patients may refuse to disclose prescription opioid use directly because they may be doctor shopping, or moving from physician to physician in an effort to obtain multiple prescriptions for pain medications (Kuehn, 2007). This reiterates the importance of the COMM in this setting as an added tool to ensure proper management of prescription opioids throughout the course of treatment (Manchikanti, Atluri, & Trescot, 2008).

Perhaps most importantly, this study exhibits that incorporating assessments, such as the WHO-ASSIST and COMM, within WC clinics is possible and relatively undemanding. These quick, noninvasive, and economically reasonable instruments can help determine which patients need further investigation regarding substance abuse. Improving screening for substance-related disorders among chronic pain patients is especially important. Management of patients with both problematic substance abuse and chronic pain is complex and requires an integrative and comprehensive plan, often addressing pain through nonpharmacological interventions and/or nonopioid agents. These patients often require strict monitoring for aberrant drug taking behavior, the use of contracts and toxicology screens, and referrals to addiction and pain specialists (Olsen & Alford, 2006). Even brief interventions for substance abusing WC patients may be beneficial as research has demonstrated that they can successfully reduce alcohol use (Bertholet, Daeppen,

Wietlisbach, Fleming, & Burnand, 2005) and tobacco consumption (Lancaster, Stead, Silagy, & Sowden, 2000) in primary care settings and increase a patient's overall compliance with their pain management (Jamison et al., 2010). Further studies are being conducted to demonstrate their effectiveness in reducing other drug use (Ondersma, Grekin, & Svikis, 2011; Saitz et al., 2010). At the very least, screening for substance use disorders in WC clinics may serve to reduce drug usage and risk and increase patient referrals to appropriate treatment providers (Madras et al., 2009).

We found that a few of the results of our study were inconsistent with previous work. First, while only one patient in our study met any DSM-IV criteria for pathological gambling (and this patient only met one criterion), a recent California state survey found that almost 4% of the population of California has some form of gambling disorder (1 or more DSM-IV criteria met; Volberg, Nysse-Carris, & Gerstein, 2006). Additionally, the same survey found that disordered gambling rates were even higher among the physically disabled (Volberg et al., 2006). This discrepancy is most likely due to an insufficient sample size, but may also be contributed to the lack of willingness of many gamblers to report their gambling in a medical setting. Second, while previous studies have demonstrated an increased risk for psychiatric comorbidity in patients with opioid-related disorders (Becker, Sullivan, Tetrault, Desai, & Fiellin, 2008; Cicero et al., 2009; Sullivan, Edlund, Zhang, Unutzer, & Wells, 2006; Wasan et al., 2007; Wilsey et al., 2008), WC patients in this sample who screened positive for prescription opioid misuse were not more likely to have a documented psychiatric disorder. This may be because we derived our data on psychiatric conditions from medical records rather than conducting diagnostic interviews. Additionally, the OR for psychiatric disorders among prescription opioid misusers compared to nonmisusers was 1.59 (95% CI = 0.70–3.65, $p = .271$), indicating that an association was likely present, but that the sample size and power of the study were not large enough to validate this difference statistically. Notably, a statistically higher number of opioid misusers had prescriptions for antidepressants than nonmisusers (OR = 3.29, 95% CI = 1.12–9.63, $p = .030$).

Interestingly, the WHO-ASSIST reported that the number of participants who required some form of intervention for alcohol abuse in our sample was 6.5%, while national data report rates of 7.7% (SAMHSA, 2009a). While it may initially seem surprising that rates of alcohol abuse were not increased in a WC population, other studies of chronic pain patients (Ekholm, Greonbaek, Peuckmann, & Sjogren, 2009) and prescription opioid patients (Edlund, Sullivan, Steffick, Harris, & Wells, 2007) found similar results. These repeated findings suggest that WC patients may not be at an increased risk of developing an alcohol-related disorder.

Limitations

One limitation of our study is the use of a single WC clinic as a sample. A sampling method that would have included multiple clinical sites would have allowed greater generalizability and external validity of our findings. It would have also likely allowed for a larger sample size, which may have generated the power necessary to find statistically meaningful differences in a greater number of outcome measures. At 100 participants, however, our study was large enough to detect most significant differences present. Additionally, our study could have benefited from the use of a more conclusive tool to determine the existence of substance-related disorders. Although the assessments used in this study have been shown to be valid and reliable, they rely heavily on the honesty of patient responses, and patients are often unwilling to be entirely forthcoming. Techniques that may be able to more accurately determine the rates of substance-related disorders are invasive and costly, and these tests would likely be impractical in the WC clinic setting. One of the chief purposes of this study was to show that screening for substance-related disorders in such a clinic is not only possible, but also practical, and the use of costly, invasive tests would have defeated

such a purpose. Lastly, our study may have benefited from the documentation of the patients' chief complaints. Rates of substance abuse may have varied by presenting condition, and having that data available may have allowed us to draw conclusions about which subpopulation of patients would benefit the most from substance-related disorder screening. However, the goal of this study was to demonstrate how a systematic approach, screening all presenting patients, was feasible in a WC clinic setting and productive in detecting a substantial number of patients that may require intervention for substance-related disorders, regardless of chief complaint. Despite all the limitations mentioned, our study was successful in this endeavor. Further research can serve to determine the cost effectiveness of screening for substance abuse in WC patients and the efficiency with which such a screening would reduce harm to this population.

CONCLUSION

Despite some limitations, this study demonstrates a substantial need to screen WC patients for substance-related disorders. Screening can be affordable, quick, and effective in determining if patients are at risk and need further investigation. Over 90% of the WC patients in our sample completed the substance-related disorder assessments without incentive and with minimal time and effort from the WC provider staff. Future studies may choose to more specifically examine the costs and benefits of providing both screening and substance abuse treatment at WC clinics. We conclude that the WHO-ASSIST and COMM can be used as brief substance use assessments in the initial evaluation of WC patients.

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References

- Adhikari B, Kahende J, Malarcher A, Pechacek T, Tong V. Smoking-attributable mortality, years of potential life lost, and productivity losses—United States, 2000–2004. *Morbidity and Mortality Weekly Report*. 2008; 57:1226–1228. [PubMed: 19008791]
- American Psychiatric Association (APA). *Diagnostic and statistical manual of mental disorders*, fourth edition (DSM-IV-TR). Washington, DC: Author; 2004.
- Baldacchino A, Gilchrist G, Fleming R, Bannister J. Guilty until proven innocent: A qualitative study of the management of chronic non-cancer pain among patients with a history of substance abuse. *Addictive Behaviors*. 2010; 35:270–272. [PubMed: 19897313]
- Ballantyne J, Mao J. Opioid therapy for chronic pain. *New England Journal of Medicine*. 2003; 349:1943–1953. [PubMed: 14614170]
- Becker W, Sullivan L, Tetrault J, Desai R, Fiellin D. Non-medical use, abuse and dependence on prescription opioids among US adults: Psychiatric, medical and substance use correlates. *Drug and Alcohol Dependence*. 2008; 94:38–47. [PubMed: 18063321]
- Bertholet N, Daeppen J, Wietlisbach V, Fleming M, Burnand B. Reduction of alcohol consumption by brief alcohol intervention in primary care: Systematic review and meta-analysis. *Archives of Internal Medicine*. 2005; 165:986–995. [PubMed: 15883236]
- Bureau of Labor Statistics. Occupational injuries and illnesses by selected characteristics news release. US Department of Labor; Washington, DC: Author; 2009. Retrieved October 1, 2010, from http://www.bls.gov/news.release/archives/osh2_12042009.htm
- Butler SF, Budman SH, Fernandez KC, Houle B, Benoit C, Katz N, et al. Development and validation of the current opioid misuse measure. *Pain*. 2007; 130:144–156. [PubMed: 17493754]
- Butler SF, Budman SH, Fanciullo GJ, Jamison RN. Cross validation of the current opioid misuse measure to monitor chronic pain patients on opioid therapy. *Clinical Journal of Pain*. 2010; 26:770–776. [PubMed: 20842012]

- CASA National Advisory Committee on the Diversion and Abuse of Controlled Prescription Drugs. Under the counter: The diversion and abuse of controlled prescription drugs in the US. New York, NY: The National Center on Addiction and Substance Abuse, Colombia University; 2005. Retrieved October 1, 2010, from <http://www.casacolumbia.org/download.aspx?path=/UploadedFiles/tt3bl4lk.pdf>
- Casey CY, Greenberg MA, Nicassio PM, Harpin RE, Hubbard D. Transition from acute to chronic pain and disability: A model including cognitive, affective, and trauma factors. *Pain*. 2008; 134:69–79. [PubMed: 17504729]
- Chutuaape MA, Brooner RK, Stitzer M. Sedative use disorders in opiate-dependent patients: Association with psychiatric and other substance use disorders. *Journal of Nervous and Mental Disease*. 1997; 185:289–297. [PubMed: 9171805]
- Cicero T, Surratt H, Inciardi J, Munoz A. Relationship between therapeutic use and abuse of opioid analgesics in rural, suburban, and urban locations in the United States. *Pharmacoepidemiology and Drug Safety*. 2007; 16:827–840. [PubMed: 17636553]
- Cicero T, Wong G, Tian Y, Lynskey M, Todorov A, Isenberg K. Co-morbidity and utilization of medical services by pain patients receiving opioid medications: Data from an insurance claims database. *Pain*. 2009; 144:20–27. [PubMed: 19362417]
- Dersh J, Gatchel R, Polatin P, Mayer T. Prevalence of psychiatric disorders in patients with chronic work-related musculoskeletal pain disability. *Journal of Occupational and Environmental Medicine*. 2002; 44:459–468. [PubMed: 12024691]
- Dunn K, Saunders K, Rutter C, Banta-Green C, Merrill J, Sullivan M, et al. Opioid prescriptions for chronic pain and overdose. *Annals of Internal Medicine*. 2010; 152:85–92. [PubMed: 20083827]
- Edlund M, Sullivan M, Steffick D, Harris KM, Wells KB. Do users of regularly prescribed opioids have higher rates of substance use problems than nonusers? *Pain Medicine*. 2007; 8:647–656. [PubMed: 18028043]
- Ekholm O, Greonbaek M, Peuckmann V, Sjogren P. Alcohol and smoking behavior in chronic pain patients: The role of opioids. *European Journal of Pain*. 2009; 13:606–612. [PubMed: 18774317]
- Executive Office of the President. The economic costs of drug abuse in the US: 1992–2002. Washington, DC: United States Government; 2004. Retrieved July 1, 2010, from http://www.ncjrs.gov/ondcphpubs/publications/pdf/economic_costs.pdf
- Fields H. Understanding how opioids contribute to reward and analgesia. *Regional Anesthesia and Pain Medicine*. 2007; 32:242–246. [PubMed: 17543821]
- Fishbain D. Approaches to treatment decisions for psychiatric comorbidity in the management of the chronic pain patient. *Medical Clinics of North America*. 1999; 83:737–760. [PubMed: 10386123]
- Fishbain D, Cole B, Lewis J, Rosomoff H, Rosomoff R. What percentage of chronic nonmalignant pain patients exposed to chronic opioid analgesic therapy develop abuse/addiction and/or aberrant drug-related behaviors? A structured evidence-based review. *Pain Medicine*. 2008; 9:444–459.
- Franklin G, Mai J, Wickizer T, Turner J, Fulton-Kehoe D, Grant L. Opioid dosing trends and mortality in Washington State workers' compensation, 1996–2002. *American Journal of Industrial Medicine*. 2005; 48:91–99. [PubMed: 16032735]
- Goodwin R, Hasin D. Sedative use and misuse in the United States. *Addiction*. 2002; 97:555–562. [PubMed: 12033656]
- Haller D, Acosta M. Characteristics of pain patients with opioid-use disorder. *Psychosomatics*. 2010; 51:257–266. [PubMed: 20484724]
- Harwood, H. Updating estimates of the economic costs of alcohol abuse in the United States: Estimates, update methods, and data. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism; 2000.
- Humeniuk R, Ali R, Babor T, Farrell M, Formigoni M, Jittiwutikarn J, et al. Validation of the alcohol, smoking and substance involvement screening test (ASSIST). *Addiction*. 2008; 103:1039–1047. [PubMed: 18373724]
- Introduction. *Pain*. 1986; 24:S3–S8.
- Ives T, Chelminski P, Hammett-Stabler C, Malone R, Perhac J, Potisek N, et al. Predictors of opioid misuse in patients with chronic pain: A prospective cohort study. *BMC Health Services Research*. 2006; 6:46–55. [PubMed: 16595013]

- Jamison R, Ross E, Michna E, Chen L, Holcomb C, Wasan A. Substance misuse treatment for high-risk chronic pain patients on opioid therapy: A randomized trial. *Pain*. 2010; 150:375–376. [PubMed: 20656407]
- Kouyanou K, Pither CE, Wessely S. Medication misuse, abuse and dependence in chronic pain patients. *Journal of Psychosomatic Research*. 1997; 43:497–504. [PubMed: 9394266]
- Kuehn BM. Opioid prescriptions soar: Increase in legitimate use as well as abuse. *Journal of American Medical Association*. 2007; 297:249–251.
- Lancaster T, Stead L, Silagy C, Sowden A. Regular review: Effectiveness of interventions to help people stop smoking: Findings from the Cochrane Library. *British Medical Journal*. 2000; 321:355. [PubMed: 10926597]
- Madras BK, Compton WM, Avula D, Stegbauer T, Stein JB, Clark HW. Screening, brief interventions, referral to treatment (SBIRT) for illicit drug and alcohol use at multiple healthcare sites: Comparison at intake and 6 months later. *Drug and Alcohol Dependence*. 2009; 99:280–295. [PubMed: 18929451]
- Manchikanti L, Atluri S, Trescot A. Monitoring opioid adherence in chronic pain patients: Tools, techniques and utility. *Pain Physician*. 2008; 11:S155–S180. [PubMed: 18443638]
- Manchikanti L, Cash K, Damron K, Manchukonda R, Pampati V, McManus C. Controlled substance abuse and illicit drug use in chronic pain patients: An evaluation of multiple variables. *Pain Physician*. 2006; 9:215–225. [PubMed: 16886030]
- Meltzer EC, Rybin D, Saitz R, Samet JH, Schwartz SL, Butler SF. Identifying prescription opioid use disorder in primary care: Diagnostic characteristics of the current opioid misuse measure (COMM). *Pain*. 2011; 152:397–402. [PubMed: 21177035]
- Morasco B, Petry N. Gambling problems and health functioning in individuals receiving disability. *Disability and Rehabilitation*. 2006; 28:619–623. [PubMed: 16690574]
- Ondersma S, Grekin E, Svikis D. The potential for technology in brief interventions for substance use, and during-session prediction of computer-delivered brief intervention response. *Substance Use & Misuse*. 2011; 46:77–86. [PubMed: 21190408]
- Olsen Y, Alford D. Chronic pain management in patients with substance use disorders. *Advanced Studies in Medicine*. 2006; 6:111–123.
- Petry N. Gambling and substance use disorders: current status and future directions. *American Journal on Addictions*. 2007; 16:1–9. [PubMed: 17364415]
- Reid M, Engles-Horton L, Weber M, Kerns R, Rogers E, O'Connor P. Use of opioid medications for chronic non-cancer pain syndromes in primary care. *Journal of General Internal Medicine*. 2002; 17:173–179. [PubMed: 11929502]
- Reid S, Haugh L, Hazard R, Tripathi M. Occupational low back pain: Recovery curves and factors associated with disability. *Journal of Occupational Rehabilitation*. 1997; 7:1–14.
- Saitz R, Alford DP, Bernstein J, Cheng DM, Samet J, Palfai T. Screening and brief intervention for unhealthy drug use in primary care settings: Randomized clinical trials are needed. *Journal of Addiction Medicine*. 2010; 4:123–130. [PubMed: 20936079]
- Savage S. Assessment for addiction in pain-treatment settings. *Clinical Journal of Pain*. 2002; 18:S28–S38. [PubMed: 12479252]
- Sheehan DV, Lecrubier Y, Sheehan H, Amorim P, Janavs J, Weiller E, et al. The Mini International Neuropsychiatric Interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry*. 1998; 59:22–33. [PubMed: 9881538]
- Stewart W, Ricci J, Chee E, Morganstein D, Lipton R. Lost productive time and cost due to common pain conditions in the US workforce. *Journal of American Medical Association*. 2003; 290:2443.
- Strong D, Kahler C. Evaluation of the continuum of gambling problems using the DSM- IV. *Addiction*. 2007; 102:713–721. [PubMed: 17493106]
- Substance Abuse and Mental Health Services Administration (SAMHSA). Results from the 2009 national survey on drug use and health: Volume I. US Department of Health and Human Services; Rockvill, MD: Author, Office of Applied Studies; 2009a. Retrieved September 1, 2010, from <http://oas.samhsa.gov/NSDUH/2k9NSDUH/2k9ResultsP.pdf>

- Substance Abuse and Mental Health Services Administration (SAMHSA). Trends in nonmedical use of prescription pain relievers: 2002 to 2007. US Department of Health and Human Services; Rockvill, MD: Author, Office of Applied Studies; 2009b. Retrieved September 1, 2010, from <http://oas.samhsa.gov/2k9/painRelievers/nonmedicalTrends.htm>
- Sullivan M, Edlund M, Zhang L, Unutzer J, Wells K. Association between mental health disorders, problem drug use, and regular prescription opioid use. *Archives of Internal Medicine*. 2006; 166:2087–2093. [PubMed: 17060538]
- Toce-Gerstein M, Gerstein D, Volberg R. A hierarchy of gambling disorders in the community. *Addiction*. 2003; 98:1661–1672. [PubMed: 14651495]
- Volberg, R.; Nysse-Carris, L.; Gerstein, D. 2006 California problem gambling prevalence survey. Sacramento, CA: California Department of Alcohol and Drug Program, Office of Problem Gambling; 2006. Retrieved September 1, 2010, from http://www.adp.ca.gov/opg/pdf/CA_Problem_Gambling_Prevalence_Survey-Final_report.pdf
- Wasan A, Butler S, Budman S, Benoit C, Fernandez K, Jamison R. Psychiatric history and psychologic adjustment as risk factors for aberrant drug-related behavior among patients with chronic pain. *Clinical Journal of Pain*. 2007; 23:307–315. [PubMed: 17449991]
- Wilsey B, Fishman S, Tsodikov A, Ogden C, Symreng I, Ernst A. Psychological comorbidities predicting prescription opioid abuse among patients in chronic pain presenting to the emergency department. *Pain Medicine*. 2008; 9:1107–1117. [PubMed: 18266809]
- World Health Organization (WHO).. Brief intervention: The ASSIST-linked brief intervention for hazardous and harmful substance use, manual for use in primary care. Geneva: Author; 2010. Retrieved June 1, 2011, from http://whqlibdoc.who.int/publications/2010/9789241599399_eng.pdf
- WHO Assist Working Group. The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST): Development, reliability and feasibility. *Addiction*. 2002; 97:1183–1194. [PubMed: 12199834]

Biographies

Dr. Iman Parhami, MD, MPH, Since medical school, Dr. Parhami has been conducting research under the primary mentorship of Dr. Timothy Fong at the Department of Psychiatry and Biobehavioral Sciences at University of California, Los Angeles (UCLA). Currently, as a Postdoctoral Research Fellow, he focuses on substance-related disorders, including pathological gambling, and the public health-related repercussions associated with them. Dr. Parhami is interested in the translation of empirically supportive tools such as screening instruments and interventions to the clinical setting.

Dr. Mark Hyman, MD, is an Associate Professor on the clinical faculty at the UCLA. He pursued medical school, internship and residency at UCLA. Now an Associate Professor, his internal medicine research and interests have expanded to include headaches, smoking cessation, spinal disorders, police arrest techniques, Tuberous Sclerosis Complex, impairment, and workers' compensation issues. He is currently publishing research on worker compensation patients for sleep disorders, addictions, and digital retinal examinations. He is a fellow of the American College of Physicians and the American Academy of Disability Evaluating Physicians and currently on the National Board of Directors.

Aaron Siani, BSc, is currently a medical student at the David Geffen School of Medicine at UCLA. He is pursuing 1 year of research at the Semel Institute for Neuroscience and Human Behavior at UCLA. The focus of his work has been in the characterization and management of addictive disorders. Previously, he was involved in research investigating the biophysical properties of potassium and calcium ion channels at UCLA's Division of Molecular Medicine in the Department of Anesthesiology. He is interested in the translation of his work on addictive disorders into clinical practice, and he has ambitions of a career robust with both clinical involvement and academic research.

Stephanie Lin, BA, is a third-year medical student at the David Geffen School of Medicine at UCLA.

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Dr. Timothy W. Fong, MD, is an Associate Professor of Psychiatry at the Semel Institute for Neuroscience and Human Behavior at UCLA. He is the Co-Director of the UCLA Gambling Studies Program and the Director of the UCLA Addiction Medicine Clinic. He is also the Director of the UCLA Addiction Psychiatry Fellowship. Dr. Fong's research interests are focused on developing effective treatments for pathological gambling and understanding the causes and course of impulse control disorders.

TABLE 1

Required intervention based on the WHO-ASSIST

	No intervention	Brief intervention	Intensive intervention	Mean score	Range	Standard deviation
One or more substances	48 (52%)	40 (43%)	4 (4%)	—	—	—
Tobacco	69 (75%)	23 (25%)	0	3.67	0–24	6.96
Alcohol	86 (94%)	5 (5%)	1 (1%)	3.67	0–34	5.72
Sedatives	71 (77%)	18 (20%)	3 (3%)	2.76	0–29	6.10
Opioids	85 (92%)	7 (8%)	0	0.68	0–19	2.76
Cannabis	88 (96%)	4 (4%)	0	0.43	0–23	2.59
Amphetamine	90 (98%)	2 (2%)	0	0.09	0–4	4
Cocaine	92 (100%)	0	0	0	0	0
Inhalants	92 (100%)	0	0	0	0	0
Hallucinogens	92 (100%)	0	0	0	0	0
Other	92 (100%)	0	0	0	0	0

Note: For all substances except alcohol, scores of 0–3 indicate no intervention necessary, scores of 4–26 indicate brief intervention recommended, and scores greater than 26 indicate more intensive intervention is recommended. For alcohol, scores of 0–10 indicate no intervention necessary, scores of 11–26 indicate brief intervention recommended, and scores greater than 26 indicate more intensive intervention is recommended.

TABLE 2

Prescription opioid misuse

	Negative screen for opioid misuse	Positive screen for opioid misuse	OR (95% CI)	Significance (<i>p</i>)
<i>N</i>	50 (54%)	42 (46%)	–	–
Psychiatric disorder	24 (26%)	25 (27%)	1.59 (0.70–3.65)	.271
Prescription use of				
Antidepressant ^a	6 (7%)	13 (14%)	3.29 (1.12–9.63)	.030
Sedative	7 (8%)	11 (12%)	2.18 (0.76–6.26)	.147
Opioid	21 (23%)	20 (22%)	1.26 (0.55–2.87)	.589
Muscle relaxant	11 (12%)	13 (14%)	1.59 (0.62–4.05)	.332
Intervention required for (based on WHO-ASSIST)				
Tobacco	11 (12%)	12 (13%)	1.42 (0.55–3.65)	.469
Alcohol	3 (3%)	3 (3%)	1.21 (0.23–6.31)	.825
Sedative ^a	7 (7%)	14 (15%)	3.07 (1.10–8.56)	.032
Opioid	3 (3%)	4 (4%)	1.65 (0.35–7.82)	.525
Cannabis	0 (0%)	4 (4%)	–	–
Amphetamine	1 (1%)	1 (1%)	1.20 (0.07–19.71)	.901
Cocaine	0 (0%)	0 (0%)	–	–
Inhalant	0 (0%)	0 (0%)	–	–
Hallucinogens	0 (0%)	0 (0%)	–	–
Other	0 (0%)	0 (0%)	–	–
Intervention required for any substance (based on WHO-ASSIST)	19 (21%)	23 (25%)	1.975 (0.86–4.55)	.108

Note: Distribution of participants who screened positive for opioid misuse versus participants who screened negative for opioid misuse (based on the COMM). Reported odds ratios (OR), 95% confidence intervals (95% CI), and significance (*p*).

^aSignificant at $\alpha = 0.05$.