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Does Report of Craving Opioid Medication Predict Aberrant Drug Behavior Among Chronic Pain Patients?

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Abstract

Objective: To examine the relationship between the self-report of craving prescription medication and subsequent opioid misuse among chronic pain patients prescribed opioids for pain.

Methods: Six hundred thirteen (613) patients taking opioid medication for chronic noncancer pain were asked how often they have felt a craving for their medication on a scale from 0 = never to 4 = very often. All subjects completed a series of baseline questionnaires. After six months the subjects were administered a structured prescription drug use interview (Prescription Drug Use Questionnaire; PDUQ), and submitted a urine sample for toxicology assessment. Their treating physicians also completed a substance misuse behavior checklist (Prescription Opioid Therapy Questionnaire; POTQ).

Results: Three hundred thirty-seven subjects (55.0%) reported that they never felt a craving for their medication, while 276 (45.0%) reported some degree of craving their medication (seldom to very often). Those who reported craving their medication were significantly more often male ($p < 0.01$), unmarried ($p < 0.05$), had lower scores on social desirability ($p < 0.001$), and had been prescribed opioids for a longer time ($p < 0.05$) than those who did not report craving medication. At 6-month follow-up, those who reported craving their medication showed higher scores on the PDUQ ($p < 0.001$), had a higher incidence of physician-rated aberrant drug behavior on the POTQ ($p < 0.05$), showed a higher frequency of abnormal urine toxicology screens ($p < 0.001$) and more often had a positive Aberrant Drug Behavior Index ($p < 0.001$).

Discussion: These results suggest that self-reported craving is a potential marker for identification of those at risk for opioid medication misuse.

Keywords

Craving; substance abuse; chronic pain; opioids; addiction; aberrant drug behaviors

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INTRODUCTION

There has been a growing use of opioids for the treatment of chronic pain, primarily from providers who prescribe them for chronic noncancer pain.¹ It is also estimated that between 3% and 16% of the general population has a substance use disorder,²⁻⁵ and increasing notice has been given to the abuse of and dependence on prescription opioid medication.^{1, 6-8} Some pain centers where opioids are prescribed for pain are overwhelmed with patients who are known or suspected to be abusing their prescribed opioids,⁹ and many physicians prescribing pain medication have little training in addiction and/or aberrant drug-related behavior.¹⁰ These physicians prescribe opioids for patients with chronic pain without an indication of the level of risk for medication abuse.¹¹ While substance abuse is frequently reported in the chronic pain population,⁹ there is also a greater potential for inadequate treatment of pain for patients with a history of substance abuse compared with those without such a history due, in part, to a reluctance of some physicians to address substance abuse issues.^{12, 13} In a survey of primary care physicians, one third of the responders indicated that they would not under any circumstance prescribe opioids to patients with chronic noncancer pain.¹⁴ Seventy percent of these same surveyed physicians also indicated that noncancer chronic pain is usually inadequately treated.¹⁴ Thus, while opioids may be an effective treatment for chronic pain, providers are reluctant to prescribe opioids because of concerns over tolerance, dependence, and addiction. Optimal use of opioids must include an evaluation of risk associated with potential abuse of opioid medication.^{11, 15}

Many persons prescribed opioids for chronic pain report that they do not experience euphoria or craving for their medication, but rather use the medication only for pain relief. There are some, however who misuse their opioid medication. These patients exhibit aberrant drug-related behaviors after taking medically prescribed drugs for pain such as use of additional, nonprescribed opioids, or illegal drugs. Some individuals prescribed opioids for pain develop problems because of biologic factors such as a family history of addiction and temperament. These individuals often report that they develop a craving and high tolerance for the opioids and take more medication than prescribed.¹³ Aberrant drug-related behavior sometimes associated with addiction may be perpetuated by a physiologic drive that comes with using opioids.⁵

While prescription opioid misuse and aberrant drug-related behaviors are, by and large, unacceptable in the treatment of chronic pain, they may or may not be indicative of opioid addiction. The American Academy of Pain Medicine, The American Pain Society, and The American Society of Addiction Medicine define prescription opioid addiction in patients with pain as “a primary, chronic, neurobiologic disease that is characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.”¹⁶ Hence, opioid misuse and aberrant drug-related behaviors may indicate a treatment adherence issue, or may signal a more serious addiction problem, if accompanied by a lack of control over use despite negative consequences. These distinctions are somewhat blurry, and in clinical practice it is often unclear whether a patient is simply misusing their medication or is truly addicted.

As mentioned, the presence of craving is central to this distinction. On the one hand, it remains unclear to what extent craving is indicative of opioid addiction since those not addicted to opioids have also reported some craving.¹⁷ On the other hand, an important principle in the treatment of addiction and the prevention of relapse is the assessment of craving for a drug.¹⁸ Craving can be defined as, “an internal state that is often used to describe antecedent or concurrent aspects of compulsive self-administration behavior”.¹⁹ Craving can be thought of as a psychological reaction (with physiological underpinnings) to avoid the negative affect associated with drug withdrawal, such as dysphoria, anxiety, or anhedonia (an inability to

experience pleasure).¹⁸ It has been conceptualized as a motivational cue along a pathway to relapse, but it can also be present in those using controlled or psychoactive substances, but not addicted.¹⁷ While it is unclear whether the treatment of craving by itself is an effective treatment for drug addiction or a singular mechanism to prevent relapse, most addiction treatments try to extinguish craving.¹⁷ Thus, in terms of prescription opioid use, it is important to understand the relationship between craving and opioid misuse, although little data is available.

The Screener and Opioid Assessment for Patients with Pain (SOAPP version 1.0) was created as a brief self-report measure to capture information that could identify which chronic pain patients may be at risk for adherence problems with long-term opioid medication.²⁰ Initial findings suggested that the SOAPP is a reliable and valid measure of risk potential for aberrant medication-related behavior among persons with chronic pain. In another study, a combined factor analysis of the SOAPP v.1 revealed five factors predicting noncompliance and opioid misuse, labeled 1) history of substance abuse, 2) history of legal problems, 3) craving medication, 4) heavy smoking, and 5) mood swings.²¹ Further investigations were undertaken to develop and validate a revised version of the SOAPP (SOAPP-R) based on empirically derived items that were subtle and socially acceptable and could address some of the concerns created from the original SOAPP.²² Items were evaluated based on data collected at follow-up, including correlation with the Aberrant Drug Behavior Index (ADBI—a dichotomous rating of prescription opioid use behavior), which is derived from interview data, physician ratings, and urine toxicology screens. The psychometric properties of the SOAPP-R suggest that it is an improvement over the original version in screening risk potential for aberrant medication-related behavior among persons with chronic pain.

The purpose of this study was to correlate the scores of an item included in the original SOAPP v.1 and the SOAPP-R validation studies that assessed self-reported craving with outcome measures of aberrant drug-related behavior. It was hypothesized that report of craving opioid medication would be a risk factor for medication misuse.

METHODS

Patient participants

The Humans Subjects Committees of each of the hospitals approved this study's procedures. Chronic noncancer pain patients were recruited from pain management centers in five states (Massachusetts, New Hampshire, Pennsylvania, Ohio, and Indiana). Patients prescribed opioids for their pain were informed about the study and invited to participate. All subjects signed an informed consent form and were assured that the information obtained through their questionnaire responses and from the urine toxicology screens would remain confidential and would not be part of their clinic record. Participant patients were paid with a \$50 gift certificate for completing the measures.

For purposes of this study we defined substance misuse as the use of any drug in a manner other than how it is indicated or prescribed. Substance abuse was defined as the use of any substance when such use is unlawful, or when such use is detrimental to the user or the others but is not unlawful. As described previously, prescription opioid addiction in patients with pain was defined as a primary, chronic, neurobiologic disease that is characterized by behaviors that include impaired control, compulsive use, continued use despite harm, and craving.¹⁶ Aberrant drug-related behavior was defined as any behavior that suggested the presence of substance abuse or addiction.

Measures

Screeners and Opioid Assessment for Pain Patients (SOAPP and SOAPP-R)^{20, 22}—The SOAPP v.1 is a 24-item scale with items rated from 0=never to 4=very often of which only 14 items are scored. Support has been found for the internal reliability and predictive validity of the SOAPP. The SOAPP-R is a 24-item revised version of the SOAPP v.1 that was empirically derived and incorporated subtle items. All 24 items are summed to create a total score. The results of an item found in both the SOAPP v.1 and the SOAPP-R, “How often do you crave your medication?” were analyzed for purposes of assessing self-reported craving. The respondents were not given any instructions as to what was met by craving.

The Brief Pain Inventory (BPI)²³—The BPI is a well-known, self-report, multidimensional pain questionnaire. The BPI provides information about pain history, intensity, and location as well as the degree to which the pain interferes with daily activities, mood, and influences enjoyment of life. Scales (rated from 1 to 10) indicate the intensity of pain at its worst, at its least, average pain, and pain “right now.” Test-retest reliability for the BPI reveals correlations of .93 for worst pain, .78 for usual pain, and .59 for pain now. Research suggests the BPI has adequate validity and has been adopted in many countries for clinical pain assessment, epidemiological studies, and in studies of the effectiveness of pain treatment. Although originally developed to assess cancer pain, the BPI has been validated for use for patients with chronic noncancer pain.²⁴

Marlow-Crowne Social Desirability Scale – Short Form (M-C)²⁵—This 13-item questionnaire was designed to measure social desirability, which is a test of response bias, i.e., whether a subject is more or less likely to tell you what you want to hear. This measure was completed by all subjects and was included to test items' tendency to be associated with patients' desire to answer questions in a socially desirable way. A lower score is indicative of less response bias. Reynolds²⁵ found this scale to be a viable substitute for the regular 33-item Marlow-Crowne scale.²⁶

Prescription Drug Use Questionnaire (PDUQ)²⁷—Self-report of patient status was obtained using the PDUQ. This 42-item structured interview is an acceptable abuse/misuse assessment screener for pain patients.²⁸ Based on the American Society of Addiction Medicine's (ASAM) definition of addiction in chronic pain patients, the PDUQ is a 20-minute interview where the patient is asked about his or her pain condition, opioid use patterns, social and family factors, family history of pain and substance abuse syndromes, patient history of substance abuse, and psychiatric history. In an initial test of the psychometric properties of the PDUQ, the standardized Cronbach's α was .79, suggesting acceptable internal consistency. Compton and her colleagues suggested that subjects who scored below 11 “did not meet criteria for a substance disorder,” while those with a score of 15 or greater “had a substance use disorder.” For purposes of this study, those patients who obtained a score of 11 points or higher on the PDUQ interview were identified as being at risk for a substance use disorder.

Prescription Opioid Therapy Questionnaire (POTQ)¹³—This is an 11-item scale adapted from the Physician Questionnaire of Aberrant Drug Behavior completed by the treating clinician to assess misuse of opioids. The items reflect the behaviors outlined by Chabal et al.²⁹ that were indicative of substance abuse. The participant patient's chart was made available to the treating physician to facilitate accurate recall of information. Providers answered yes or no to eleven questions indicative of misuse of opioids, including multiple unsanctioned dose escalations, episodes of lost or stolen prescriptions, frequent unscheduled visits to the pain center or emergency room, excessive phone calls, and inflexibility around treatment options. Patients who were positively rated on two or more of the items met criteria for prescription opioid misuse. Clinicians were asked to complete the POTQ for each of their patients after a

>5-month follow-up period. All physicians who completed the POTQ were blinded to the patient responses on the craving question from the SOAPP and SOAPP-R.

Urine toxicology screens—Subjects were requested to provide a urine sample and inform staff of their current medication. The subjects were given a specimen cup and instructed to provide a urine sample (~30–75 ml of urine) without supervision in the clinic bathroom. The research assistant (RA) at each center collected and shipped the sample to a central Quest Diagnostics lab (www.questdiagnostics.com). This was a radioimmunoassay screen followed by gas chromatography mass spectroscopy confirmation of positive results. The results of the urine toxicology were sent directly to the research team. The treating physician and the clinic did not have access to the results. The report included evidence of 6-MAM (heroin), codeine, dihydrocodeine, morphine, oxycodone, oxymorphone, hydrocodone, hydromorphone, meperidine, methadone, propoxyphene, buprenorphine, fentanyl, tramadol, amphetamines, barbiturates, benzodiazepines, cannabinoids, cocaine, phencyclidine, and ethyl alcohol.

Aberrant Drug Behavior Index (ADBI)—Patients were classified as to whether they engaged in aberrant medication-related behavior, which relates positively to opioid medication abuse. Since there is no gold standard for identifying which patients are and which are not abusing their prescription medications,²⁸ we classified patients into categories of aberrant drug-related behavior by triangulating three perspectives, self report via structured interview, physician report, and urine toxicology results. The ADBI is based on positive scores on the self-reported PDUQ, the physician-reported POTQ, and the urine toxicology results. A positive rating on the PDUQ is an accumulated score higher than 11. A positive rating on the POTQ is given to anyone who has two or more physician-rated aberrant behaviors.²⁰ A positive rating from the urine screens is given to anyone with evidence of having taken an illicit substance (e.g., cocaine) or an additional opioid medication that was not prescribed. We chose not to count the omission of a prescribed opioid medication from the urine screen results as a positive rating because of multiple factors that can contribute to this result (e.g., subject ran out the medication before the urine screen). We also did not classify urines that were rejected by the lab. Urine screen results were confirmed based on chart review of prescription history and a comparison between self-report at the time of the urine screen and the toxicology report. Those with positive scores on the PDUQ were given a positive ADBI. If this score was negative, then positive scores on both the urine toxicology screen and on the POTQ (≥ 2) contributed to a positive ADBI. This allowed for triangulation of data to identify those patients who admitted to aberrant drug-related behavior and those who underreported aberrant behavior (e.g., low PDUQ scores, but positive POTQ and abnormal urine screen results).

Statistical analyses—All data were analyzed with SPSS (Statistical Package for the Social Sciences; Chicago, IL) v.15.0. Relations among demographic data, interview items, and questionnaire data were analyzed using Pearson product moment correlations, and Chi-square and t-test analyses depending whether the variables were ordinal or numerical. A discriminant function analysis was run to determine which items were most useful in identifying subjects who denied and those who admitted to craving their prescription medication.

RESULTS

Patient characteristics

Six hundred twenty-two (N=622) patients who were taking long-term opioid medication for chronic noncancer pain participated in this study. The average age of the patients was 50.4 years (SD=13.0; range 21-89), 54.8% were women, 46.1% were married, 80.1% Caucasian, 72.5% had a high school education, and 66.8% reported low back pain as their primary pain site. Their average pain rating was 5.96 (SD=1.83; least=4.53, SD = 2.31; worst = 7.19,

SD=2.15; now = 5.74, SD=2.29). The patients were prescribed immediate-release (53.6% oxycodone with acetaminophen; 15.5% hydromorphone; 9.5% oxycodone; 7.2% morphine; 7.1% hydromorphone; 3.6% codeine; 3.6% propoxyphene), and sustained-release (43.3% oxycodone; 22.7% methadone; 20.6% transdermal fentanyl; 13.4% morphine) opioids for pain. Twenty-seven percent were taking both long and short-acting opioids for pain.

Craving Item Results

Of the original 622 patients, nine subjects left the question "How often have you felt a craving for medication?" blank when completing the SOAPP and SOAPP-R. Of the 613 who answered this question, 55.0% (N=337) reported never, 21.5% (N=154) reported seldom, 14.8% (N=91) reported sometimes, 3.9% (N=24) reported often, and 1.1% (N=7) reported very often. In the first set of analyses we examined how the responses on this item related to the demographic and outcome measures. Since the results of the craving question were skewed to the lower end of the scale, we next examined the craving question as a dichotomous scale between those who reported never craving medication (55.0%) and those who reported times when they did crave their medication (45.0%). Differences on demographic data, pain intensity ratings, and Marlow-Crowne scores between subjects who reported never craving medication and those who did crave their medication are presented in Table 1.

Average scores on the Marlow-Crowne for all the subjects were 2.68 (SD=8.68; range 0-13). Scores on the PDUQ averaged 8.62 (SD=4.51; range 1-28) and physicians' ratings of drug misuse behavior on the POTQ averaged 0.96 (SD = 1.67; range 0-10). Twenty four percent of the patients (N=115) had positive scores of two or more on the POTQ while 29.1% (N=130) scored an 11 or higher on the PDUQ. Three hundred fifty-six subjects (58.1%) had results from a urine toxicology screen and 37.1% of these (N=134) had positive urines. As outlined in the ADBI criteria above, 158 (25.8%) of the subjects had missing data on two or more variables (PDUQ, POTQ, urine toxicology results) and as a result were excluded from the final analyses. Four hundred fifty-five (N=455; 74.2%) of the 613 patients with a positive or negative ADBI were included in the outcome analyses. Using the algorithm for the ADBI, 155 (34.1%) were positive and 300 (65.9%) were negative. Correlations between the responses on the craving question (0-4) showed positive relations between craving and M-C scores ($r=.22$; $p<0.001$), PDUQ ($r=.25$; $p<0.001$), POTQ ($r=.17$; $p<0.01$), positive urine screen results ($r=.14$; $p<0.01$) and the ADBI ($r=.23$; $p<0.001$). Correlations between the craving responses and demographic data, average pain, type of opioid, years of using opioids, and pain description were nonsignificant.

Independent samples t-test were run between subjects who scored positively or negatively on the craving item (How often have you felt a craving for medication?) and scores on the PDUQ, POTQ, urine screen results, and the ADBI (Table 2). All score differences were found to be significant. Analyses were also run between those subjects who had an ADBI (complete; N=455) and those who did not have an ADBI (missing; N=158) on the demographic variables, pain ratings, M-C scores, and craving item to determine if there was a selection bias for those with incomplete data. All differences between those with complete data and those with missing data were nonsignificant except that those with a missing ADBI were younger (48.1 vs. 51.1; $p<0.05$). A discriminant analysis was performed incorporating the eight variables that indicated significant differences between the two conditions (the demographic and pain history differences listed on Table 1, and the outcome variable differences shown on Table 2). From this initial group of variables, three variables included in the step-wise procedure were found to be the best in distinguishing between the conditions (being male, the ADBI, and the M-C total scores). The analysis yielded a single discriminant function, and resulted in correct classification of 63.4 % of the patients with a Wilks' Lambda of 0.91 and canonical correlation of 0.30.

DISCUSSION

The results of this study suggest that patients who admit to craving their medication are at greater risk for aberrant drug-related behavior. The exact understanding of this relationship is unclear, but could be explained in part by the addiction literature. Addiction is generally understood to be a chronic condition of an underlying neurobiologic dysfunction that, once manifested, is believed to persist.^{30, 31} Many persons with an addiction disorder admit to have a liking for the euphoric effects of opioids. Among these individuals addictive substances in general and opioids in particular have the ability to interfere with their sense of priorities in favor of doing what it takes to get more drug. Because addiction has the property of impaired control over drug use, compulsive use, continued use despite harm, and craving,¹⁶ it is possible that admission of craving among persons prescribed opioids for pain is a useful predictor of future misuse of prescription medication. Among heroin addicts, craving reflects an underlying dysphoric state characterized by: 1) the urge for drug, 2) self-medication of anxious or depressive feelings, and 3) a preoccupation with obtaining the next dose.³²

Because craving prescription medication can be perceived as a negative trait, it is surprising that almost half of the subjects admitted, to some degree, to craving their medication. The results of the M-C scale showed that individuals who denied craving their medication had a tendency to answer questions in a socially desirable way, suggesting that there is a component of 'looking good' that affects self-report of no craving. Since most who admitted to craving their medication marked "seldom" on the scale, there may be a response bias toward underreporting craving. It has been well-reported in the addiction literature that craving is less likely to be admitted to because of its perceived meanings and social stigma.³³ The significant differences between groups on the M-C scores support the conclusion that individuals in this study seemed to answer the craving question in a way that they thought would be more acceptable. This helps to justify the identification of two groups of subjects – those who report some craving of their medication and those who do not.

The discriminant analyses showed that being male and having a combined aberrant drug-related index of self-reported substance abuse, physicians' ratings of drug misuse behavior, and abnormal urine screens was most predictive of an admission of craving. As discussed above, those who tended to admit to craving also scored lower on social desirability. Surprisingly some demographic factors were not useful in differentiating groups. In particular, age, education, pain site, benefit from opioids, and pain intensity did not significantly predict differences among those who reported craving medication and those who did not, as might have been hypothesized based on the literature.^{9, 12, 13, 21} It is also possible that other variables not assessed in this study would have been better markers in differentiating the craving groups.

There is the possibility that some participants in the study interpreted the craving question to mean that they really needed their opioid medication to treat their pain and that they wanted to avoid the adverse effects of withdrawal. In an elegant, controlled experiment, Greenwald has demonstrated that reports of craving are associated with opioid withdrawal in methadone-maintained volunteers with a history of opioid addiction, who were given intravenous fentanyl, saline placebo, naloxone, and/or monetary reinforcement.³⁴ He did not find that craving was a positive reinforcing factor in receiving more opiate. In fact, receiving more fentanyl in this randomized crossover experiment did not produce more craving. In our study, the nonsignificant correlation ($r = 0.05$) between average pain level and craving speaks against the interpretation that reports of craving were indicative of actual or anticipated opioid withdrawal. This result also suggests that reports of craving were not reflecting pseudoaddiction - the appearance of addiction behaviors solely due to under-medicated pain.³⁵

It is also possible that craving could have been interpreted in a number of different ways - as a desire or urge for pain relief as well as a dependency on the drug due to its opioid effect. Unfortunately we were unable to differentiate between those who interpret craving to be directly related to their pain or due to a reliance on the euphoric effect of the drug. Despite possible variations in the interpretation of the craving question, the results show that their responses are predictive of medication misuse. Future investigations may examine how the craving question compares with other validated craving measures such as the Addiction Research Center Inventory (ARCI).³⁶

There are limitations of this study that deserve mention. First, the initial intent of the studies was to validate screening tools for predicting medication misuse and not to assess craving per se. Additional investigations are needed to explore this construct further. The results are also correlational, and no causal relationship can be claimed between admitting to craving medication and showing aberrant drug-related behavior.

Second, these analyses are only based on the response to one question. The wording of the item among patients who are prescribed opioids for pain is vague, and there is the possibility that medications other than opioids may have been brought to mind when considering craving. We also recognize that more symptoms than just craving would be needed to make a diagnosis of addiction and the results of the POTQ and the Aberrant Drug Behavior Index by themselves do not represent a diagnosis. Third, we decided not to count as positive for the Aberrant Drug Behavior Index those participants who did not show evidence of the prescribed drug in their urine and as a result some patients who may have been overusing their medication or even diverting their medication may not have been identified. Finally, not all subjects completed the measures and some had missing urine toxicology screens. Although those who were younger tended to have missing data more often than older subjects, we do not believe that this significantly biased the results. Future studies in which all subjects are tracked for a period of time with limited missing data are needed.

Despite these limitations, the results of this study suggest that persons with chronic pain who take opioids for pain and admit to craving their medication are at greater risk for opioid misuse. The literature on the importance of craving to preventing addiction and relapse indicate that serious attention should be paid to further research in this area. Craving for prescription opioids in patients with chronic pain may not only predict misuse, but may also signal an addiction disorder. As noted, despite a rigorous definition of prescription opioid addiction from the consensus of several professional societies, determining the overlap and distinction between misuse and addiction in any particular patient can be a daunting task. Rigorous controlled trials are needed to investigate this finding further and the creation of a reliable and valid scale to assess craving for persons taking opioids for chronic pain could have clinical value.

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TABLE 1

Patient Demographic and Descriptive Characteristics Between Patients Admitting and Denying Craving their Prescription Medication (N=613).

Variable	No Craving (N= 276)	Craving (N = 337)	p
Age	50.0 ±13.3	50.8 ±12.7	NS
Gender (% female)	60.7	47.6	X ² =10.44 **
Married (% yes)	50.1	42.2	X ² =11.27 *
Race (% Caucasian)	81.3	80.4	NS
High school graduate (% yes)	88.8	85.1	NS
Pain site (% low back)	63.3	59.3	NS
Pain relief from meds [‡] (%)	31.4	33.1	NS
Yrs taking opioids	5.25 ±7.45	6.90 ±12.34	t=2.01 *
Pain: [†] Worst (24 hrs; 0-10)	7.14 ±2.15	7.24 ±2.16	NS
Least (24 hrs; 0-10)	4.49 ±2.24	4.52 ±2.38	NS
Average (24 hrs; 0-10)	5.85 ±1.73	6.07 ±1.93	NS
Now (0-10)	5.67 ±2.28	5.81 ±2.29	NS
Marlow-Crowne Score (total)	9.25 ±2.55	7.99 ±2.69	t=5.96 ***

[†] 0=no pain; 10=pain as bad as you can imagine

[‡] 0=no relief; 10=complete relief

* p<0.05

** p<0.01

*** p<0.001

TABLE 2

Differences Between Patients who Report No Craving and Some Craving of their Medication on the M-C, PDUQ, POTQ, ADBI, and Urine Toxicology Results.

Variable	N	No Craving	Craving	p
PDUQ total	(447)	7.7 ±3.8	9.8 ±5.0	t=4.90 ^{***}
POTQ total	(480)	.80 ±1.45	1.2 ±1.87	t=2.57 [*]
Abnormal Urine	(356)	22.8%	39.5%	X ² =14.89 ^{***}
ADBI [‡]	(455)	26.0%	43.9%	X ² =16.07 ^{***}

*
p<0.05

p<0.001

[‡] Aberrant Drug Behavior Index = (positive scores on the PDUQ, or positive scores on the POTQ and urine toxicology screen)