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Ann Schwartz, *Emory University*
Rebekah G. Bradley, *Emory University*
Kristin M. Penza, *Emory University*
Melissa Sexton, *Emory University*
Daniel Jay, *Emory University*
Patrick Haggard, *Emory University*
Steven Garlow, *Emory University*
Kerry Ressler, *Emory University*

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Pain Medication Use Among Patients With Posttraumatic Stress Disorder

Ann C. Schwartz, M.D., **Rebekah Bradley, Ph.D.**, **Kristin M. Penza, Ph.D.**, **Melissa Sexton, M.Div.**, **Daniel Jay, M.D.**, **Patrick J. Haggard, M.D.**, **Steven J. Garlow, M.D., Ph.D.**, and **Kerry J. Ressler, M.D., Ph.D.**
Dept. of Psychiatry and Behavioral Sciences, Emory Univ. School of Medicine, Atlanta, GA; the Dept. of Comparative Literature, Emory University, Atlanta, GA; and the Central Fulton Community Mental Health Center, Grady Health Systems, 60 Coca-Cola Place, Atlanta, GA

Abstract

The relationship of analgesic medication use with posttraumatic stress disorder (PTSD) diagnosis was investigated among a sample of 173 African Americans presenting for routine outpatient visits at an urban mental health center. Seventy-eight (43.5%) of the sample met DSM-IV PTSD criteria. Those with PTSD had significantly higher use of analgesic medication (both opiate and non-opiate), as compared with non-PTSD patients. PTSD symptoms, as measured by the Posttraumatic Symptom Scale, were significantly higher in subjects who were prescribed analgesics. The authors conclude that there may be a relationship between PTSD and use of pain medications warranting further examination of the endogenous opiate system in the pathophysiology of PTSD.

Posttraumatic stress disorder (PTSD) and chronic pain disorder are highly comorbid.[1,2] The literature indicates a high degree of co-occurrence between pain and PTSD, regardless of whether the pain is being assessed in patients with PTSD or PTSD is being assessed in patients with chronic pain. Also, they may interact in such a way as to negatively affect the course and outcome of treatment of either disorder.[3] The high comorbidity between these disorders has been postulated as being due to either shared vulnerability or mutual maintenance.[1,2]

PTSD symptoms are associated with greater reporting of physical health problems and symptoms, and also are strongly associated with current pain, overall pain ratings, and pain-related disability.[1,4-8] Evidence suggests that PTSD symptoms and pain frequently co-occur on an acute level, yet this association also appears to hold in cases where pain persists beyond the acute phase.[1] In one of the first studies looking at the co-occurrence of PTSD and chronic pain, White and Faustman[9] reported that 1 in 5 military veterans with PTSD developed chronic pain. Beckham and colleagues[4] investigated chronic pain patterns in Vietnam veterans with PTSD and observed that 80% reported chronic pain. McFarlane and co-authors[10] investigated the reporting of physical complaints in a sample of firefighters with and without PTSD and found statistically higher rates of musculoskeletal pain (primarily in the back) in those with PTSD, as compared with 21% of those without PTSD.

Also, studies have shown that PTSD symptoms tend to be elevated in patients with chronic pain and fibromyalgia.[8,11,12] It appears that between 10% and 50% of patients receiving tertiary-care treatment for chronic pain and related conditions have symptoms that meet criteria

Address correspondence and reprint requests to Dr. Schwartz, Psychiatry, Grady Memorial Hospital, 80 Jesse Jill Jr. Dr., P.O. Box 26238, Atlanta, GA 30303. aschwa2@emory.edu.

for PTSD, as compared with approximately 8% of the population in general.[1] For example, approximately 10% of patients referred to a pain clinic met criteria for PTSD.[13] The prevalence of PTSD increased when the pain problem directly resulted from a traumatic event.[3] Rates of PTSD in patients for which pain is secondary to a motor vehicle accident range from 30% to 50%.[3,14-16] PTSD symptoms in individuals who experience work-related injury were 34.7%.[17] High rates of PTSD (45%) were reported in hospitalized burn patients 12 months post-injury.[18] PTSD-like symptoms were found to be more prevalent in fibromyalgia-syndrome patients.[8,11] PTSD subjects also reported more pain, lower quality of life, and more functional impairment, and suffered more psychological distress than PTSD patients not having fibromyalgia syndrome.[8] These findings indicate that pain symptoms and chronic pain are prevalent in patients with PTSD and that PTSD symptoms are common in patients with chronic pain.

Despite this relatively large literature on the co-occurrence of pain symptoms and PTSD, we know of no data demonstrating actual differences in pain medication use among those with PTSD versus those without. If such a difference exists, it would be critical to demonstrate this potentially more objective measure, given the complex issues of symptom reporting. Furthermore, it raises potential questions about the role of analgesic use as self-medication in patients with PTSD.

There is evidence that endogenous opioids play a role during the human stress response;[19] the endogenous opiate system has therefore been implicated in psychobiological models of PTSD-maintenance.[20,21] Although experimental data on opioid mechanisms in PTSD are scarce, a number of investigators have suggested that abnormalities in the endogenous opioid system may be important in PTSD symptomatology.[22-24] It has been shown that PTSD patients exhibit lower pain thresholds, lower β-endorphin levels, and decreased production and release of methionineenkephalin and, possibly, stress-induced analgesia.[19] Beyond the obvious pain-reducing qualities of opiates, these medications have direct and potent inhibitory effects on neurological systems known to be important for the development of PTSD. For example, Saxe et al.[23] showed that morphine administration reduced PTSD symptoms over a 6-month period in children with burn-related pain.

Because of the high degree of comorbidity between chronic pain disorders and PTSD, we hypothesized that pain medication would be prescribed more for patients with PTSD than those without PTSD among an outpatient sample. An additional prediction is that the symptom clusters of numbing/avoidance might be more closely associated with pain medication use than are other symptom clusters. In fact, we find that all PTSD symptom clusters are highly associated with increased pain medication use. Interestingly, the cluster of hyperarousal appears to be the most highly associated with analgesic prescription rates.

METHOD

The research was conducted at the Fulton County Community Mental Health Center of the Grady Hospital System in Atlanta, GA, an urban, outpatient mental health center serving an economically disadvantaged, primarily African American population (more than 1,500 active patients in the clinic, receiving a range of outpatient services). Male and female African American participants were randomly recruited from clinic patients presenting for routine outpatient treatment over an 18-month period. The study was limited to African Americans because 1) there are no studies examining PTSD among inner-city African Americans; 2) these patients are understudied; and 3) this minority group comprises the vast majority of patients at this clinic. We approached 200 patients, of whom 184 completed our survey. To ensure a nonbiased sample, subjects were approached every day of the week at all times of the day. For subjects in our study, the average number of monthly visits was 1.2, which is comparable to

the clinic average of 1.0 visits per month, consistent with the assumption that our study sample was similar in clinic use to the clinic population as a whole. Of the 184 patients screened, 173 had full pharmacy and treatment records and are included in this study. Selection criteria included being active patients in the mental health clinic (for a minimum of 3 years), age 18 years or older, being African American, and able to understand English. Exclusion criteria included mental retardation documented in the chart, a Mini-Mental State Exam (MMSE) score of less than 24, and inability to give valid informed consent.

Patient evaluation consisted of a demographic questionnaire, the MMSE,[25,26] the Traumatic Events Inventory (TEI; Rothbaum and Davidson, unpublished), and the Posttraumatic Symptom Scale (PSS).[27] When combined with the TEI, the PSS provides a full diagnostic screen for a DSM-IV diagnosis of PTSD. The PSS has been widely used and has good psychometric properties for screening PTSD.[28] Measures were administered orally because of the low literacy rates in this population.[29] In order to validate the PSS data in this population, we also administered the Structured Clinical Interview for DSM-IV (SCID)[30] to a randomly selected subset of the study participants (N = 72). The interviewer conducting the SCID was blind to PSS diagnoses. A full description of the SCID and PSS diagnoses found in this study is provided in Schwartz et al.[31]

Patients' hospital records were reviewed and abstracted to determine current psychiatric diagnoses and medications prescribed in the past 3 years. The researcher extracting the prescription data was blind to the PSS data and psychiatric diagnosis records. Records were reviewed to determine prescribed analgesics, specifically, opiate and non-opiate medication, among the sample. Non-opiate medications include nonsteroidal anti-inflammatory agents, acetaminophen, and others. Opiate medications include codeine, oxycodone, hydrocodone, and others. Although non-opiate analgesics generally do not require a prescription, the majority of patients in our public hospital system are issued prescriptions for these medications for continuity of care.

RESULTS

Prevalence of PTSD and Pain Medication Use

The sample includes 60 African American men (35%) and 113 women (65%); (N = 173). Participants ranged in age from 21 to 72 years (mean: 45.1; standard deviation [SD]: 11.4). Of these, 151 (82%) reported experiencing a traumatic event meeting DSM-IV–defined PTSD Criterion A at some point in their lifetime.

Using the PSS questionnaire, 78 respondents (43.5% of the sample) met DSM-IV PTSD criteria.[31] This is consistent with other studies examining rates of PTSD in inner-city community mental health center populations.[32] Also, we compared the PSS total scores of participants with and without a SCID-based diagnosis of PTSD. As expected, these two groups differed markedly in their PSS total scores (average PSS score of those with PTSD: 30.9; average PSS score of those without PTSD: 12.9 ($F[1, 70] = 34.4$; $p<0.001$). The PSS means for the two groups are consistent with both the cutoff score of "good end-state functioning" presented by Foa et al.[27] and the empirically derived cutoff scores derived by Wohlfarth et al.,[33] suggesting that the PSS is a reliable and efficient means of diagnosing PTSD in this population.

PTSD was vastly underdiagnosed in this population. Although we found that approximately 40% of the patients interviewed met criteria for PTSD, only 6.5% of the total sample whose charts were reviewed carried a diagnosis of PTSD. Furthermore, only 11% of those interviewed (N = 3) that met SCID-I criteria for PTSD (N = 26) had a documented diagnosis of PTSD in their charts.[31] Among the participants who were interviewed by the SCID-I, we found that

those patients with substance use disorders, either current or past, had more PTSD symptoms and were more likely to have a SCID-based diagnosis of PTSD than patients who did not have a substance use disorder.[31]

One hundred one (58%) of the total sample (N = 173) were prescribed pain medication, including opiate (50%) or non-opiate analgesics (36%), within the 3 years preceding the study assessment (Table 1). Of the patients prescribed analgesic medications, 47 (27%) received both opiate and non-opiate medications.

Sixty-eight percent of patients with PTSD were prescribed an analgesic, versus 51% of patients without PTSD ($\chi^2[1] = 5.35$; $p = 0.03$; Table 1). Fifty-nine percent of patients with a diagnosis of PTSD were prescribed an opiate analgesic, versus 42% of those without PTSD ($\chi^2[1] = 4.88$; $p = 0.03$; Table 1). Forty-six percent of patients with PTSD were prescribed a non-opiate analgesic, versus 27% of those without PTSD ($\chi^2[1] = 6.57$; $p = 0.01$). Of the patients prescribed both types of analgesics, 37% had a diagnosis of PTSD, versus 19% of those without PTSD.

This increase in analgesic medication use among subjects with PTSD appears to be relatively selective among prescribed medications. Numbers of all other classes of medications, including total number of psychiatric medications or nonpsychiatric medications, were not different between those with and without PTSD ($p>0.05$). Nonpsychiatric medications were further broken down into the most common categories prescribed in this patient population, including antibiotics, antihypertensives, cardiovascular, anticoagulant, antihyperlipidemic, anti-seizure, diabetic-related, gastrointestinal-related, or obstetrics/gynecology-related. Separate analyses of all of these subcategories revealed no significant differences in prescription rates among those with and those without PTSD ($p>0.05$).

Association of Pain Medication Use With PTSD Symptom Categories

Preclinical and some clinical evidence have suggested that symptoms such as numbing and avoidance may be associated with increased activation of the endogenous opiate system, whereas symptoms such as hyperarousal may be more associated with a need for self-medication. We wondered whether there would be a difference between the different symptom clusters and the presence of analgesic pain medication use. In addition to a significant increase in overall PSS score for those with, versus those without, a history of analgesic use, we also found significant effects with intrusive and hyperarousal symptom scores and number of symptoms experienced ($p<0.05$; Table 2). Interestingly, although there was a near-significant trend in the same direction, the Avoidance PSS score and number of Avoidance symptoms did not quite reach significance at the 0.05 level ($p<0.10$; Table 2). These data suggest that the symptom cluster of avoidance may be the least associated, whereas that of hyperarousal may be the most associated with pain medication use.

Correlation Between Amount of Pain Medication Used and PTSD Symptoms

We found in our analyses of the data that many patients received both opiate and non-opiate analgesics, whereas others did not receive any, raising the hypothesis that receiving multiple types of analgesic medication may have a higher correlation with PTSD symptomatology. To address this question, we first correlated the number of categories of pain medication used (coded as 0, 1, 2) with overall PSS score ($r[173] = 0.25$; $p<0.001$). This finding suggests that there is a relationship between the number of types of prescribed pain medication and the likelihood of having experienced symptoms of PTSD.

Thus, we conducted further analyses using ANOVA. Specifically, we examined pain medication use (divided into No Pain Medication [0], Opiate or Non-opiate, but not both [1], or Both types of analgesics [2]) as the independent variable, and overall PSS score, scores for

PTSD criterion clusters (intrusions, hyperarousal, and avoidance), and total number of symptoms in each of these clusters as dependent variables. Consistent with the above correlation, we found highly significant increases in PTSD symptoms among patients who had the most categories of pain medication prescribed (Table 3).

As found with the previous analyses, both Intrusive and Hyperarousal clusters were found to be highly significant with regard to amount of pain medication prescribed. In this analysis, overall Avoidance score and number of avoidance symptoms were also found to be significant ($p<0.05$). Asmundson and colleagues[34] have recently conducted a factor analysis of PTSD symptomatology. They reported that a four-factor model, in which avoidance and numbing subclusters were separately considered, provided the best overall fit to the extant data.[35] Therefore, we reanalyzed our data, separating Avoidance and Numbing subclusters, as described by Asmundson and colleagues. Interestingly, when these subclusters are examined separately, there is no significant association with pain medication prescriptions. (PSS Avoidance subcluster score: $F = 1.8$, $p = 0.17$; PSS Numbing subcluster score: $F = 2.8$, $p = 0.06$; number of Avoidance subcluster symptoms: $F = 2.2$, $p = 0.11$; number of Numbing subcluster symptoms: $F = 2.7$, $p = 0.07$). Therefore, in terms of pain medication use, combined Avoidance symptomatology is more predictive than the separate Avoidance and Numbing subclusters.

Analgesic Use Does Not Result From Residual Pain From the Index Trauma

One possible interpretation of these data is that the patients with PTSD have been physically traumatized, leading to physical pain secondary to injury at the time of the index trauma. Two aspects of our data are inconsistent with this hypothesis. First, the average length of time since the index trauma was 14.6 years, and the average age of the patient at the time of the index trauma was 29.8 years (versus 45.1 years at the time of the interview). An additional analysis examined only patients with PTSD whose index trauma did not involve direct physical trauma to their person; for example, witnessing a murder, losing a child, witnessing a death, or emotional trauma. We found that when PTSD subjects with a noninjurious index trauma ($N = 49$) were compared with those without PTSD ($N = 95$), there was still a significant increase in number of subjects prescribed opiate analgesics, versus those without PTSD ($\chi^2[1] = 4.70$; $p = 0.03$), as well as an increase in total categories of pain medication ($\chi^2[1]34.54$; $p = 0.03$). These data suggest that the pain symptoms being treated are not due to acute physical injury and are not fully accounted for by enduring pain from physical trauma associated with PTSD.

DISCUSSION

In this study, we found that PTSD symptoms and diagnosis were significantly related to a higher likelihood of analgesic use in a random sample of mental health outpatients. Also, patients prescribed analgesic medication had significantly higher PTSD symptom-severity scores, with those patients receiving opiate analgesics having the highest scores. The finding that PTSD diagnosis was associated with use of both opiate and non-opiate analgesics lends preliminary support to the thesis suggesting dysregulation of the opioid system in PTSD.[2,24,36]

Because of the possibility that any differential use of pain medications between patients with and without PTSD may be attributable to physical pain directly related to the traumatic experience, we looked at time since the traumatic experience. The average time since the index trauma was 14.6 years, making it unlikely that physical injury at the time of the trauma accounts for ongoing pain symptoms. These data suggest that the differential use of pain medication among those with PTSD versus those without is unlikely to be fully (or even mostly) accounted for by enduring physical pain from the index trauma. Furthermore, some nonphysical trauma categories, including witnessing trauma, were among the highest to correlate with pain

medication use, suggesting that analgesic use was not directly related to physical injuries of a trauma that produced the PTSD symptomatology. Instead, these data raise the possibility that the ongoing physical pain symptoms are related to the emotional impact of these traumas.

Limitations of this study include the small sample, a sample of convenience, and the retrospective design. Records of analgesic prescriptions were used as a surrogate measure of pain disorder, and limitations also include the difficulty in quantifying medication use, because participants could supplement their usage by purchasing over-the-counter meds, or sharing their meds with others. Furthermore, prescription data do not always equate with medication usage. Also, because of the cross-sectional nature of our research and because information on opiate use was gathered from medical records in the absence of a chronology of pain medication use provided by the patient, it is impossible to determine the temporal relationship between PTSD symptoms and pain medication use. Therefore, it is not clear whether physical pain places one more at risk for PTSD symptoms after a traumatic experience or vice versa.

An additional limitation is the fact that we did not consider or rule out other sources of chronic or persistent pain in our analysis. Although nonphysical trauma and analgesic use may be associated, analgesic use does not necessarily stem from that trauma; that is, other potential sources of pain were not ruled out. Also, chronic pain stemming from injury is maintained by factors often unrelated to the initial physical injury. Therefore, it is possible that the precipitating injury, even if it occurred many years ago, has a meaningful (if not direct) association with ongoing pain symptoms.

In summary, these data provide evidence that pain medication use may be greater in patients with PTSD than in those without, for both opioid and non-opioid analgesics. These data raise the possibility that there may be a dysregulation of the endogenous opiate system in subjects with PTSD, although this needs to be tested more directly in prospective studies. Such a hypothesis would suggest that the experience of pain in the present may be affected by previous emotional trauma and ongoing trauma-related stress disorders.

Future research should focus on the collection of longitudinal data and mechanisms of association between the experience of trauma and pain. Such studies may prove quite interesting and provide a novel approach to treating some aspects of PTSD symptomatology. For example, Saxe et al.[23] showed that morphine administration reduced PTSD symptoms over a 6-month period in children with burn-related pain. Future studies examining pain-responsiveness in subjects who have experienced trauma may inform a further understanding of the pathophysiology of as well as novel treatment approaches to PTSD.

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References

1. Asmundson GJG, Coons MJ, Taylor S, et al. PTSD and the experience of pain: research and clinical implications of shared vulnerability and mutual maintenance models. Can J Psychiatry 2002;47:930–937. [PubMed: 12553128]
2. Sharp TJ, Harvey AG. Chronic pain and posttraumatic stress disorder: mutual maintenance? Clin Psychol Rev 2001;21:857–877. [PubMed: 11497210]
3. Otis JD, Keane TM, Kerns RD. An examination of the relationship between chronic pain and post-traumatic stress disorder. J Rehabil Res and Development 2003;40:397–406.
4. Beckham JC, Crawford AL, Feldman ME, et al. Chronic posttraumatic stress disorder and chronic pain in Vietnam combat veterans. J Psychosom Res 1997;43:379–389. [PubMed: 9330237]

5. Beckham JC, Moore SD, Feldman ME, et al. Health status, somatization, and severity of posttraumatic stress disorder in Vietnam combat veterans with posttraumatic stress disorder. Am J Psychiatry 1998;155:1565–1569. [PubMed: 9812119]
6. Kimerling R, Clum GA, Wolfe J. Relationships among trauma exposure, chronic posttraumatic stress disorder symptoms, and self-reported health in women: replication and extension. J Trauma Stress 2000;13:115–128. [PubMed: 10761178]
7. Wagner AW, Wolfe J, Rotnitsky A, et al. An investigation of the impact of posttraumatic stress disorder on physical health. J Trauma Stress 2000;13:41–55. [PubMed: 10761173]
8. Amir M, Kaplan Z, Neumann L, et al. Posttraumatic stress disorder tenderness and fibromyalgia. J Psychosom Res 1997;42:607–613. [PubMed: 9226608]
9. White P, Faustman W. Coexisting physical conditions among in-patients with posttraumatic stress disorder. Mil Med 1989;154:66–71. [PubMed: 2494581]
10. McFarlane AC, Atchison M, Rafalowicz E, et al. Physical symptoms in posttraumatic stress disorder. J Psychosom Res 1994;38:715–726. [PubMed: 7877126]
11. Sherman JJ, Turk DC, Okifuji A. Prevalence and impact of posttraumatic stress disorder-like symptoms on patients with fibromyalgia syndrome. Clin J Pain 2000;16:127–134. [PubMed: 10870725]
12. Engel CC, Liu X, McCarthy BD, et al. Relationship of physical symptoms to posttraumatic stress disorder among veterans seeking care for Gulf War-related health concerns. Psychosom Med 2000;62:739–745. [PubMed: 11138991]
13. Benedikt RA, Kolb LC. Preliminary findings on chronic pain and posttraumatic stress disorder. Am J Psychiatry 1986;143:908–910. [PubMed: 3717433]
14. Hickling EJ, Blanchard EB. Posttraumatic stress disorder and motor vehicle accidents. J Anxiety Disord 1992;6:285–291.
15. Chibnall JT, Duckro PN. Posttraumatic stress disorder and motor vehicle accidents. Headache 1994;34:357–361. [PubMed: 7928315]
16. Taylor S, Kocj WJ. Anxiety disorders due to motor vehicle accidents: nature and treatment. Clin Psychol Rev 1995;15:721–738.
17. Asmundson GJG, Norton RG, Allerdings MD, et al. Posttraumatic stress disorder and work-related injury. J Anxiety Disord 1998;12:57–69. [PubMed: 9549609]
18. Perry S, Cella D, Falkenberg J, et al. Pain perception in burn patients with stress disorders. J Pain Symptom Manage 1987;2:29–33. [PubMed: 3644856]
19. Friedman MJ. What might the psychobiology of posttraumatic stress disorder teach us about future approaches to pharmacotherapy? J Clin Psychiatry 2000;61:44–51. [PubMed: 10795609]
20. Grillon C, Southwick SM, Charney DS. The psychobiological basis of posttraumatic stress disorder. Mol Psychiatry 1996;1:278–297. [PubMed: 9118351]
21. Pitman RK, van der Kolk BA, Orr SP, et al. Naloxone-reversible analgesic response to combat-related stimuli in posttraumatic stress disorder. Arch Gen Psychiatry 1990;47:541–544. [PubMed: 2350206]
22. Pitman RK. Posttraumatic stress disorder, hormones, and memory. Biol Psychiatry 1989;26:221–223. [PubMed: 2545287]
23. Saxe G, Stoddard F, Courney D, et al. Relationship between acute morphine and the course of PTSD in children with burns. J Am Acad Child Adolesc Psychiatry 2001;40:915–921. [PubMed: 11501691]
24. van der Kolk BA, Greenberg MS, Orr SP, et al. Endogenous opioids, stress-induced analgesia, and posttraumatic stress disorder. Psychopharmacol Bull 1989;25:417–421. [PubMed: 2626517]
25. Folstein MF, Folstein S, McHugh PR. “Mini-Mental State:” a practical method for grading the cognitive state of patients for the clinician. J Psychiatr Res 1975;12:189–198. [PubMed: 1202204]
26. Folstein, MF.; Folstein, S.; McHugh, PR. Mini-Mental State Examination. Odessa, FL: Psychological Assessment Resources; 2001.
27. Foa EB, Riggs DS, Dancu CV, et al. Reliability and validity of a brief instrument for assessing posttraumatic stress disorder. J Trauma Stress 1993;6:459–473.
28. Foa EB, Tolin DF. Comparison of The PTSD Symptom Scale–Interview Version and the clinician-administered PTSD Scale. J Trauma Stress 2000;13:181–191. [PubMed: 10838669]

29. Williams MV, Parker RM, Baker DW, et al. Inadequate functional health literacy among patients at two public hospitals. JAMA 1995;274:1677–1682. [PubMed: 7474271]

30. First, MB.; Spitzer, RL.; Gibbon, M., et al. Structured Clinical Interview for Axis I DSM-IV Disorders– Patient Edition (With Psychotic Screen) Version 2.0. New York: New York State Psychiatric Institute, Biometrics Research Department; 1995.

31. Schwartz AC, Bradley R, Sexton M, et al. Posttraumatic stress disorder among African Americans in an inner-city mental health clinic. Psychiatr Serv 2005;56:212–215. [PubMed: 15703352]

32. Switzer GE, Dew MA, Thompson K, et al. Posttraumatic stress disorder and service utilization among urban mental health center clients. J Trauma Stress 1999;12:25–39. [PubMed: 10027140]

33. Wohlfarth TD, van den Brink W, Winkel FW, et al. Screening for posttraumatic stress disorder: an evaluation of two self-report scales among crime victims. Psychol Assess 2003;15:101–109. [PubMed: 12674729]

34. Asmundson GJG, Frombach L, McQuaid J, et al. Dimensionality of posttraumatic stress symptoms: a confirmatory factor analysis of DSM-IV symptom clusters and other symptom models. Behav Res Ther 2000;38:203–214. [PubMed: 10661004]

35. Asmundson GJG, Stapleton JA, Taylor S. Are avoidance and numbing distinct PTSD symptom clusters? J Trauma Stress 2004;17:467–475. [PubMed: 15730065]

36. McEwen BS. Protective and damaging effects of stress mediators. N Engl J Med 1998;338:171–179. [PubMed: 9428819]

TABLE 1

Posttraumatic Stress Disorder (PTSD) Diagnosis and Analgesic Use

	PTSD Diagnosis					
	Yes		No		Total	
	N	%	N	%	N	%
Analgesics[a]						
Yes	53	68	48	51	101	58
No	25	32	47	49	72	42
Total	78		95		173	
Opiate analgesics[b]						
Yes	46	59	40	42	86	50
No	32	41	55	58	87	50
Total	78		95		173	
Non-opiate analgesics[c]						
Yes	36	46	26	27	62	36
No	42	54	69	73	111	64
Total	78		95		173	

[a] χ^2 [1] = 5.35; p = 0.03.

[b] χ^2 [1] = 4.88; p = 0.033.

[c] χ^2 [1] = 6.57; p = 0.011.

TABLE 2

Posttraumatic Stress Disorder (PTSD) Symptom Categories and Analgesic Use

	Analgesic Prescription		No Analgesic Prescription		Analysis	
	Mean	**SD**	**Mean**	**SD**	***F***	**p**
Posttraumatic Symptom Scale (PSS) score						
Overall	20.5	14.6	15.1	14.6	5.72	0.018
Intrusive	5.1	4.1	3.8	4.2	4.38	0.038
Avoidance	9.1	6.9	7.0	6.7	3.62	0.059
Hyperarousal	6.4	4.9	4.4	4.6	7.49	0.007
Number of symptoms						
Intrusive	2.4	1.8	1.8	1.8	4.56	0.034
Avoidance	3.2	2.1	2.5	2.2	3.39	0.067
Hyperarousal	2.8	1.9	1.9	1.9	7.69	0.006

Note: SD: standard deviation.

TABLE 3

Posttraumatic Stress Disorder (PTSD) Symptom Categories and Amount of Analgesic Usage

	Categories of Pain Medication Used			Analysis	
	0 (N = 72)	**1 (N = 54)**	**2 (N = 47)**	***F***	**p**
Posttraumatic Symptom Scale (PSS) score					
Overall	15.1 (14.5) [a]	16.9 (13.1) [a]	24.7 (15.2) [b]	6.63	0.002
Intrusive	3.8 (4.2) [a]	4.1 (3.8) [a]	6.3 (4.3) [b]	5.89	0.003
Avoidance	7.0 (6.7) [a]	7.7 (6.6) [a]	10.7 (7.0) [b]	4.34	0.014
Hyperarousal	4.4 (4.6) [a]	5.2 (4.4) [a]	7.7 (5.1) [b]	7.40	0.001
Number of symptoms					
Intrusive	1.8 (1.8) [a]	2.0 (1.7) [a]	2.9 (1.8) [b]	5.55	0.005
Avoidance	2.5 (2.2) [a]	2.7 (2.0) [a]	3.7 (2.2) [b]	4.41	0.014
Hyperarousal	1.9 (1.9) [a]	2.4 (1.9) [a]	3.2 (1.8) [b]	5.88	0.003

Note: Data are mean (standard deviation), unless otherwise indicated. Total N = 173. Means with different superscripts are significantly different ($p<0.05$).