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A Comparison of Trauma Profiles among Individuals with Prescription Opioid, Nicotine or Cocaine Dependence

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Abstract

Exposure to traumatic events is common among individuals with substance use disorders. Little is known, however, about the trauma histories among individuals with various types of addiction. The present study compared the trauma histories (general, sexual, physical and emotional) of non-treatment seeking outpatients dependent on prescription opioids (n=41), nicotine (n=87) or cocaine (n=73). The Life Stressor Checklist-Revised (LSC-R) was completed by participants to assess childhood and adult trauma. The findings revealed that all three groups endorsed high levels of trauma exposure, with 96.5% of the entire sample experiencing at least one traumatic event in their lifetime. The prescription opiate group experienced a greater number of general and total traumas than the nicotine group. However, no group differences in the number of emotional, physical, or sexual traumas were revealed. The prescription opiate group reported a younger age of first traumatic event than the cocaine group, and was significantly more likely to report childhood traumatic events than both the cocaine and nicotine groups. The findings provide clinically relevant information that may help improve screening, interventions, and preventative efforts.

Introduction

Research indicates that individuals with substance use disorders (SUDs) are at elevated risk for exposure to traumatic events [1–3]. In fact, it is estimated that substance users are approximately twice as likely as the general population to experience a traumatic event [4]. In addition, research consistently shows that individuals with SUDs are at increased risk of developing posttraumatic stress disorder (PTSD) [1, 5, 6]. The lifetime rate of PTSD in the general population is 7.8%, whereas it is estimated to range between 12–58% among substance users [7].

Nicotine

Research indicates that exposure to stressful life events (e.g., divorce, death of a loved one) is associated with nicotine dependence [8]. In addition, traumatic childhood events (e.g., sexual or physical abuse) are associated with high rates of cigarette smoking and nicotine dependence in adulthood [9, 10]. For example, a comparison of current smokers to non-smokers (N=57) without other psychiatric disorders or SUDs indicated that current smokers were more likely to have experienced severe abuse as a child and individuals exposed to childhood trauma were four times more likely than individuals not exposed to childhood trauma to smoke cigarettes as an adult [11].

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Smoking rates are also higher among individuals with PTSD than in the general population [12]. Three main reasons why nicotine dependence may be related to trauma exposure and PTSD include: (1) Individuals may use nicotine to cope with the stress of the traumatic events, which is supported by evidence in that nicotinic acetylcholine receptors (nAChRs) may modulate the function of pathways in the brain involved in the stress response [13]; (2) Nicotine dependence may be associated with higher-risk lifestyles, which may in turn increase the risk of trauma exposure; and (3) Among those who experience traumatic events, nicotine dependence may have neurobiological effects that could potentially increase vulnerability to PTSD [14].

Cocaine

Research suggests that cocaine users are more likely to report a traumatic event than the general population [4]. Conversely, individuals who report physical and emotional abuse as children are more likely to use cocaine as adults [9]. Additionally cocaine users report more traumatic events and more symptoms than individuals who use alcohol [1, 15]. However, cocaine users have similar rates of trauma as individuals who use opioids (i.e., heroin) [4]. Moreover, individuals with cocaine dependence are three times more likely to have PTSD than the general population. In addition, compared with the general population, cocaine dependent individuals described an earlier age of onset of PTSD and reported more symptoms than the general population [4].

Opioids

Exposure to traumatic events is particularly common among individuals with opioid use disorders. A national survey in Australia found very high rates of trauma among individuals with opioid use disorders compared to individuals without an SUD, 87.8% vs. 56.8% respectively after controlling for age and sex [16]. Among a consecutive sample of 113 treatment-seeking opioid-dependent outpatients seeking buprenorphine treatment, the majority (80.5%) reported a history of childhood sexual, physical, or emotional abuse, physical neglect, or violent trauma [17].

PTSD is also common among individuals using opioids. Individuals who use opioids are three times more likely to meet criteria for PTSD than the general population [4]. Using a nationally representative sample, Mills and colleagues [16] found that among individuals with substance use disorders in the general population, the highest rate of PTSD was observed among individuals with an opioid use disorder (33.2%). Although research has focused on trauma in individuals using opioids (i.e., heroin), no research has focused specifically on traumatic experiences reported by individuals who use prescription opioids for nonmedical purposes. The present study seeks to address this gap in the literature.

The incidence of non-medical use of prescription opioids has drastically increased over the last decade [18]. Despite these data, little is known about the trauma history among individuals dependent on prescription opioids. In addition, although prescription opioid, nicotine, and cocaine dependent individuals may differ in clinically meaningful ways, understanding the trauma profiles of these individuals may have import implications for treatment and prevention.

The focus of the present study was to compare the trauma histories of individuals dependent on prescription opioids, nicotine, or cocaine. More specifically, we investigated differences in the endorsement of traumatic events, the number of events reported, how much the event affected their lives in the past year, first age of onset, mean age of trauma exposure, and the experience of childhood traumatic events.

Methods

Participants/Procedure

Participants (N=201) included individuals dependent on prescription opioids (n=41), nicotine (n=87), or cocaine (n=73). Participants were enrolled in one of five laboratory studies investigating: (1) the hypothalamic-pituitary-adrenal (HPA) axis and prescription opioid dependence; (2) a technique to provide feedback of brain activity while reducing cigarette craving; (3) gender differences in brain activity response to nicotine replacement therapy; (4) the effects of varenicline on areas of the brain related to cigarette craving; and (5) the affects of yohimbine on responses to cocaine cues. Participants were recruited through media outlets such as newspaper, radio advertisements, and craigslist.

General exclusion criteria for all five studies included: pregnancy or nursing, clinically significant medical problems, or meeting criteria for current dependence (i.e., past 60 days) on any substance other than the substance of interest in the particular study. Participants in the prescription opioid and the cocaine groups were allowed to participate if they were a smoker because of the high rate of smoking among individuals dependent on prescription opioids and cocaine. Additional exclusion criteria were specific to individual studies: opioid study (body mass index ≥ 39, use of methadone in the past 3 months); nicotine studies (non-treatment seeking, left-handed, positive urine drug screen, history of substance dependence on any substance other than nicotine, substance abuse within the last 30 days, current Axis I disorders, the need for treatment with psychoactive medication, charges pending for a crime, and metal implants); and cocaine study (premenstrual dysphoric disorder, depot medroxyprogesterone acetate as a form of birth control, body mass index ≥ 35, the use of psychotropic medicines, opioids, or opioid antagonists, psychotic disorder, bipolar, major depressive disorder, posttraumatic stress disorder, or panic disorder).

Participants were preliminarily screened over the telephone. Following the telephone screening, participants came into the office and completed self-report measures and a clinical interview to assess substance use disorders and other psychiatric conditions. A urine drug screen test, breathalyzer test, and a history and physical examination were performed. All participants completed the assessments examined in the current study prior to any study-specific procedures (e.g., fMRI) taking place. Participants signed an IRB-approved informed consent prior to any study procedures taking place. Participants were compensated between $30 and $50 for completion of the first visit.

Assessments

Diagnostic and Substance Use Measures—The Structured Clinical Interview for DSM-IV (SCID) [19] and/or the Mini International Neuropsychiatric Interview (MINI) [20] were used to assess substance use disorders and other psychiatric disorders. The Fagerström Test for Nicotine Dependence (FTND) [21] was used to assess nicotine dependence.

Trauma History—The Life Stressor Checklist-Revised (LSC-R) [22] was used to examine childhood and adult trauma exposure. The LSC-R is composed of 30 items that assess the occurrence of traumatic events (e.g., “Have you ever had a very serious accident or accident-related injury”). If participants report experiencing a traumatic event (using a yes/no response format), participants are asked to provide further information, including the age the event began and ended, the belief that they were in harm (yes/no response format), feelings of helplessness (yes/no response format), how upsetting the event was at the time (*1=Not at all, 5= extremely*), and the impact of the event on the participant’s life during the past year (*1=Not at all, 5= extremely*). Subscales are created by summing the number of events endorsed in the following categories: general trauma (e.g., someone close to you died

suddenly or unexpectedly, sent to jail), emotional/neglect (e.g., put in foster care or put up for adoption, separated or divorced), physical trauma (e.g., robbed, mugged, physically attacked), and sexual trauma (e.g., rape). A total score is created by summing the number of traumatic events endorsed.

Analyses

Descriptive statistics and measures of central tendency (e.g., mean, standard deviation, frequencies) were used to describe the sample characteristics and trauma profile. One-way ANOVAS and chi-square analyses were used to compare demographic characteristics across drug groups. Post hoc analyses for the one-way ANOVAs were conducted using Tukey's Honestly Significant Difference test (Tukey HSD). For chi-square post hoc analyses, residuals between the observed and expected frequencies were standardized to determine which cells were statistically different than what would be expected by chance (i.e., standardized difference is greater than 1.96). General linear models and logistic regression were used to compare the trauma profiles of the three groups while controlling for age, race, and education (see below). For the general linear models, a Bonferonni adjustment was used to correct for Type I errors. For the logistic regression analyses, the dependent variables were coded into a "yes" or "no" format (0= no, 1= yes). Drug group was recoded into two variables (nicotine dependent and cocaine dependent) so that the prescription opioid group was the reference group.

Results

Demographics

As can be seen in Table 1, the groups did not significantly differ in gender composition (χ^2= 1.56, p=.925) or employment status (χ^2= 3.08, p=.379). However, the groups significantly differed in age (F(2,195)= 8.70, p<.001), racial composition (χ^2= 67.86, p<.001), and education (χ^2= 20.01, p<.001). Post hoc analyses (Tukey HSD) revealed that the cocaine group was significantly older than the nicotine (mean difference=7.3 years, p=.001) and prescription opioid groups (mean difference=5.2 years, p=.04). The nicotine and prescription opioid groups had more education than the cocaine group, and the nicotine group had more education than the prescription opioid group. The cocaine group had more African American participants than the prescription opioid and nicotine groups. Therefore, age, race, and education were entered as covariates.

Participants in the prescription opioid and cocaine groups were included if they were current smokers. In the prescription opioid group, 82.9% of the sample were smokers and they reported smoking approximately 14.8 (SD=7.9) cigarettes per day. In the cocaine group, 84.7% of the sample were smokers, and they reported smoking approximately 10.8 (SD=6.8) cigarettes per day. The nicotine dependent group smoked an average of 17.9 (SD=9.1) cigarettes per day.

Traumatic Experiences

As can be seen in Table 2, the majority of participants reported experiencing at least one lifetime traumatic event. Significant differences between groups were found for the number of general traumatic events reported (F(2)= 4.86, p<.01) and the total number of traumatic events reported (F(2)= 4.11, p= .018). Post hoc analyses revealed that the prescription opioid group reported more general traumatic events and total traumatic events than the nicotine group. At the trend level, the groups differed in the number of sexual traumatic events reported (F(2)= 2.67, p=.07). Post hoc analyses revealed that the prescription opioid group reported more sexual traumatic events than the nicotine group (p=.07). In addition, the groups differed in the reported measures of negative impact from the traumatic events over

the past year (F(2)=6.98, p=.001). Both the prescription opioid and cocaine groups reported that the traumatic events affected them significantly more than did the nicotine group. The three groups did not significantly differ in the number of emotional (F(2)= 1.13, p=.33) or physical (F(2)=.67, p=.51) traumatic events reported.

In addition to the number of traumatic events reported, analyses were conducted to investigate group differences in the age of onset of trauma. Results indicate that the three groups differed in the age of the first traumatic event (F(2)=6.19, p<.01), but did not differ in the mean age of traumatic events (F(2)=.90, p= 41). Post hoc analyses revealed that the prescription opioid group reported a younger age of first traumatic event than the cocaine group (p<.01). Results also revealed that drug status was a significant predictor of childhood traumatic experiences (χ^2= 39.02 p=.001). Further investigation revealed that the nicotine and cocaine groups were significantly less likely to report childhood traumatic events than the prescription opioid group (nicotine: β=−1.62, Wald=6.35, p=.01; cocaine: β=−1.48, Wald= 5.03, p=.03).

Discussion

The present study revealed that individuals with prescription opioid, nicotine, and cocaine dependence endorsed high levels of trauma exposure, with 96.5% of the entire sample experiencing at least one traumatic event in their lifetime. This is consistent with past research, which indicates that individuals with SUDs are at significantly increased risk of trauma exposure [1–3]. Trauma profiles of individuals dependent on prescription opioids were similar to individuals dependent on cocaine. That is, a similar percentage of prescription opioid and cocaine dependent individuals reported endorsing at least one traumatic event, reported a similar total number of traumatic events, and reported a similar impact of the event(s) on their life in the past year. This is consistent with past research indicating that cocaine users have similar rates of trauma as individuals who use opioids (i.e., heroin) [4]. However, the prescription opioid dependent group reported a significantly younger age of onset of trauma and, similarly, was more likely to have experienced a childhood traumatic event (90.2% vs. 60.0%) as compared to the cocaine group.

Overall, the prescription opioid and cocaine dependent individuals reported more severe trauma profiles than the nicotine dependent individuals. The prescription opioid dependent individuals reported significantly more general and total trauma than the nicotine dependent group, whereas both groups reported that the trauma affected their life in the past year significantly more than the nicotine dependent group. The opioid dependent group also reported significantly younger ages of first onset of trauma and was more likely to have experienced a childhood traumatic event than the nicotine dependent group (90.2% v. 71.1%).

Although the current study provides evidence of high rates of trauma among the participants, it is important to consider several limitations of the study. First, participants in the prescription opioid and cocaine groups were smokers, and a standardized measure of nicotine dependence was not assessed in these groups. However, the level of cigarettes smoked per day across the studies is consistent with nicotine dependence. Future research should utilize a validated measure of nicotine dependence in prescription opioid and cocaine dependent groups in order to compare trauma profiles of individuals dependent on prescription opioids and cocaine, both with and without comorbid nicotine dependence. Second, the findings rely on self-report of trauma histories, which may be subject to recall bias or cognitive impairment. Third, the small sample size (particularly the smaller size of the prescription opioid group) is a limitation. Future research is needed with larger sample

sizes to provide further evidence of high levels of trauma among individuals with prescription opioid dependence.

Despite the limitations, the findings from the study suggest a number of important clinical implications. First, given the high rate of trauma reported by participants in all three groups, regular screenings of trauma exposure are warranted for individuals seeking treatment for opioid, cocaine or nicotine dependence. Similar to previous research, the highest rates of trauma were found among the prescription opioid dependent group, highlighting the need for careful assessment of trauma in these patients. Finally, the findings highlight the need for access to treatment of co-occurring PTSD and protection from further trauma for patients with substance use disorders.

The current study enhances understanding of trauma profiles associated with prescription opioid, cocaine and nicotine dependence. In particular, the findings add to the extant literature regarding trauma among individuals with prescription opioid dependence. This population is critically important to study because research indicates that the nonmedical use of prescription opioids is increasing at an alarming rate. The study is also unique in that it compares the trauma profile of individuals dependent on prescription opioids to individuals addicted to other substances (i.e., cocaine and nicotine) and provides clinically relevant information that can be applied to screening, interventions and preventative efforts.

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Table 1

Demographic Characteristics (N=201)

	Drug Group		
	Prescription Opioid (n=41)	**Nicotine (n=87)**	**Cocaine (n=73)**
Age, M(SD) *	35.90 (12.14)	33.82 (11.90)	41.12 (9.36)
Gender (% Male)	48.8%	52.4%	52.1%
Race (% Caucasian) **	87.8%	70.7%	28.8%
Education (% Some College or More) **	48.8%	73.5%	45.2%

Note.

* $p < .05$,

** $p < .001$

Table 2

History of Trauma

	Drug Group		
Variable	**Prescription Opioid**	**Nicotine**	**Cocaine**
	n (%)	n (%)	n (%)
Experienced Traumatic Events			
General	41 (100%)	82 (94.3%)	68 (93.2%)
Emotional	33 (80.5%)	63 (72.4%)	50 (68.5%)
Physical	15 (36.6%)	30 (34.5%)	25 (34.2%)
Sexual	14 (34.1%)	14 (16.1%)	16 (22.2%)
Childhood Trauma	37 (90.2%)	59 (71.1%)	42 (60.0%)
Total	41 (100%)	83 (95.4%)	70 (95.9%)
	M (SE)	M (SE)	M (SE)
Age of First Trauma **	9.46 (1.54)	13.32 (1.16)	16.43 (1.23)
Number of Traumatic Events			
General **	5.21 (0.42)[a]	3.67 (0.31)[a]	4.69 (0.33)
Emotional	1.28 (0.14)	1.13 (0.11)	1.01 (0.12)
Physical	0.64 (0.13)	0.49 (0.09)	0.47 (0.10)
Sexual *	0.60 (0.13)	0.23 (0.10)	0.41 (0.10)
Childhood Trauma *	2.90 (.40)[a]	1.72 (.30)[a]	2.14 (.32)
Total **	7.73 (0.62)[a]	5.52 (0.47)[a]	6.58 (0.50)
Impact of Traumatic Events	19.65 (2.32)[a]	11.25 (1.74)[ab]	20.07 (1.86)[b]

Note. Adjusted means are reported. Covariates are evaluated at the following values: Age= 37.1, Race= 1.55, Education= 2.45.

Note.

* p< .10,

** p< .05,

*** p< .001

Note.

[a] Significant differences between opioid group and nicotine group

Note.

[b] Significant differences between nicotine group and cocaine group

Note. Impact of traumatic events refers to the impact in the past year.