

ORIGINAL ARTICLE

Family History of Alcohol and Drug Abuse, Childhood Trauma, and Age of First Drug Injection

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Background: Childhood maltreatment may lead to development of future substance use; however the contributions of a family history of substance use is unclear. **Objectives:** To better understand the relationship between childhood abuse, family history of alcohol and drug abuse, and injecting drug use initiation in a cohort of chronic opioid users. **Methods:** A cross-sectional survey of long-term and difficult to treat intravenous opiate users of the North American Opiate Medication Initiative (NAOMI) cohort was conducted in two Canadian cities (Vancouver and Montreal). For the analysis, we selected a subsample ($n = 87$) of the population reported experiencing childhood abuse and completed a 12-month follow up. The sample was 41.4% female and 14.9% First Nations, with a mean age of 38 years. This sample then completed the Childhood Trauma Questionnaire (CTQ) and the Addiction Severity Index (ASI) beside others. **Results:** Maternal alcohol and drug use was significantly associated with childhood sexual abuse, emotional abuse, and physical neglect. Paternal alcohol and drug use was significantly associated with childhood physical abuse. Increased severity of all types of childhood trauma was related to an earlier age of first injection. **Conclusions/Importance:** Family history of drug and alcohol use is strongly associated with childhood trauma, which may, in turn, lead to an earlier initiation to the dangerous routes of drug injection.

Keywords child abuse, substance use disorders, intravenous drug abuse, family health

INTRODUCTION

Parental substance abuse has deleterious effects on children, since these parents often cycle between relapse and recovery. Parental substance use may undermine the stability of a child's living, making children's needs

secondary to the parent's drug addiction (McKeganey, Barnard, & McIntosh, 2002). During times of heavy parental substance abuse, children may be neglected both emotionally and physically (e.g., lack proper clothing and remain unfed). One study suggests that 83% of opioid user's children have varying degrees of medical or nutritional disorders (Shulman, Shapira, & Hirshfield, 2000). Also, there may be inappropriate diversion of family funds toward substance use, disinhibited behavior, difficulty providing appropriate adult role models (Sims & Iphofen, 2003), parent-child conflict (El-Sheikh & Flanagan, 2001), all of which can individually contribute to development of substance use disorders among children in the future (Arria et al., 2012).

Multiple studies have concluded that adverse childhood experiences, such as a history of childhood abuse, are associated with having a substance use disorder (De Bellis, 2002; Ducci et al., 2009; O'Connell et al., 2007) and with initiation of early drug use (Arria et al., 2012). In turn, early drug use predicts long-term substance use issues, such as lifetime substance dependence and risky behaviors (De Bellis, 2002; O'Connell et al., 2007). Further, exposure to parental substance abuse behaviors is highly associated with experiencing adverse childhood experiences, (Dube et al., 2001) and predicts offspring substance use disorders independently of other risk factors (Biederman et al., 2000).

Few studies so far have examined the relationship between different types of childhood maltreatment, family history factors such as alcohol and substance abuse, and the age of first drug injection. We therefore aimed to bridge this gap by exploring and better understanding the association between family history of drug abuse or dependence, age at initiation of injection drug use, and different subtypes of childhood trauma in order to develop effective programs that will slow the transgenerational spread of these harmful behaviors. We derived data from the North American Opiate Medication

Initiative (NAOMI) study, which was a Canadian multisite, randomized controlled trial evaluating the effectiveness of diacetylmorphine administered via injection compared to oral methadone in 251 chronic opiate injection users who had not benefited from previous treatments for their opiate use (Oviedo-Joekes et al., 2008, 2009). The decision to further explore childhood maltreatment within this population was prompted by a preliminary examination of the NAOMI baseline questionnaire data, which showed that 62.6% of the participants reported having experienced emotional abuse in their lifetime, 43% reported lifetime physical abuse, and 19.5% reported lifetime sexual abuse.

METHODS

Participants

Participants were chronic injection opioid users who had volunteered to participate in the NAOMI heroin-assisted opiate dependence treatment study. The initial study evaluated two arms; one arm received oral methadone and the other received intravenous diacetylmorphine (DAM) as replacement regime for opioid dependence. Participants included were at least 25 years old and opioid users for 5 years or more. Participants had attempted treatment at least two or more times (including at least one methadone maintenance treatment reaching 60 mg or more for at least 30 days in a 40-day period), and had not undergone opioid maintenance treatment in the prior 6 months. Participants were considered as “treatment responders” if they had a significant reduction in drug use and illegal activities at the 12-month follow-up. A detailed description of methods and sample characteristics of the NAOMI study is given in an earlier paper (Oviedo-Joekes et al., 2008). The trial was conducted at outpatient settings, in the Downtown East Side (DTES) area of Vancouver, British Columbia and Montreal, Quebec.

Of the 251 participants in the NAOMI trial who completed the study, a subset of 87 individuals was selected from those who had answered “Yes” to a question on childhood abuse ($n = 125$) and who agreed to complete a 12-month follow-up questionnaire. The screening questions related to history of childhood abuse were obtained from the Family Relations questionnaire of the EuropASI (Kokkevi & Hartgers, 1995). The questions (six in total) were expressed as follows: did any of these people (mother, father, brothers/sisters, sexual partner/spouse, children, other significant family close friends, neighbors, coworkers) abuse you emotionally (make you feel bad through harsh words), physically (cause you physical harm), or sexually (force sexual advances or sexual acts)? Participants responded regarding the past 30 days and their lifetime.

For the second part of the study, all individuals who had answered “yes” were recruited through an intensive outreach campaign to complete childhood trauma questionnaires (CTQ) from July to October 2008. The main inclusion criteria for the current study were not having withdrawn consent, having completed the main study,

and provision of further written informed consent for this study on assessment of childhood maltreatment. Being part of the main study, a participant in either arm of the study (oral versus injection) had an equal chance of being selected for this study. This subsample of participants (who had answered “Yes” to the question on childhood abuse and consented for further participation) was assessed through face-to-face self-report interviews in the following additional areas: childhood maltreatment, current posttraumatic stress, and acute psychological distress. Questionnaires for three individuals were excluded due to missing data. There were no differences in gender, ethnicity, age, or study group between participants who agreed to take part on this study and those that did not as well as no differences between participants selected from either arm of the study. Participants received \$25 for their participation in the study. All procedures were approved by the ethics boards of the Centre de Recherche du Centre Hospitalier de l’Université de Montréal, the University of British Columbia, and Providence Health Care.

Measures

The *Sociodemographic Baseline Questionnaire* assessed sociodemographic information that was used to describe the sample prior to treatment at intake. The questionnaire included information on age, gender, ethnicity, housing status, and engagement in illegal activities.

The Childhood Trauma Questionnaire (CTQ) is a retrospective, 28-item self-report inventory that provides brief screening for history of abuse and neglect in childhood and adolescence, defined as prior to the age of 18 (Bernstein et al., 2003).

Family history of drug and alcohol use, recent contact to family members, and age of first injection were assessed using the “Family History” Section of the European Addiction Severity Index (EuropASI) (Kokkevi & Hartgers, 1995).

Statistical Analyses

In this study, family history of drug use was categorized into four groups: drug use of the mother (“mother drug use”), drug use of the father (“father drug use”), drug use of a family member on the mother’s side (“maternal family drug use”), and drug use of a family member on the father’s side (“paternal family drug use”). The latter two categories include drug use by the grandmother, grandfather, aunt, and uncle of the mother and father, respectively. The same categories were derived for alcohol use of the parents and the extended family. Bivariate associations between family alcohol and drug use and each type of childhood trauma were examined. The raw CTQ scores were used as continuous measures and Mann–Whitney tests were performed for inferential analysis. To investigate the association between childhood trauma and age of first injection, the log-transformed age of first injection was used as a response variable and multiple regression models were conducted to estimate the average change in age. Estimates from modeling were transformed back

to the original scales and then the percentages of age decrease and their 95% Confidence Intervals were used to illustrate the final results. All analyses were adjusted for age, gender, and ethnicity. Statistical analysis was carried out in SAS version 9.1 and all reported p -values are two-sided, with significance being considered when $p < .05$.

RESULTS

Past and Current Contact With Family

Fifty-one (58.6%) of the participants stated they had experienced a close, long-lasting personal relationship with their mother, while only 26 (29.9%) of the participants reported the same with their fathers. Only 7 (8.0%) of the participants were currently living with their families and 13 (14.9%) of them spent most of their free time together with their families.

Sample Characteristics (Data Not Shown)

The mean age of the participants in the current study was 38.0 years. Forty-one percent of the participants were female and 14.9% identified as First Nations, the rest being Caucasian. In regards to moderate to extreme childhood abuse, a total of 45.9% reported emotional abuse, 41.2% reported physical abuse, and 40% participants sexual abuse. Moderate to extreme childhood was defined by including both "moderate to severe" and "severe to

extreme" abuse intensities. In addition, 35.8% and 45.9% of participants reported similar severities of physical neglect and emotional neglect. Overall, 62 (72.9%) participants reported at least one type of moderate to extreme childhood abuse or neglect.

Childhood Trauma and Family History of Alcohol and Drug Abuse

Maternal alcohol abuse was strongly associated with all types of trauma, except for physical abuse (Table 1). Similarly, maternal drug abuse was associated with physical neglect, emotional abuse, and sexual abuse. Apart from the mother's alcohol and drug history, only alcohol abuse by maternal relatives was significantly associated with higher reporting of childhood emotional, physical, and sexual abuse. In contrast, paternal alcohol abuse was associated with physical abuse, while paternal drug abuse was associated with both physical abuse and neglect. Drug and alcohol usage of paternal family was not associated with an increase in any of the five types of childhood trauma.

In addition, all domains on the CTQ correlated with each other with the strongest association shown for emotional maltreatment ($p < .001$) (data not shown).

Childhood Trauma and Age of First Substance Injection

When age of first injection was analyzed in relation to the types of childhood trauma (Table 2), all types of trauma

TABLE 1. Childhood trauma and family history of alcohol and drug abuse

Family history	Emotional neglect mean (SD)	Physical neglect mean (SD)	Emotional abuse mean (SD)	Physical abuse mean (SD)	Sexual abuse mean (SD)
Mother alcohol use					
No	12.9 (4.7)	8.4 (3.4)	11.4 (5.3)	9.4 (4.9)	8.4 (5.6)
Yes	16.4 (6.1)*	11.8 (5.8)*	15.6 (6.2)**	11.7 (5.7)	14.3 (8.1)**
Mother drug use					
No	13.3 (5.3)	8.7 (4.1)	11.9 (5.7)	9.6 (4.9)	9.1 (6.4)
Yes	15.9 (4.7)	11.9 (5.0)*	15.3 (5.6)*	11.7 (6.3)	13.8 (7.5)**
Maternal family alcohol use					
No	12.6 (4.8)	8.4 (3.8)	11.1 (5.4)	8.5 (4.1)	8.2 (5.8)
Yes	14.8 (5.2)	9.9 (4.8)	13.5 (5.6)*	11.4 (5.8)*	11.4 (7.2)*
Maternal family drug use					
No	13.3 (5.2)	8.9 (4.5)	11.8 (5.6)	9.4 (4.7)	9.3 (6.5)
Yes	14.4 (4.7)	9.5 (4.0)	13.3 (5.7)	10.8 (6.1)	10.7 (7.2)
Father alcohol use					
No	12.8 (5.1)	8.5 (3.9)	12.2 (5.7)	8.3 (3.9)	9.5 (6.3)
Yes	14.9 (5.3)	9.9 (4.5)	12.7 (5.9)	11.8 (5.9)**	10.5 (7.3)
Father drug use					
No	13.3 (5.3)	8.6 (3.8)	11.9 (5.8)	9.3 (4.8)	9.7 (6.6)
Yes	15.5 (4.6)	11.6 (5.4)*	14.7 (4.9)	12.8 (6.1)*	11.1 (7.2)
Paternal family alcohol use					
No	13.2 (4.9)	8.8 (4.3)	11.7 (5.8)	9.0 (4.9)	9.3 (6.7)
Yes	13.7 (5.3)	9.1 (3.9)	12.6 (5.6)	10.3 (5.4)	9.8 (6.2)
Paternal family drug use					
No	12.9 (5.1)	8.7 (4.2)	11.6 (5.8)	9.2 (5.1)	9.2 (6.5)
Yes	15.3 (4.3)	9.6 (3.9)	14.0 (4.7)	11.0 (5.2)	10.8 (6.6)

Note: * $p < 0.05$, ** $p < 0.001$

TABLE 2. Association of abuse and age of first injection

Subtype of childhood maltreatment	Percent decrease in age of first injection (95% CI)	<i>p</i> -value *
Emotional abuse	1.19 (0.06 – 2.31)	0.043
Physical abuse	1.44 (0.20 – 2.67)	0.025
Sexual abuse	1.31 (0.33 – 2.29)	0.011
Emotional neglect	1.69 (0.48–2.88)	0.008
Physical neglect	2.07 (0.64–3.48)	0.006

were significantly associated with an earlier age of first injection ($p < .05$). The mean age of first injection for the participants was 20.6 (\pm 6.5) years. Emotional and physical neglect were most strongly correlated with an earlier age of first injection. In addition, there was a 2.07% decrease in age of first injection for each point increase in childhood trauma raw score on the physical neglect domain. This meant that when there was physical neglect, the CTQ score increased by 5 points and the average age of first injection decreased by 2 years.

DISCUSSION

In this sample of chronic injection substance users, the proportion of participants who had experienced any childhood abuse or neglect was extremely high (72.9%) in comparison to lower rates seen in the community and the general population (29.8%–42.8%) (Scher et al., 2004; Walker et al., 1999). The high prevalence of childhood trauma shown in this study is consistent with previous studies that link serious substance use disorders in adulthood with childhood trauma (Najavits, Weiss, & Shaw, 1997; Reynolds et al., 2005; Triffleman, Marmar, Delucchi, & Ronfeldt, 1995). For example, in a study of 113 adult opioid users on buprenorphine, 80.5% reported some form of childhood trauma and the majority of participants reported having experienced one, two, or three forms of trauma (Sansone, Whitecar, & Wiederman, 2009).

Of primary interest in this study was the strong association between severity of childhood trauma and parental alcohol and drug abuse. Maternal alcohol abuse was significantly associated with all types of childhood trauma except physical abuse, which, in turn, was associated with paternal alcohol abuse. The relationship between parental alcohol abuse and childhood trauma in this population of chronic opioid users is unsettling considering the lack of international and public policies in place to regulate alcohol consumption, unlike illicit drug and tobacco use (Casswell & Thamarangsi, 2009). As expected, drug abuse by the mother or father was also strongly associated with increased severity of specific forms of childhood trauma. Although maternal drug and alcohol abuse was most commonly associated with increased severity of childhood trauma, it is important to consider that the majority of our participants had more regular contact with their mothers (57.8%) than their fathers (37.0%). It may

seem reasonable to say, that substance use issues and related behaviors of the mother would have a larger impact than the habits of an often absent father. In contrast, a father who is absent the majority of time may still have an impact on the child even though he is not physically present.

Further, increased severity of reported childhood abuse was associated with an early age of initiation into injecting drug use. This study of chronic injection users reinforces the link between childhood trauma and an earlier initiation into injection drug use as reported by other studies in North America (Ompad et al., 2005). Unfortunately, in our study, although there was a clear link between severity of childhood trauma and a decrease in age of first injection, we only know that the trauma (neglect or abuse) occurred before the age of 18, as this is defined as childhood by the administered childhood trauma questionnaire.

It is important to note that a child may not develop behavioral or other social problems as a result of one risk factor (e.g., parental substance abuse). Instead, a myriad of genetic, psychosocial, and environmental factors that interact over a long period of time may lead to severe and long-term negative effects. Therefore, our findings that highlight the relevance of childhood trauma and family history of substance abuse for severe addiction in adulthood need to be considered in the wider context of other risks primarily genetic (Urbanoski & Kelly, 2012). However, it is increasingly clear that these variables are closely related and require more exploration. More research into this area is important in order to reduce the transfer of addictive behaviors from one generation to the other. This study also is a pointer to the preventive aspects of addiction psychiatry, which foretell an early initiation into drug use, if the maternal/paternal environment comprises substance use, especially in a background of childhood abuse/neglect.

This study has a number of limitations. First, a larger sample size would likely make the findings more representative. Second, our sample was heterogeneous and also included individuals with complex conditions who may differ from average intravenous drug users. Third, the results of this study were based on cross-sectional data, and therefore can only capture part of the dynamic. Thus, direct relationships cannot be inferred from the results. Fourth, the CTQ is a self-report instrument and may not accurately reflect the level of trauma exposure.

To conclude, childhood abuse and neglect in the background of paternal/maternal substance abuse is a strong predictor of initiation of drug use, which needs to be targeted specifically by public health policies, in order to reduce the impact on the children that seem to be most affected by these behaviors.

Declaration of Interest

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

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the Michael Smith Foundation and on the SAC for the Canadian Center of Substance Abuse (CCSA) and the Steering committee for EMH at the Mental Health Commission of Canada (MHCC).

GLOSSARY

Childhood trauma: It generally refers to the traumatic experiences that occur to children which can be the result of intentional violence—such as child physical or sexual abuse, or domestic violence—or the result of natural disaster, accidents, or war. Young children also may experience traumatic stress in response to painful medical procedures or the sudden loss of a parent/caregiver.

Child neglect: This occurs when a parent or caregiver does not give a child the care he or she needs according to its age, even though that adult can afford to give that care

or is offered help to give that care. Neglect can mean not giving food, clothing, and shelter.

Child sexual abuse: This includes a wide range of sexual behaviors that take place between a child and an older person or alternatively between a child and another child/adolescent.

Emotional abuse: Emotional abuse of a child is commonly defined as a pattern of behavior by parents or caregivers that can seriously interfere with a child's cognitive, emotional, psychological, or social development. This may be in the form of isolating, rejecting, neglecting, terrorizing, or exploiting a child.

Physical abuse: This means causing or attempting to cause physical pain or injury. It can result from punching, beating, kicking, burning, or harming a child in other ways.

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