



## Examining the link between psychological distress, mental health disorders and sharing behaviors among cocaine users



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### HIGHLIGHTS

- Participants to this study were cocaine users who inject drugs.
- We examined the link between psychological distress, psychiatric disorders and sharing behaviors.
- Participants with anxiety disorders were more likely to share needle.
- Psychological distress and mood disorders were not associated with sharing practices.

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### ABSTRACT

**Background:** Psychiatric problems and cocaine use are associated with heightened vulnerability for HIV and Hepatitis C infections. Little is known regarding the relationship between psychiatric symptoms, psychiatric diagnoses and injection risk behaviors among cocaine users. We examined the association between psychological distress and injection material sharing among cocaine users, while accounting for comorbid anxious and mood disorders.

**Methods:** Participants included cocaine users who inject drugs recruited in a prospective cohort study in Montreal, Canada. Diagnosis of mood and anxiety disorders in the year preceding baseline were established using the Composite International Diagnostic Interview (CIDI) questionnaire. Psychological distress based on the Kessler scale and injection material sharing in the past 3 months were assessed at baseline and at each of the five follow-up visits at 3-month intervals. Statistical analyses were conducted using generalized estimation equation.

**Results:** Of the 387 participants (84.5% male; 80.1%,  $\geq 30$  y.o.), 35% reported severe psychological distress, 43% qualified for an anxiety disorder diagnosis and 29% for a mood disorder diagnosis at baseline. Psychological distress was not associated with any injection risk behavior when adjusting for socio-demographic and psychiatric disorders. Participants with anxiety disorders were more likely to share needle (adjusted odds ratio: 1.89, 95% CI: 1.17–3.03). Sharing of injection material other than needle was not associated with psychiatric disorders or with psychological distress in multivariate analyses.

**Conclusions:** Anxiety disorders are associated with needle sharing among cocaine users. Our results suggest the importance of screening for anxiety disorders as part of preventive interventions to decrease blood-borne viruses' transmission.

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### 1. Introduction

Injection drug use is a major public health concern as it remains one of the main vectors for human immunodeficiency virus (HIV) and hepatitis C virus (HCV) transmission worldwide (Mathers et al., 2008; Nelson et al., 2011). Both infections are effectively transmissible

through percutaneous routes, via needle sharing and other paraphernalia used in drug preparation and consumption (Pouget, Hagan, & Des Jarlais, 2012; WHO, 2011). Cocaine use in particular plays a central role in the spread of HIV and HCV infections, partly due to its association with high risk consumption patterns. When compared to other PWID, those who regularly use smoked or injected cocaine were found to engage in more risky injection practices and to have increased likelihood of HIV and HCV seroconversion (Bruneau, Roy, Arruda, Zang, & Jutras-Aswad, 2012; DeBeck et al., 2009; Golub et al., 2005; Havens, Oser, & Leukefeld, 2011; Ropelewski, Mancha, Hulbert, Rudolph, & Martins, 2011; Tyndall et al., 2003).

While exact mechanisms underlying these risk taking behaviors remain unclear, there is a growing body of evidence to suggest that mental health should be examined as a potential key element conditioning risk behaviors among drug users. Thus far, investigators have looked at two categories of mental health measures and their association with risk behaviors: mental health symptoms (including depressive, anxious and nonspecific psychological distress) and measures of mental health disorder diagnoses.

Of the few studies that have examined the association between mental health symptoms and injection risk behaviors, significant population and methodological differences, including studied samples from different countries and different measures to assess symptoms, limited comparisons and generalizability. A positive association was found between depressive symptoms and injection material sharing in PWID samples in India and Canada (Armstrong et al., 2013; Lemstra, Rogers, Thompson, Moraros, & Buckingham, 2011), but not among a sample of PWID in Massachusetts, United States (Lundgren, Amodeo, & Chassler, 2005) nor among street-based female injectors in the city of Danzhou, China (Gu et al., 2010). Likewise, symptoms of anxiety were associated with sharing of injection material in Puerto Rico and in Massachusetts, USA (Lundgren et al., 2005; Reyes et al., 2007), while a negative association was found among PWID in Delhi, India (Armstrong et al., 2013).

A few studies have also examined the relation between diagnoses of depression or anxiety disorders and sharing behaviors among drug-using populations. A Canadian study showed that PWID diagnosed with depression were more likely to share injection equipment than those who were not (Wild et al., 2005). Similarly, a study conducted among young PWID in Chicago, Illinois, found an increased prevalence of major depression and anxiety disorders among young injectors who shared needles, but these associations were not statistically significant (Mackesy-Amiti, Donenberg, & Ouellet, 2014).

Of note, none of these studies have specifically examined the relative contribution of psychiatric diagnoses and mental health symptomatology on sharing behaviors. Moreover, these studies were conducted in populations mainly composed of opiate users (Armstrong et al., 2013; Lundgren et al., 2005; Wild et al., 2005).

We recently reported that severe psychological distress was associated with greater odds of needle sharing, but not sharing of other paraphernalia among 378 cocaine users who inject drugs in Montreal, Canada (Levesque et al., 2014). This analysis did not, however, take into account mental health disorders. The aim of the current investigation was to examine the association between psychological distress and sharing of different types of injection paraphernalia, while taking into account comorbid anxious and mood disorders.

## 2. Methods

The sample was drawn from COSMO, an ongoing prospective cohort study conducted in Montréal, Canada, which aimed to assess the impact of mental illness on HIV and HCV risk behaviors among cocaine users. Participants were recruited between October 2010 and April 2013 in different community-based programs in downtown Montréal, including needle exchange programs (53.3%), homeless day programs and shelters (40.5%) and the Centre Hospitalier de l'Université de Montréal's emergency room and addiction treatment program (5%). A small

number (1.2%) were recruited directly at the study office where interviews were performed. Participants were eligible for enrolment into the study if they met the following criteria: having smoked crack cocaine or having injected cocaine in the previous month, being 14 years of age or older, being able to communicate in French or English, planning to stay in the Montréal area in the following year, and providing informed consent. Consents were obtained in compliance with the institutional review boards regulations of both the Faculty of Medicine and Health Sciences of the Université de Sherbrooke and the Centre Hospitalier de l'Université de Montréal. Only participants who reported having injected drugs (including cocaine, opioid or any other injected substance) in the 3 months prior to study entry were included in the current investigation.

The study design included one baseline visit and 5 follow-up visits at 3-month intervals. Participants underwent a 60 to 90 minute baseline interviewer-administered questionnaire. A shorter (20 to 30 min) version of the same questionnaire was administered at every follow-up visit. The "Life History Calendar" technique that consists of placing recent life events on a visual calendar was used to help situate events in time and to minimize recall bias (Caspi et al., 1996). Participants were compensated \$30 for every visit they completed. Interviews took place in a research office located near the recruitment sites to facilitate access for participants.

### 2.1. Measurements

Sharing of injection material, defined as having used paraphernalia that had already been used by someone else in the previous 3 months, was assessed at each study visit. Two dichotomous outcomes representing different types of paraphernalia sharing were considered for the present analyses: 1) needle sharing and; 2) sharing of other injection material (including dilution water, cookers, filters, backloading/frontloading - defined as using drug solution prepared in a syringe that has already been used by another person - and "doing a wash" - defined as injecting drug residues removed from a cotton, a filter or a container already used by another person).

The main variable of interest for this study was psychological distress, assessed at each study visit using the K10 scale developed by Kessler et al. (2002). The K10 scale is a self-report tool consisting of 10 questions aimed at measuring non-specific psychological distress. Each question evaluates the frequency of experiencing different anxious and depressive symptoms over the last 30 days, for which a score of 1 to 5 is obtained (1 = none of the time, 2 = a little of the time, 3 = some of the time, 4 = most of the time, 5 = all of the time). The total score ranges from 10 to 50. Psychological distress was assessed as a continuous variable for inferential analysis, as the K10 tool was originally validated as a continuous measurement. A dichotomous assessment of psychological distress, using a score of 30 or more to denote "severe psychological distress" was also used for descriptive analysis, in order to facilitate interpretation. The cut-off was based on prior studies using this scale and on a validation study of 10,641 Australian adults, in which K10 scores equal or higher to 30 were found to detect anxiety and mood disorders with a sensitivity of 0.24 and a specificity of 0.99 (Andrews & Slade, 2001; Kinner, George, Campbell, & Degenhardt, 2009).

Diagnoses of mood and anxiety disorders were considered as main potential confounders. These were measured at baseline assessment only, as they are likely to persist over several months (in contrast to psychological distress which is a fluctuating mental state). A diagnosis of mood disorder (major depression, bipolar disorder or dysthymia) in the past year was assessed using the World Mental Health-Composite International Diagnostic Interview (WMH-CIDI) (Kessler & Ustun, 2004). A diagnosis of anxiety disorder (phobia, panic disorder or general anxiety) in the previous year was determined using the Composite International Diagnostic Interview Simplified (CIDI-S) developed by Kovess, Fournier, Lesage, Lebigre, and Caria (2001). Both instruments

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