Title: “I love having benzos after my coke shot”: The Use of Psychotropic Medication among Cocaine Users in Downtown Montreal.

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Abstract

Background: Cocaine abuse is a major public health issue due to its role in the HIV and hepatitis C virus (HCV) epidemics in North America. A significant area of concern among people who use cocaine (PWUC), injected or smoked, is their frequent misuse of prescription drugs, particularly psychotropic medication (PM), such as tranquilizers, sedatives, stimulants, and antipsychotics.

Objective: To describe and understand practices of PM use among PWUC in downtown Montreal.

Method: Ethnographic methods including participant observation and semi-structured interviews were used in an iterative manner.

Results: Two thirds of the 50 participants were male. They ranged in age from 20 to 60 and most were homeless. A significant proportion of them reported polydrug use patterns that included frequent concomitant opioid use (heroin and/or prescription opioids (PO)). Benzodiazepine-based tranquilizers and the atypical antipsychotic quetiapine were the most frequently used PM. Routes of PM administration were oral, nasal and, to a lesser degree, intravenous. Five main PM use practices were identified: 1) "downers" from cocaine high (benzodiazepines and quetiapine); 2) enhancers of heroin/PO effects (benzodiazepines); 3) reducers or suppressors of heroin/PO withdrawal symptoms (benzodiazepines); 4) enablers of a different type of "trip" (benzodiazepines); and 5) treatment for mental and physical problems (benzodiazepines and quetiapine).

Conclusion: PM use practices showed several complementary functions that PM fulfill in a context of polydrug use. The soothing and stimulating effects of PM reinforce the patterns of drug use among participants, posing various risks including overdose, HIV/HCV transmission, PM dependence and accidents. The results highlight the need for clinicians to assess clients' substance use patterns when prescribing PM and to question PWUC about PM use. The findings also underline certain unmet service needs in relation to overdose, HIV/HCV and mental health prevention/treatment among cocaine users.

Keywords: cocaine use; prescription drugs; mental health; overdose; HIV/HCV risk behaviours; ethnographic methods

Introduction

Over the last two decades, misuse of prescription drugs (e.g. opioids, tranquilizers, stimulants, antipsychotics, etc.) has become a major public health concern in various parts of the world due to the increasing number of people who abuse them (SAMHSA, 2010a) and the associated harmful health and social consequences (Huang, Dawson, Stinson, Hansin & Ruan, 2006; SAMHSA, 2004). Prescription drug misuse, particularly that of opioids and tranquilizers, has been associated with numerous risk behaviours and harms such as dependence, mental health problems, fatal and non-fatal overdose, initiation into injection drug use, syringe sharing and unsafe sex (Hayashi, Suwannawong, Ti, Kaplan, Wood, & Kerr, 2012; Lake & Kennedy, 2016; Kecojevic, Silva, Sell & Lankenau, 2014; Lankenau et al., 2007; Lankenau, Teti, Silva, Bloom, Harocopos, & Treese, 2012a; SAMHSA, 2004, 2010b; Tucker et al., 2016). Public health programs have been particularly challenged by people who use cocaine (PWUC) whose complex drug use patterns often involve polydrug consumption that includes non-medical use of prescription drugs (Fischer et al., 2010; Guindalini, Vallada, Breen, & Laranjeira, 2006; Latkin, Knowlton, & Sherman, 2001; Prinzleve et al., 2004; Roy et al., 2012; Shaw, Shah, Jolly, & Wylie, 2008). A significant area of concern is the frequent misuse by this population of psychotropic medications[1] (PM) such as tranquilizers, sedatives, stimulants and antipsychotics; a problem compounded by high rates of mental health problems among these individuals (Conway, Compton, Stinson, & Grant, 2006; Roy et al., 2015). In the North American context where cocaine misuse plays a major role in the HIV and hepatitis C virus (HCV) epidemics (Edlin et al., 1994; Nelson, Galai, Safaeian, Strathdee, Celentano & Vlahov, 2002; Patrick et al.,

[1] A psychotropic medication or drug is any chemical agent that primarily or significantly affects the central nervous system. Some authors apply the term to drugs used primarily to treat mental disorders (World Health Organization, 2016).

2001; Tyndall et al., 2003; Bruneau, Roy, Arruda, Zang & Jutras-Aswad, 2012; Roy et al., 2012), and where PM misuse is ubiquitous, there is a need to better understand the interplay among these substances.

Little is known about patterns of prescription drug misuse among PWUC, particularly PM misuse. Earlier studies have examined the use of prescription tranquilizers (benzodiazepines) among people using drugs, but have mostly focused on opiate users (heroin users and methadone maintenance clients) in different parts of the world (Forsyth, Farquhar, Gemmell, Shewan & Davies, 1993; Fountain, Griffiths, Farrell, Gossop & Strang, 1999; Gelkopf, Bleich, Hayward, Bodner & Adelson, 1999; Iguchi, Handelsman, Bickel & Griffith, 1993). More recent studies have explored complex patterns of prescription and street drug co-use that include prescription opioids (PO) and a variety of PM in adolescent populations (Boyd, McCabe, Cranford & Young, 2006; McCabe, & Cranford, 2012; McCabe, West & Boyd, 2013), persons who inject drugs (Courtney, Degenhardt, Bruno, Roxburgh, & Jenkinson, 2004; Johnson, Fibbi, Langer, Silva & Lankenau, 2013; Lankenau et al., 2007; Lankenau, Teti, Silva, Bloom, Harocopos, & Treese, 2012b; Lankenau & Schrager et al., 2012; Ojha, Sigdel, Meyer-Thompson, Oechsler & Verthein, 2014), college students (Quintero, Peterson, & Young, 2006; Quintero, 2009; McCabe, Teter, & Boyd, 2006; Rabiner, Anastopoulos, Costello, Hoyle, McCabe & Swartzwelder, 2009; White, Becker-Blease, & Grace-Bishop, 2006), nightclub goers (Kelly, Welles, Pawson, LeClair & Parsons, 2014; Kurtz, Surratt, Levi-Minzi, & Mooss, 2011) and men who have sex with men (Benotsch, Martin, Koester, Cejka & Luckman, 2011; Kecojevic et al., 2014, Kecojevic, Corliss & Lankenau, 2015; Kelly & Parsons, 2013). Only a few studies have focused on PWUC, and those almost exclusively examined PO misuse (Bruneau et al., 2012; Roy, Arruda & Bourgois,

2011; Roy et al., 2012; Roy & Arruda et al., 2012; Roy, Richer, Arruda, Vandermeerschen, & Bruneau, 2013).

Only recently have researchers started examining factors and processes underlying patterns of prescription drug misuse among people who use drugs (Ali, Dowd, Classen, Mutter & Novak, 2017; Fatséas, Lavie, Denis & Auriacombe, 2009; Firestone & Fischer, 2008; Inciardi, Surratt, Kurtz, & Cicero, 2007; Kecojevic et al., 2015; Lankenau et al., 2007, 2012b; McCabe, Cranford, Boyd, & Teter, 2007; McCabe et al., 2012, 2013; Novak, Peiper, & Zarkin, 2016; Ojha et al., 2014; Rigg & Ibanez, 2010; Roy et al., 2011; Silva, Kecojevic & Lankenau, S. E. 2013). Qualitative methods are particularly powerful to document emerging issues (Miles, Huberman & Saldana, 2014; Nichter, Quintero, Nichter, Mock & Shakib, 2004), and have effectively described motivations for using prescription drugs (Kecojevic et al., 2015; Lankenau, et al., 2007; Rigg et al., 2010; Silva et al., 2013); contexts of use (Firestone et al., 2008; Lankenau, et al., 2007, 2012b; Roy et al., 2011; Silva et al., 2013); how changes in the drug market and availability of prescription drugs influence polysubstance use patterns (Firestone et al., 2008; Inciardi et al, 2007; Lankenau, et al., 2007; 2012b, Roy et al., 2011); and risks posed by prescription and illicit drug co-use (Firestone et al., 2008; Inciardi et al, 2007; Kecojevic et al., 2015; Lankenau et al., 2007, 2012b; Roy et al., 2011; Silva et al., 2013). Although complex patterns of prescription drug misuse are described, most of these studies focused on PO and tranquilizers. A gap still remains in the literature about why and how PWUC co-use PM with other drugs. In an attempt to develop a better understanding of current PM use practices among PWUC, we have conducted a study that addresses these questions: what are the strategies PWUC deploy to obtain PM and how do these strategies relate to users' mental health problems? What

are the motives for using certain PM? What drugs (prescription and street drugs) and routes of administration are employed? What are the risks posed by PM during polydrug use?

Approach and Methods

This study is part of the COSMO project, an ongoing multi-methods research program being conducted in Montreal, Canada to assess the relationship between mental health disorders and HIV and HCV risk behaviors among PWUC (Roy et al., 2014)**.** The present study was conducted by an interdisciplinary team composed of two anthropologists, a public health physician, a psychologist and a psychiatrist.

The research team applied ethnographic methods such as participant observation and semi-structured interviews in an iterative manner. To thoroughly explore PWUC's perspectives about PM use, the anthropologists conducted 10 months of ethnographic fieldwork (March to December 2015) in street-based settings (injection and crack-smoking sites, locations where drugs and PM were sold, pharmacies, etc.), outreach community organizations, and other institutional and social surroundings (hospitals and health centers, supervised apartments, retail stores and chain restaurants, etc.) in downtown Montreal frequented by drug users. For the participant observation component, participants were recruited, using the snowball technique (Biernacki & Waldorf, 1981). The anthropologists recruited them through participants from previous studies conducted by members of the research team (Roy et al., 2011, Roy et al. 2012) and at the street level. Data was collected by means of direct observations of the practices and interactions of PWUC in participants' regular environments at various times of the day and night, and by conversational interviews steered toward the subject of PM use. Moreover, the anthropologists followed more intensively core participants (n=10) through their everyday

routines to further understand the role of PM within their drug use practices. Visits to the field were from 3 to 5 times per week and lasted between 2 and 6 hours. In total, more than 500 hours were spent on participant observation and information was collected from a wide number of participants (n=50). Field notes of observations and conversations were taken and digitally transcribed. Participation in observations and informal conversations was based on voluntary relationships of trust and friendship, without financial compensation.

During the last months of fieldwork, the anthropologists conducted semi-structured interviews with a sub-group of participants (n=25) to complement and triangulate previously collected data about PM use practices. Semi-structured interviews allowed the research team to thoroughly explore the participants' points of view about relevant themes identified through participant observation. These included specific practices of PM and street drugs co-use, as well as associated risk behaviours. Moreover, participants felt more comfortable discussing their PM use within the context of semi-structured interviews (one-on-one private conversations) than in front of other people (see Results sections). To sample this sub-group, COSMO eligibility criteria were used: having injected or smoked cocaine in the last month, being 14 or older, speaking French or English, and having the capacity to understand and sign an informed consent. An additional eligibility criterion was regular use of one or more PM in the last six months. To ensure sample diversification (Pires, 1997) gender, age and drug injection or not were also considered. Participants for the interviews were recruited with the help of outreach workers in community-based organizations and at the street level. Semi-structured, focused interviews lasted 20 to 60 minutes, and were recorded and digitally transcribed. Monetary compensation was offered to individuals who participated in semi-structured interviews (CAN$20).

The anthropologists thematically analyzed the field notes and semi-structured interviews using NVivo 9 software. To ensure anonymity, participants', institutions' and site names were changed. To obtain consensus on practices of PM use, members of the research team regularly discussed the collected information during face-to-face meetings held throughout the study period.

These sessions allowed incorporation of diverse disciplinary perspectives into the analysis and a redefinition of the process of data collection when needed. Moreover, the field notes and interview transcripts were reviewed again through iterative analysis (Glaser & Strauss, 1967) to identify emergent themes and sub-themes, and to refine the coding process. Data were organized using computer software, but it was not used to identify relevant themes.

The study was approved by the Comité d'éthique de la recherche en santé chez l'humain of the Centre hospitalier de l'Université de Sherbrooke (CHUS) and the University of Sherbrooke.

Results

The final ethnographic sample was composed of approximately 50 individuals, including 10 core participants. In addition, 25 of these individuals participated in semi-structured interviews. Two thirds were male and ranged in age from approximately 20 to 60. Almost all participants were white, born in the province of Quebec (one fourth in Montreal) and French-speaking; one fifth were English-speaking (from other Canadian provinces) and around one sixth were Afro-Canadian and/or Caribbean Canadian. Most participants were homeless or lived in precarious housing conditions (shared spaces in friends' lodgings, illegal squats, or rented rooms in low-cost hotels). At the time we conducted fieldwork, several of them lived in small

encampments (from two to five persons), located in parks and other public areas. The vast majority of participants did not have stable jobs and depended on social welfare, but also obtained income generated by street economy activities (panhandling, squeegeeing, sex work, small-scale drug sales, etc.).

Participants were geographically concentrated in a 20-square-block neighborhood of downtown Montreal, where informal activities predominated and several outreach community organizations for people who use drugs were located. They did not belong to well-defined social groups, but to a large unstructured social network where most of them knew one another and several had consumed drugs together at some time. This network was characterized by poverty, social marginalization and mobility. Its members were regularly exposed to police and drug dealer harassment, robbery and other forms of violence. Moreover, it is important to note that during the fieldwork period, city authorities displaced homeless participants from their living quarters in public areas as a result of an ongoing gentrification process in downtown Montreal. The significant majority of participants were also constantly on the move due to regional and seasonal migration, incarceration, hospitalization and rehabilitation treatment; therefore, the types of relationships they established were temporary and fragile. Significant parts of their everyday lives were organized around activities to get resources to buy and consume drugs.

Polydrug use and Multiple Addictions

Almost all participants were regular cocaine users (powder cocaine and/or crack). The vast majority alternated between injecting cocaine and smoking crack. Some only smoked crack and a few sporadically snorted powder cocaine in addition to injecting and/or smoking this substance. Although they were regular cocaine users, almost all consumed additional substances.

We estimated that more than two thirds injected heroin, more than half injected PO, almost half smoked cannabis, over a third drank alcohol, over a quarter used amphetamines or methamphetamines and to a lesser degree synthetic drugs (ecstasy, ketamine, GHB, or hallucinogens). Around two thirds of participants were in methadone replacement therapy and several of them reported that methadone had reduced or stopped their use of opioid-based drugs; however, they had increased their cocaine use or even "replaced' these drugs with cocaine (and other drugs), as illustrated in the following field note excerpt:

> *We met Gabriel and Ginette in Saint-Jérôme Square, nearby Daniel's camp. They told us that Daniel had just left to buy cocaine for them. Gabriel was sitting on a concrete bench, with a syringe half-filled of something that looked like heroin, searching a vein to inject. He explained to me that since his doctor had increased his methadone dose (from 50 to 75 ml) he only used heroin occasionally, but he had started taking cocaine. He said that he preferred cocaine than heroin because its withdrawal symptoms were less overwhelming and impairing. Daniel arrived thirty minutes later with three small Ziploc bags with "a quarter" (0.25 gram) of powder cocaine each. Daniel and Ginette sat in Daniel's bed, made of flat cardboard boxes and blankets, and started preparing the cocaine injections. They poured distillated water in each of the little plastic bags, shook them until the powder and the water were mixed and filled up three syringes with the bags' content. Then, they called Gabriel and gave him one of the syringes. The three of them toasted their syringes, saying "cheers," and started looking for veins to shoot.* (Field note excerpt June 15, 2015)

The significant majority of participants reported being addicted to more than one substance; cocaine and heroin/PO were the most common. Managing double or multiple addictions was particularly challenging because most of the time they lacked money to buy enough of the different substances they depended on. They had to make choices and prioritize opioid-based drugs to avoid physical withdrawal symptoms, not always an easy decision.

> *Daniel was panhandling in Saint-Quentin Street when we met him. He looked particularly sad. He told us that he had taken some distance from Ginette, one of his running partners and close friends. Daniel said that he did not mind that Ginette was a "spoiled girl," and a "real mess," but what upset him was that she rarely shared her resources with him. Two days ago, Ginette borrowed Daniel's new sleeping bag that he just got from a charity organization to pass a night with her friends in another camp.*

When Ginette came back, she was "dopesick" and Daniel's "sleeping bag had more than ten cigarette burns." Daniel gave her a "half point" (0.05 gram) of heroin to help her out. Once Ginette got better, Daniel suggested her to make some money to buy opioids and to keep them for the next day to avoid having withdrawal symptoms again. She went squeegeeing and came back "very fast with some money." But instead of buying opioids, she got cocaine from a dealer that "always made special prices for young and beautiful girls." Daniel asked her if she saved money for opioids. Ginette got mad, yelled at him for trying to control her life and did not share her cocaine with him. The day after, as expected, Ginette woke up dopesick and "crying like a baby" begging him for some PO. He gave her a "hydro" (hydromorphone hydrochloride time-release capsule), but at that moment he decided to take his distance from her. According to Daniel, Ginette did not know how to manage her money: she "burned" most of it "on coke" and never had enough to pay for her opioid consumption. (Field note excerpt June 25, 2015)

Perception of PM, Sources and Circuits of Exchange

At the beginning of the fieldwork, the only information the research team had about PM was that approximately a third of PWUC in downtown Montreal used them (unpublished data from the COSMO cohort study data base). When the anthropologists began asking participants if they took PM, their initial response was that they did not use medication for the mentally ill. But in the same conversation, they often remembered or acknowledged that they had recently taken PM, such as clonazepam (a type of benzodiazepine) or quetiapine:

We explained to Mario, one of our closest collaborators, that the study we were conducting was about the use of PM and that we wanted to know if he took any of these drugs. Surprised, he looked at us and said in a dismissive tone that "psychopatatos" were for the "crazies" and he did not take this type of drugs. Then he made a pause and told us that he had just remembered that a couple of days ago he took a "rivo" (clonazepam) pill to alleviate a knee joint pain. Steve had the same reaction when we asked him about his PM use. By the end of the conversation he also acknowledged that in the course of the week he had taken a quetiapine pill that a friend gave him because he had problems sleeping after injecting cocaine. (Field note excerpt May 21, 2015)

As the fieldwork developed, we came to learn that the participants were not comfortable publically discussing their PM use because of the direct association of this type of drugs with mental illness. They feared to be stigmatized for having mental health problems or being diagnosed with psychiatric disorders and preferred not to talk about these issues. However, the

use of PM was more widespread than we had initially thought, and almost all participants used them regularly. Although not intending to generalize the findings, we calculated that over two thirds of participants used tranquilizers (benzodiazepines), more than half used the atypical antipsychotic quetiapine, almost a third took antidepressants; they also used other PM such as stimulants, anticonvulsants and central-acting agents, but to a lesser degree. In addition, participants attributed positive qualities such as "efficacy," "safety" and "trustable quality" to PM. As described below in detail, they appreciated how certain PM complemented the effects of street drugs.

> *Ian emphatically said that he "really love[d] benzos" because they relaxed him and made him fall asleep fast. He compared benzodiazepines with street dugs and pointed out that the quality of the former was trustable because one always knows what benzodiazepines contained and what their effects were going to be. Ian added that he "really like[d]" to take a 2mg clonazepam pill to "come back from the cocaine high"* (Field note excerpt June 4, 2015)

Around three quarters of the persons met during the fieldwork had prescriptions for one or more PM. Those who did not have prescriptions or wanted additional PM obtained them through friends or, less frequently, bought them on the street. Commercialization of PM occurred in locations already familiar to users (outside pharmacies and sites of drug use), in a relaxed atmosphere not controlled by criminal groups through violence but by small dealers or individual sellers. Many individual sellers sold PM to buy other street drugs. The place of PM within the street drug market was marginal: neither demand nor prices were high. For example, a 2mg clonazepam tablet (Rivotril®), the most popular PM pill, cost around CAN$2, and other commonly used PM such as quetiapine (Seroquel®) and even methadone did not have an established cost.

> *We met Kyle in one of the camps at Saint-Jérôme Square. He was with Tanya and Rachel. They were chatting and Kyle was painting his nails in different colours. Tanya told me*

that she brought several nail polish bottles for Kyle because she liked him and supported all his "eccentricities." Suddenly, a young guy with sun glasses arrived and began offering us clonazepam (Rivotril®) pills: "Rivo, rivo, rivo." Kyle stopped painting his nails and asked Tanya two dollars to buy a rivo. Tanya gave him the money. Kyle got a 2mg clonazepam pill, put it in his sweatshirt and left. Tanya explained to me that Kyle had gone to panhandle to pay her back the money she had just lent him. She said in a motherly voice that Kyle was "such a sweet and conscious guy" who was aware that she needed "every single cent" to pay for her own drug consumption. She also told me that the "rivo guy" was a "crack head," with a "big prescription" of clonazepam pills that he sold to buy crack. Kyle came back ten minutes later, paid Tanya her two dollars and continued painting his nails. I asked Kyle if he often bought clonazepam pills. He told me that he bought some only from time to time because he generally got benzodiazepines from friends that had prescriptions. I asked him if he buys other PM. He said that a week ago he bought a quetiapine pill from a man that use to come to the park after picking up his prescription from a nearby pharmacy. Kyle did not remember how much he paid, but he pointed out that quetiapine pills were "really cheap" and that people that sold them often accepted whatever the potential client offered for them. (Field note excerpt June 11, 2015)

Practices of PM Use

The main practice of PM use identified by the participants shows the various complementary functions that these substances fulfill in a context of polydrug use. PM were used 1) as "downers" from a cocaine high, 2) as enhancers of heroin/PO effects, 3) as reducers or suppressors of heroin/PO withdrawal symptoms, 4) to enable a different type of "trip", and 5) to treat mental and physical problems. The most common routes of PM administration employed by participants were oral and intranasal and, to a lesser degree, intravenous.

a. "Downers" from Cocaine High

The significant majority of participants took benzodiazepines and quetiapine as "downers," to counter the after-effects of a cocaine high. In the following field note excerpt, Eddie describes how he used these PM:

Eddie explained to us that when he injects "a quarter" (0.25 gram) of cocaine he reaches a state of "happiness" and "excitement" that lasts around 20 minutes. Eddie said that

> *there is "always a down after the high" in which he feels "anxious," "fearful" and "paranoid." To avoid these uncomfortable feelings, without having to inject cocaine again, he takes one or two 2 mg clonazepam pills. In other occasions, in which he injects cocaine several times and is particularly awake and excited, he prefers to swallow, snort or inject quetiapine (50 to 100 mg), to immediately fall asleep and not feel the down.* (Field note excerpt September 3, 2015)

Over a third of participants reported that when they did not have money for or wanted to stop taking cocaine, they swallowed or snorted benzodiazepines. This substance curtailed cocaine cravings or "jonesing" as stated by James:

> *James asked us to join him at a coffee shop to buy an egg sandwich. He said he felt tired and wanted to change environment for a few minutes. On the way there, he told us that years ago he worked for a big cocaine dealer and learned how to transform powder cocaine into crack. He laughed and excitedly said that he had never had as many crack rocks in his hands and he could not refrain himself from constantly smoking them. He was aware that his uncontrollable crack intake would eventually lead him to serious problems, but he could not resist the cocaine cravings. He said that fortunately: "a friend gave me an advice that saved my life…he told me to take Rivotril [clonazepam] or an Ativan [lorazepam] after my last puff [of crack] to stop jonesing and it worked! No more jonesing!"* (Field note excerpt December 10, 2015)

Over a quarter of participants also said that they took certain anti-depressants such as trazodone to be able to sleep after using cocaine:

> *To sleep at night, at the end of the day, before going to bed, I take a trazodone if I've injected a lot of cocaine.* (Gabrielle, 28-year-old female. Translated interview transcript quotation)

A minority of participants reported taking the anticonvulsant pregabalin as a downer from their cocaine use. Laurence stated taking this substance allowed her to have her cocaine "buzz" while preventing the undesirable after-effects:

> *Sometimes I do Lyricas [pregabalin], I sniff them…the pills, after I do coke. It is a downer and the other, the coke is an upper… I want Lyrica just to keep my buzz. [When]I wake up in the morning…I'm good this way, it's cool, it's quiet, I'm less anxious.* (Laurence, 48-year-old male. Translated interview transcript quotation)

b. Enhancers of Heroin or PO Effects

The majority of participants combined benzodiazepines with either heroin or PO to enhance the effects of the latter. They often took benzodiazepines orally or nasally before injecting heroin or PO:

> *Tanya introduced me to Maria, a good friend of hers who I had not met in my previous visits to Saint-Jérôme Square. Maria said jokingly that it was impossible that I had missed her because she used to do sex work in a nearby street and that she was not exactly "discrete." Tanya told me that I had to interview Maria because she took "all sorts of psychiatric pills." Maria laughed and told me that Tanya was exaggerating. Even if she had a prescription for several PM, she did not take all of them. I asked her what were the PM that she regularly took. She said that she mostly took clonazepam when doing heroin. She explained to me that before shooting heroin, she swallowed one or two 2mg pills of clonazepam to "boost" the heroin effect.* (Field note excerpt August 30, 2015)

A minority of participants also reported that sometimes they simultaneously injected benzodiazepine with heroin or PO, as Kyle described:

> *Sometimes I put a little bit of benzo [benzodiazepine] in my spoon…with morphine [heroin or PO]. This increases the effects of the morphine. It doesn't increase the effects of the benzo. I find that it increases the effects of the morphine.* (Kyle, 37-year-old male. Translated interview transcript quotation)

Over a half of participants who were in methadone replacement therapy reported co-using this substance with benzodiazepine to simulate the effects of heroin and, according to Robert, "nod":

> *When I take methadone and benzos I nod [laughs]…Nodding is when you are high on heroin. Methadone and benzos make you nod. That's why some doctors don't want to prescribe both. It makes the effect of heroin. Methadone and benzos make you high like heroin.* (Robert, 28-year-old male. Interview transcript quotation)

In addition, they reported that when they could not afford a full dose of heroin and/or wanted to reduce their intake of this substance, they took benzodiazepine. The cost of heroin is

particularly high in Montreal (0.1 gm = CA$30) and even the few participants who had stable jobs, like Laurie, did not have enough money to maintain regular use of this substance:

> *When I do heroin at night…because often…if I haven't found the money to do heroin during the day, I start being sicker and sicker. So, I want the heroin to have more effect. Then, I take a rivo before [because] this way, I'm sure the heroin will really [have] a good effect.* (Laurie, 35-year-old female. Translated interview transcript quotation)

Although less common, a minority of participants reported taking certain stimulants (methylphenidate) or central-acting agents (clonidine), used for treating ADHD and other conditions, "to boost" the effects of cocaine:

> *…Because Catapres® [clonidine]…you take it…you shoot a hit of coke and it doubles the [coke] dose.* (Mathieu, 29-year-old male. Translated interview transcript quotation)

c. Reducers/Suppressors of Heroin or PO Withdrawal Symptoms

As mentioned, the significant majority of participants regularly co-used cocaine with heroin/PO and were dependent on both substances. To suppress or reduce the withdrawal symptoms of heroin/PO, they often used benzodiazepine. In the field note excerpt, Ginette talked about a common practice among them: helping people with these disabling symptoms by sharing benzodiazepines and/or methadone with them.

> *We met Ginette in an outreach community organization, when she was picking up clean injection material. She had virtually disappeared from our field site after a fight with Daniel around drug sharing. Ginette let us know that she had fixed her differences with Daniel: "A couple of days ago, I was totally dopesick, with no strength in my body to search heroin or dilaus [hydromorphone hydrochloryde tablet]. Daniel brought me methadone and rivos and I came back to life." Ginette was excited that she and Daniel were friends again.* (Field note excerpt November 19, 2015)

Young participants also reported being advised to keep benzodiazepine pills to stave off withdrawal symptoms for when they could not get heroin or PO:

> *Usually, I get benzos for free, people just give it to me because they are not very expensive. I have friends that sell it and when they see me, they give me a couple for free.*

When I'm [dope]sick, it helps...So they give it to me and say: "Save it until you are sick." (Danielle, 23-year-old female. Interview transcript quotation)

d. "*Rivotrips*"

A minority of participants reported using benzodiazepines to do what they called "rivotrips." When they wanted to "have a break" or "detox" from the use of "hard drugs," they took several benzodiazepine pills:

Cyril, one of our close collaborators, has been hospitalized for almost five months due to life-threatening complications associated with a generalized bacterial infection. He explained that he caught some rare bacteria of unknown origin by injecting cocaine. We have been visiting Cyril regularly and in one occasion he shared with us one of his strategies to cope with his heavy drug use. He told us that when he felt "sick" from hard drugs, he went into his "little corner" and took only benzodiazepines for a day or several hours. This way, he did not have cocaine cravings and could "detox" from this substance. Then, he went to sleep and the day after he felt "refreshed, like a new person!" (Field note excerpt November 9, 2015)

Participants reported that when they did "rivotrips" they took benzodiazepine in a controlled way: not taking all the pills at the same time but in small amounts, sequentially, "like making a fire." Taken this way, benzodiazepine pills brought them another type of "buzz" that they considered relaxing and safe:

Rivo is to make a trip in its own. It's something else. It brings me into another bubble. I feel nice with it. But I don't take ten, fifteen. I'm going to take three and then one hour later I'll take two others. It is like making a fire and after one hour I put more wood to keep the fire the same. (Cyril, 51-year-old male. Interview transcript quotation)

To do rivotrips, participants kept their prescribed benzodiazepine pills for a few days and/or bought them on the street:

If I had benzos, I keep them for two-three days then I'll do a trip, a rivotrip…Sometimes I wanted to get a trip and I didn't have enough on me. I got five or six of them [in the streets] and they are not expensive: the 1 mg is one dollar, the two milligrams is two dollars. (Frédéric, 34-year-old male. Interview transcript quotation)

e. Medication of Mental and Physical Problems

The significant majority of participants used benzodiazepines, quetiapine and antidepressants to medicate mental and physical conditions. Although having mental health problems was not among the sample inclusion criteria and participants did not publically talk about these issues, in private conversations and semi-structured interviews almost all of them mentioned having sleep problems, being stressed, and/or feeling sad/depressed. Moreover, more than half reported being diagnosed by a doctor as having one or more psychiatric disorders at certain point(s) of their lives, with anxiety disorder and depression being the most frequent. Several participants used PM to alleviate their mental health problems:

> *Seroquel® is to stop the thermonuclear fusion in my brain [laughs]. It calms me down. It is also to sleep, I take it from time to time to sleep.* (Kyle, 37-year-old male. Translated interview transcript quotation)

More than half of young male participants reported taking benzodiazepines to control their anger. Several stated that their precarious and dangerous living conditions constantly triggered violent reactions. They used benzodiazepines to calm themselves down and "avoid more trouble":

> *Benzos help me not kill someone. I mean...they take away my aggression…they make me feel okay with this life and take away my aggression, which is exactly what I need.* (Henri, 32-year-old male. Interview transcript quotation)

Older participants reported often taking benzodiazepine and, in some cases, methadone as muscle relaxants to alleviate untreated physical pain:

> *When I have sciatic nerve pain. I don't feel for going to bump [panhandling] and I use that [benzodiazepine] because it helps me with my pain. It is another type of buzz: it relaxes my back, my sciatic nerve…I don't take it to be uauuuuauuuu [He imitates somebody getting high]. I take it for relaxing my back.* (Cyril, 51-year-old male. Interview transcript quotation)

The significant majority of participants took PM to treat mental and physical problems for which these drugs are commonly prescribed, but they did not follow the instructions for use.

For instance, as Léon pointed out, they took PM irregularly and in larger doses due to their co-use of street drugs:

> *I try to take drugs only on weekends [laughs]. When I work, I have a job that I like a lot, I try not to use [drugs]. But it also happens that I shoot up [cocaine] one night a week. So, I take medication to sleep [50mg quetiapine] because it helps me a lot. But instead of taking one pill, I take two or three.* (Léon, 32-year-old male. Translated interview transcript quotation)

PM Use and Risk Taking Behaviors

Participants described various risk-taking behaviours associated with their co-use of PM and street drugs, which led to overdose, HIV and HCV risk behaviors, drug dependence and accidents. The practice of combining benzodiazepines with either heroin, PO or methadone was the most frequently reported. Moreover, among those who drank alcohol, the practice of combining this substance with cocaine and benzodiazepines (and/or quetiapine) was very common. A minority of participants was aware of the overdose risks associated with these combinations and tried to avoid them:

> *Richard said that he would never mix benzodiazepines with heroin or another opioid-based drug again. The last time he did this, he woke up in the ER, tied to a stretcher. He did not remember how he got there. His friends told him afterwards that he started acting violently and then he overdosed. They had to call an ambulance that brought him to the ER.* (Field note excerpt May 12, 2015)

Nonetheless, the significant majority of participants did not consider the dangers of combining these substances. For example, Rafael said, "after doing coke and drinking all night," he took "benzos to calm down and go to sleep". When he was asked about the negative effects of mixing these substances, he did not report any, only falling asleep "too deep." Furthermore, Nancy highlighted the lack of awareness among drug users about the harmful outcomes of co-using these substances:

> *I would say that we need a warning to not mix opiates with the Rivotril®. It's dangerous and so many people have prescriptions for Rivotril® and they take opiates. I think it's so easy to OD when you mix it with opiates. I'm sure our ODs are because of this combination.* (Nancy, 42-year-old female. Interview transcript quotation)

Another type of risk-taking behaviour among the participants is related to HIV and HCV transmission. For example, more than a third of participants reported risky injection practices (sharing PO or heroin residues and sharing needles and/or injection paraphernalia) and unprotected sex with occasional partners. When asked how the co-use of PM and street drugs influenced their HIV and HCV risk-taking behaviours, some replied that benzodiazepines slowed down their "thinking," made them more "sleepy," and in Henri's words: "Not too conscious about risk, you don't give a f*ck!"

Although less frequent, participants reported developing drug dependence as an additional consequence associated with PM use, especially benzodiazepines. For example, Luka mentioned that he received a "benzo prescription" from his "methadone doctor". He began taking this substance every day. A year later, when he quit the methadone program, he was "cut off from benzos", but he was already "dependent" on this medication and as part of the withdrawal symptoms, he "started having seizures." Another consequence reported by a few participants was a higher propensity to have accidents as a result of "excessive" use of benzodiazepines, particularly while doing rivotrips:

> *It happened last summer, I took 5 [2mg clonazepam pills] I had my buzz, I was biking and I rolled in the cracks in the street. I heard "bang" and I didn't realize it was me! [laughs] …. It is like when you drink, you don't have all your faculties…I had an accident with my bike, I hurt myself!...* (Cyril, 51-year-old male. Interview transcript quotation)

Finally, it is important to highlight that the unwanted outcomes of PM use reported by participants constitute an additional stress factor in their already difficult everyday lives, thus increasing their anxiety and making them more prone to take different types of risks. As

illustrated in this field note excerpt, benzodiazepine helps Daniel to sleep, but its side effects intensify his stress:

> *Daniel has been taking more and more benzodiazepine to be able to sleep. He is stressed because in a month, the City will evict him and other participants from Saint-Jérôme Square, the park where they live. On top of that a week ago, Rocket, a close friend of him, has been stabbed to death by a drug dealer to whom Rocket's girlfriend owned money. The park is under constant surveillance and the police has been drafting its dwellers—more than usual—to interrogate them about the crime. Daniel has increased his dose of benzodiazepine and has problems waking up early and being able to do his everyday activities (e.g. panhandling to get money to buy drugs and make his living). It gets even worse when he wakes up dope sick and cannot buy heroin or PO. Thus, Daniel feels "nervous" each time he takes "benzos," but he is also afraid of not being able to sleep.* (Field note excerpt June 6, 2015)

Discussion

This study aimed to contribute to the growing literature that has begun exploring patterns of prescription drug use from a qualitative perspective (Firestone et al., 2008; Inciardi et al., 2007; Kecojevic et al., 2015; Lankenau et al., 2007, 2012a, 2012b; Rigg et al., 2010; Roy et al., 2011; Silva et al., 2013). The study focused on PM, including not only tranquilizers but also antipsychotics, antidepressants, anticonvulsants, stimulants, and other central-acting agents. Other studies carried out among drug using populations other than PWUC have found similar patterns of prescription drug misuse: benzodiazepines, PO and quetiapine were used as downers from stimulant use (Fountain et al., 1999; Inciardi et al., 2007; Kecojevic et al.; 2015, Rigg et al., 2010, Roy et al., 2012; Silva et al., 2013); benzodiazepines and/or PO as enhancers of opioid-based drugs, including methadone (Fountain et al., 1999, Iguchi et al., 1993; Lankenau et al., 2007; Lankenau et al., 2012b) and/or to curb heroin use (Lankenau et al., 2012b); prescribed stimulants to increase the effects of crystal meth (Kecojevic et al., 2015); benzodiazepines to reduce or suppress withdrawal symptoms from opioid-based drugs (Fountain et al., 1999; Gelkopf et al., 1993; Lankenau et al., 2012b; Rigg et al., 2010); and benzodiazepines, PO and/or

quetiapine to medicate sleep, emotional problems (Gelkopf et al., 1993; Iguchi et al., 1993, Lankenau et al., 2007; Lankenau et al., 2012b; Rigg et al., 2010) and/or stress related to harsh life conditions (Kecojevic et al., 2015) as well as physical pain (Lankenau et al., 2007; Lankenau et al., 2012b). In addition, some studies have suggested that drug users took benzodiazepines and other tranquilizers exclusively as low-cost alternatives to getting "high" (Iguchi et al., 1993; Rigg et al., 2010), which is comparable to our finding about "rivotrips". Nonetheless, the motives for taking benzodiazepines in controlled ways, as our participants identified, seem to point to a different practice, where the aim is mainly to "take a break" or "detox" from street drugs.

The five practices identified in our study show that PM are not only used because of their low market value, but that they fulfill specific functions (i.e. downers, enhancers, reducers/suppressors, enablers of different kind of trip and medication) within complex practices of polydrug use. In a context dominated by illicit drugs and PO, these functions could be easily overlooked due to participants' initial resistance to talk about their PM use. The stigma associated with mental illness and by extension to those that use PM among PWUC was a barrier faced by this study and it is a topic that deserves further exploration. However, our use of the ethnographic approach allowed us to identify PM as silent actors that play central roles in participants' consumption management and maintenance of their polysubstance use.

Ours is one of the few qualitative studies that examine misuse of quetiapine among drug users (Incardi et al., 2007; Kecojevic et al., 2015; Malekshahi, Tioleco, Ahmed, Campbell & Haller, 2015). Since quetiapine obtained market approval in 1997, there has been an increasing number of case reports suggesting it has a misuse/abuse potential (Haridas et al., 2010; Hussain et al., 2005; Keltner & Vance, 2008; Morin, 2007; Murphy, Bailey, Stone & Wirshing, 2008;

Pierre, Shnayder, Wirshing & Wirshing, 2004; Pinta & Taylor, 2007; Reeves & Brister, 2007; Waters & Joshi, 2007). Several reports have emphasized that individuals in institutional settings (psychiatric units and prisons) show drug-seeking behaviours or mimic psychiatric symptoms to obtain quetiapine, and use alternative routes to administer it. More recently, studies have shown that the misuse of quetiapine is also widespread in community-based populations (Mattson, Albright, Yoon, & Council, 2015), which is consistent with our findings among street-drug users in downtown Montreal. Our research contributes to this literature by examining motives of misusing quetiapine within a logic of polysubstance use. We argue that the availability of quetiapine, users' mostly positive perceptions of it, as well as the ways in which it complements the use of certain street drugs are central elements for understanding its misuse.

Our results about practices of PM use in a population of polydrug users could have implications for clinicians' prescription practices. Of note, over three quarters of participants had prescriptions for PM, and some of the most frequently prescribed PM were benzodiazepines and quetiapine. Co-use of benzodiazepines and certain street drugs increases several risks, especially overdose. Our findings further support the need to assess the patient's history of drug use before prescribing potentially addictive PM such as benzodiazepines. Moreover, it is important for clinicians to take into consideration how patients who are polydrug consumers could potentially use PM as clinicians can employ this knowledge to address potential harms. It is also relevant to raise awareness within the medical community of the abuse/misuse potential of certain PM considered "safe," non-addictive therapeutic alternatives. For instance, quetiapine has been widely prescribed for drug users (and other populations) because of the alleged absence of addiction potential. Our study shows that within practices of polydrug use, quetiapine plays unexpected roles (e.g. "downer" from cocaine "high") and its misuse may have adverse

consequences (Ngo, Ciranni & Olson, 2008; Heilbronn, Lloyd, Mcelwee, Eade & Lubman, 2013). This information should notably be taken into account when choosing between the various therapeutic options to treat mental health disorders in this specific population.

Our findings about practices of PM use could also help public health authorities to tailor interventions to the needs of PWUC. The functions that PM fulfill and the positive view of them could result in participants underestimating the potential risks associated with co-use of these substances with street drugs. For instance, it was surprising that several participants with vast experiential knowledge about drug interactions did not report the risks of overdose linked to those combinations. It is crucially important to create more awareness about the various consequences of PM use in drug using populations. As our participants noted, warnings about dangerous drug combinations as well as accessible information about drug interactions could be a first preventive step. Moreover, harm reduction counselling interventions focused on PM use in contexts of polydrug consumption could help to disseminate information about these overdose risks and complement already existing interventions.

Our result concerning the ways in which participants use PM to medicate anxiety, depression, insomnia, anger, etc. highlights unmet needs for evidence-based treatments and psychological interventions. On the one hand, acceptability of non-pharmacological interventions may be a challenge in certain PWUC who prefer pharmacological treatment in such situations. This study suggests that strategies still need to be fine-tuned to increase the use of evidence-based algorithm for the choice of appropriate and safe medication. On the other hand, a significant number of participants expressed a desire to access psychological care. For instance, after the violent murder of a well-known drug user, some of his friends circulated a petition to get a part-time psychologist in one of the outreach community organizations. They asserted that

their stressful life conditions had taken a toll on their mental health and they needed some kind of support other than PM. This finding suggests that increased availability of psychological care to address untreated ongoing mental health problems would greatly contribute to this population's wellbeing.

Certain strengths and limits of the study should be underlined. Due to its qualitative design, the sample studied is not meant to be representative of all people who co-use cocaine and PM. However, our detailed description of the research context should help to appraise the transferability of our findings. The study was based on participant observations, informal conversations and semi-structured interviews, so social desirability could have been induced. Nonetheless, the anthropologists' non-judgmental attitudes while conducting research helped to control this potential bias. Moreover, the use of multiple qualitative methods to triangulate and cross-check information as well as the interdisciplinary iterative discussions of the research team should ensure the study's scientific validity. Finally, to our knowledge this is the first study that has used participant observation to explore the new trend of misusing the PM quetiapine and its problematic outcomes. Although its generalizability is limited, the study emphasizes the potential for this method to contribute to understanding emerging public health concerns.

Conclusion

The practices of PM use identified in this study show the various complementary functions that these substances fulfill (downers, enhancers, reducers/suppressors, enablers of relaxing and detoxing trips, as well as medication) in the context of polydrug consumption. These practices pose various risks among the studied population, including overdose, HIV and HCV transmission, drug dependence and accidents. The results raise awareness about the

emerging trend of misusing supposedly non-addictive substances like quetiapine. Results also indicate the need for clinicians to assess clients' substance use history when prescribing PM. The findings also underline certain unmet service needs, such as overdose prevention, with a focus on polydrug use and evidence-based interventions such as psychological treatments to address long-term untreated mental health problems. Overall, this study aims to highlight the value of qualitative ethnographic methods to identify public health problems that could guide future research and interventions in vulnerable drug user populations.

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Conflict of interest statement

There are no conflicts of interest to declare.

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