Differences between co-users of cocaine and crack among Canadian illicit opioid users

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ZORA URL: https://doi.org/10.5167/uzh-96409

Originally published at:
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Keywords
Cocaine, crack, opioids, polydrug use, Canada

Introduction
As in most other Western countries, street drug use – dominated by an estimated population of 100,000 injection drug users (IDUs) (Federal/Provincial/Territorial Committee on Injection Drug Use, 2001; Remis et al., 1998) – is associated with considerable harms in Canada. These include approximately 1,000 overdose deaths per year, a high proportion of HCV and HIV infections, and a substantive social cost burden (primarily crime-related) associated with street drug use (Fischer, Rehm, & Blitz-Miller, 2000b; Fischer et al., 2005a; CCENDU, 2003; Wall et al. 2001).

Although the evolution of street drug use in Canada is strongly associated with injection heroin use, it is evident that current street drug users are increasingly characterized by diverse forms of both poly- and non-injection
substance use (Fischer et al., 2000a). While poly-substance use profiles differ considerably across Canada, cocaine and crack use have been shown to play an increasingly role in street drug use populations (Leri, Bruneau, & Stewart, 2003; Bourgois & Bruneau, 2000; Haydon & Fischer, 2005a). In addition to mere epidemiological descriptions, there is also growing evidence that the co-consumption of cocaine and/or crack is often associated with distinct patterns of risk behaviors or consequences (Patrick et al., 2001; Bourgois et al., 2000; Palepu et al., 1999). However, there are few interventions offered specifically for street users of cocaine or crack; on the contrary, the co-use of these substances often forms a barrier to accessing or benefiting from interventions (i.e., treatment) (Fischer et al., 2000a).

In this paper, we have utilized the opportunity of an ongoing cohort of illicit opioid and other drug users in five Canadian cities (»OPICAN«) to explore the characteristics of two subpopulations of that multi-city study population, namely those using cocaine versus those using crack in addition to illicit opioids. The aim is to examine potential differences between those distinct co-use populations related to their drugs of choice, also to point out needs for further analysis as well as to highlight some considerations for interventions.

Background
Cocaine and crack use in drug user population

Several studies focusing on IDUs in the Canadian context over the past years have documented the high prevalence of both cocaine and crack use, through various methods of administration (Fischer et al., 2005a; Strathdee et al., 1997a; CCENDU, 2003; Cornish & O’Brien, 1996). The increasing cooccurrence especially of opioid use, and cocaine or crack use, in street drug user populations needs to be understood in consideration of the fact that those two drug categories feature unique – and desirable – interactive pharmacological effects, likely fuelling their increasingly prevalent use in various combinations (Leri et al., 2003). For example, cocaine was already the main drug injected among two thirds of the Vancouver IDU Study (»VIDUS«) cohort in 1996 (Strathdee et al., 1997b). Similarly, in the St. Luc IDU cohort in Montreal (Leri, Stewart, Tremblay, & Bruneau, 2004), 47 % (n = 614) reported the use of injected cocaine and 15 % (n = 189) reported the use of combined heroin and cocaine by injection in the month preceding the interview. A recent study of IDUs in four Canadian cities showed that the majority of participants were involved in both cocaine and crack use, although use patterns were locally quite diverse (I-Track, 2004). Several North American treatment studies have documented the high cocaine and/or crack use involvement in persons entering into opioid substitution treatment (Grella, Anglin, & Wugalter, 1997; Fischer, Rehm, Kim, & Kirst, 2005; Villano, Rosenblum, Magura, & Fong, 2002).

Risks and harms associated with cocaine and crack use

Research evidence suggests that street drug users involved with cocaine or crack respectively are featuring possibly distinct risk characteristics or harm outcomes. For example, IDUs injecting cocaine display higher frequencies of injecting than non-cocaine injectors, often occurring in the form of high-risk injection »binges« (Bourgois et al., 2000). In the VIDUS cohort, cocaine injection has been identified as a predictor of both HIV and HCV prevalence (Patrick et al., 1997; Spittal et al., 2003). Reviews of overdose mortality among IDUs have identified (combination) drug use – specifically involving opioids and cocaine – as a major determinant of overdose fatality (O’Driscoll et al., 2001; Coffin et al., 2003; Darke & Hall, 2003). During the massive spike of fatal drug overdose incidents in British Columbia in the mid-1990s, cocaine use had been present in a disproportionate number of overdose incidents (Fischer et al., 2004). Street crack use has also been associated with several distinct risks and consequences (Haydon & Fischer, 2005a; Cornish et al., 1996; Hunter, Donoghoe, & Stimson, 1995). Crack-involved street drug users may have to be understood more in terms of a subculture in the wider sense (i.e., as defined beyond mere drug use indicators), distinctly defined by an extreme degree of social marginalization that is associated with other problem indicators (Haydon, Chorny, & Fischer, 2005b). This marginalization is expressed, for example, in their high involvement in sex trade activities for income generation purposes, often involving high-risk sexual behaviors or sex-for-crack exchanges (Inciardi, 1993; Inciardi, 1995; Inciardi & Suratt, 2001; Logan & Leukefeld, 2000; Booth, Kwiatkowski, & Chitwood, 2000). Furthermore, crack smokers are more likely to be inadequately housed than non-crack drug users, and experience substantial barriers keeping them from accessing health and social services. Finally, crack users typically indicate a much more intensive involvement with crime and the criminal justice system (Johnson, Natarajan, Dunlap, & El moghazy, 1994). Grella and colleagues (Grella, Anglin, Wugalter, Rawson, & Hasson, 1994), in a study of 409 high risk heroin addicts in the United States, found that criminal activity was substantially higher in crack than in non-crack co-users in this population. There is some evidence of distinct health risks and consequences for crack users, for example, that they display overall worse health status than other drug users (Haydon et al., 2005b; Cherubin & Sapira, 1993; Erickson, Butters, McGillicuddy, & Hallgren, 2000; Verthein, Haasen, Prinzleve, Degkwitz & Krausz, 2001). Several studies have shown crack use to be an independent predictor of HCV infection status although there is no clarity at this point as to whether crack use (via paraphernalia sharing) itself functions as a causal pathway for HCV transmission, or rather is a »proxy« of other ele-
Interventions targeting crack users specifically had been fully absent until very recently. Over the past couple of years, community-based initiatives in some Canadian cities have begun to distribute so-called «safer crack use kits», providing crack users with safer use materials as well as providing service referrals (Haydon et al., 2005a). The «crack kit» initiatives are rather controversial, un-evaluated and receive little to no public (funding) support to date. Advocates have called for the Vancouver SIF – akin to European models – to add a »safer inhalation« room to the facility, yet such proposals to date have been rejected (Haydon et al., 2005b).

Methods

The OPICAN cohort is one component of a larger research program on »Illicit Opiate Addiction Research, Treatment and Policy«, the purpose of which is to monitor key social, health and drug use characteristics of illicit opioid and other drug users across Canada in the five cities of Vancouver, Edmonton, Toronto, Montreal and Quebec City. The cohort baseline (N = 677) recruited participants by community- and outreach-based snowball methods between March and December 2002 who at recruitment a) used illicit opioids regularly and b) were not in any form of treatment in the past six months (see Fischer et al., 2005, for details of study methodology). Study applicants underwent a (toll-free) telephone screener; if eligible, subjects provided informed consent, and were offered service referrals if required. The uniform study protocol across sites consisted of an interviewer-administered questionnaire on social, health, and drug use items, oral fluid immunoassay screen for infectious disease antibodies (HIV, hepatitis C, hepatitis B), and short standardized psychiatric assessments. Data were collected anonymously; subjects received $20 compensation for baseline assessment, and have been followed up subsequently. The study received ethics approval (REB) in all participating study sites (Fischer et al., 2005a).

Descriptive analyses (i.e., prevalence of drugs used in sample and by city) were conducted for the baseline sample. For the purpose of analyzing differences of selected factors between cocaine or crack involved cohort participants respectively, the following sub-samples were selected: a) those who reported cocaine use (but no crack) in the last 30 days (n = 171); b) those who reported crack use (but no cocaine) in the last 30 days (n = 175) in addition to their opioid use. Subjects reporting the use of both cocaine and crack were not included in the present analysis in order to test for differences of a number of factors between the two selected drug combination groups, included in the analyses as a dichotomous variable (coded 0 for crack co-users only and 1 for cocaine co-users only). Bivariate tests for significant differences were assessed by means of cross-tabulations (chi-square statistic) and mean comparisons (t-test statistic).

Results

The OPICAN study sample was characterized by a high degree of poly-drug use. In terms of opioid use, about two thirds of the sample reported heroin use, although sizable minorities reported the use of other opioids (e.g., Dilaudid, Tylenol 3 or 4, street methadone). About half the study sample also reported the use of cocaine or crack (each 55%). In addition, both the use of alcohol and the use of benzodiazepines were reported by a sizable proportion of the study population.

Table 1: Drug use prevalence (last 30 days) in the OPICAN baseline sample (N = 677)

<table>
<thead>
<tr>
<th>Drug Used</th>
<th>Percent (and no.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>64.4% (436)</td>
</tr>
<tr>
<td>Cocaine</td>
<td>54.7% (370)</td>
</tr>
<tr>
<td>Crack</td>
<td>54.8% (371)</td>
</tr>
<tr>
<td>Demerol</td>
<td>46.5% (31)</td>
</tr>
<tr>
<td>Dilaudid</td>
<td>33.1% (224)</td>
</tr>
<tr>
<td>Heroin</td>
<td>67.2% (455)</td>
</tr>
<tr>
<td>Methadone (from street)</td>
<td>21.3% (144)</td>
</tr>
<tr>
<td>Tylenol 3 or 4</td>
<td>32.5% (220)</td>
</tr>
<tr>
<td>Valium</td>
<td>36.2% (245)</td>
</tr>
</tbody>
</table>
As already demonstrated elsewhere (Fischer et al., 2005a), both the use of the various opioids as well as cocaine and crack differed substantially between study sites (table 2). While the use of heroin, for example, varied considerably across the cities, similarly stark local differences were evident for cocaine and crack use. Cocaine use was highly prevalent in the two Quebec sites (Quebec City and Montreal), yet only reported by a sample minority in the cities of Vancouver, Toronto and Edmonton. For crack use, the prevalence distribution was the opposite, with high prevalence in the three anglophone cities, and low prevalence in Montreal and Quebec City.

In terms of route of administration of cocaine and crack in the OPICAN sample, about three in four users (75.2%) reported cocaine use by injecting (no table shown). As also shown elsewhere, cocaine injection in a large number of instances occurs in combination with other drugs (typically opioids, i.e., so-called «speedball»; Fischer et al., 2005a). The vast majority (87.2%) of those who also used crack used the drug by inhaled (smoked) route of administration.

When comparing cocaine and crack co-using sub-populations of illicit opioid users in OPICAN, key differences were observed when comparing the two groups on specific indicators. On socio-economic indicators (table 3), the cocaine co-users featured a significantly higher proportion of persons who were permanently housed and who reported some form of paid work or legal income (paid work (legal) was marginally significant (see table 3 for details)). Conversely, the crack co-user sub-population reported larger proportions of persons who generated income through drug dealing or sex work (sex work was marginally significant (see table 3 for details)). However, in both groups about the same proportion received some form of social support income. The crack co-user group furthermore reported a much larger prevalence of cases who had been arrested for criminal activity or been to detention within the past year. While the crack user group was somewhat older on average compared to the cocaine group, no difference was found regarding the distribution of gender.

On key health risk or status characteristics (table 4), crack co-users indicated a higher degree of physical health problems over the cocaine co-user group; conversely, the cocaine sub-sample reported almost double the prevalence of depressive symptoms (as measured by CIDI-SF). While this group reported a significantly higher current proportion of drug injectors, this difference did not hold for lifetime prevalence of injecting between the two groups. There were also no significant differences in HIV or HCV (antibody) status between the two groups.

Discussion

In the above, we have explored differences in socio-economic and health-related indicators between two sub-samples of co-substance using participants in a Canadian multi-city cohort of illicit opioid users, namely 1) those who reported co-use of cocaine (but exclusive of crack), and 2) those who reported co-use of crack (but exclusive of cocaine) in addition to their opioid (and other) drug use. The main purpose of these analyses has been to tentatively investigate potential differences between those two sub-popula-
tions, also as a basis for suggestions for further inquiries as well as implications for interventions.

First, our overall observations with regards to cocaine and crack co-use within the OPICAN cohort demonstrated that the prevalence of the co-use of these drugs among illicit opioid users differed considerably between our five study sites. This points to the fact that the co-use of these substances is likely anchored within a wider social ecology of local drug cultures and markets that need to be understood for systematic causal analyses (Bourgois, 1995; Kemmesies, 1997; Kerr et al., 2005), also implying that one may have to limit assumptions of free «choice» by consumers resulting in the substance use patterns observed. On first glance, it is quite striking that cocaine co-use is so disproportionately more prevalent in Montreal and Quebec City than in the other sites. This may point to locally stratified or determined drug cultures, yet we can neither meaningfully speculate nor offer empirical explanations on this issue of site influences; this needs to be a theme of future analyses. What these data demonstrate, however, is that drug use profiles are locally distinct; this also generally implies that interventions – be it prevention or treatment – need to be shaped and informed on the basis of local needs, directly responding to the concretely existing circumstances.

We also note that the co-use of cocaine and crack within the OPICAN cohort forms part of a rather diverse picture of poly-drug use, predominantly characterized by the use of various opioids, crack and/or cocaine, but also other substances, including benzodiazepines, alcohol and cannabis. Our present analysis did not include any focus on the association of different drug types due to space limitations. However, a separate analysis in OPICAN exploring possibly distinct clusters of drugs used (by «latent class analysis») suggested that the observed phenomena of (oral) crack use predominately associated with non-injected (smoked) heroin use, and (injected) cocaine use was predominantly associated with injected heroin use (Monga et al., 2005). Even a careful interpretation of these data thus seems to suggest that the use of specific drugs (and specific forms of administration) cannot fully be understood in isolation, yet requires exploration in the interactive context of other drugs used (see also Leri et al., 2003).

When looking at the two sub-samples under examination, we have detected several preliminary indicators of differences associated with the phenomenon of cocaine versus crack co-use. The first striking difference is that on more or less all the indicators of social deviance or marginalization (i.e., non-permanent housing, illegal income, arrests and detention), the population of crack co-users sets itself negatively apart from the cocaine co-users. These exploratory findings appear to support the variedly illustrated hypothesis that crack users – specifically in contemporary North American contexts – constitute a distinct sub-group of extremely marginalized and socially dis-integrated street drug users, thus a population of the «marginalized among the marginalized» (Haydon et al., 2005b; Williams, 1992). This status is, among other ways, expressed through the fact that crack users in many instances appear to lack even the most basic qualities of social stability or support, and are highly involved in criminal activity, including sex work (Inciardi et al., 2001; Bourgois & Dunlap, 1993). While these characteristics are interesting from a sub-cultural studies point of view, they are equally relevant for public health or interventions: It has been demonstrated that social marginalization can be strongly associated with various key forms of drug use related harms, for example, infectious disease transmission risks, (fatal and non-fatal) overdose, health care access and utilization, etc. (Patrick et al., 2001; Palepu et al., 1999; Fischer et al., 2004a; O’Driscoll et al., 2001). These insights pose challenges for interventions, in that approaches that focus on the use of crack alone may be too narrow or insufficient. Rather, targeted interventions for crack use may require, as one priority, measures that aim to reduce the extreme degree of marginalization (including criminal involvement, sex work, homelessness, etc.) among crack users. One main benefit of «safer crack kit» initiatives may thus be their function as a «contact vehicle» for service providers to connect with crack users, and link them with social and health service programs (Haydon et al., 2005a). It seems inevitable that such anti-marginalization efforts become integral components of crack use interventions, especially in cities where crack use is highly prevalent.

Given that the phenomenon of cocaine co-use observed in the OPICAN cohort occurred predominantly by injection while crack was used predominantly in oral (smoked) form, it is further interesting to note that the (exclusive) co-involvement with one or the other substance further delineated differences between the two groups in terms of overall current routes of drug (beyond cocaine or crack) administration. In other words, co-users of cocaine were more likely to be current drug injectors, whereas co-users of crack were more likely to be current drug non-injectors in our study. This may point to the possibility that drug use profiles may in fact be strongly influenced by (cultural) dynamics principally linked to route of administration (McBride, Pates, Arnold, & Ball, 2001; Giddings, Christo, & Davy, 2003), an issue that calls for further systematic investigation as this may also have high relevance for secondary prevention specifically considering injection risks and behaviors. At the same time, our study samples indicated no differences between the two analysis groups in terms of lifetime injection history, suggesting that these behavioral differences may be in flux and contingent on temporary and/or local influences (bearing more relevance for preven-
This may explain the fact that the two sub-samples indicated no differences in HIV or HCV status, although evidence suggests that oral crack use may pose an independent risk factor for HCV infection status within populations of IDUs (Thorpe et al., 2000; Tortu et al., 2004).

One detail standing out is the starkly higher prevalence of depressive symptoms among the cocaine co-user group. While the disproportionately elevated level of mental health problem symptoms among illicit substance users is well documented (Krausz, Degkwitz, Kuhne, & Verthein, 1998; Frei & Rehm, 2002), it is not immediately evident why such pronounced differences in depression symptoms were observed between the cocaine and crack co-user groups. One possible explanation – following Khantzian’s self-medication hypothesis (Khantzian, 1997; Krausz et al., 1998) – may be that cocaine specifically may be a more effective and thus more desired drug use response to the experience of depression symptoms among users. While these interaction dynamics require further inquiry, the above observations have important implications for interventions. It seems imperative that targeted interventions for this group respond to these specific circumstances and needs of co-morbid cocaine co-users. While true co-morbidity interventions at this point are mostly limited to scarce (institutional) co-morbidity treatment programs (Charney, Parherakis, & Gill, 2001; Brady & Malcolm, 2004), there seems to be a substantive need to think about the implementation low-threshold frontline or outreach (‘harm reduction’) interventions aiming at the co-occurrence of drug use and depression in consideration of this group of co-morbid cocaine co-users, especially since cocaine co-users also displayed an elevated level of injection risks. Such interventions may utilize both models of brief assessments and interventions used for depression in other areas.

As stated above, the present study has been exploratory, and has some key limitations. First, our sub-populations examined for the purpose of this analysis were selective – albeit empirical – ‘ideal-types’ of drug user groups within the larger OPICAN cohort. In other words, we limited our exploratory analysis to the ‘pure’ co-users of cocaine versus crack, while a substantial number of OPICAN subjects were users of none or both (yet not considered in our analyses). Our analyses have also been limited to a select catalogue of variables, explored by bi-variate analysis. However, this approach was justified by the exploratory purpose and nature of this paper, which should be continued elsewhere by appropriate methods (e.g., multi-variate analysis).

Furthermore, most of the data used in our analyses has been based on self-report (including sensitive issues, i.e. sex work, criminal activity), though studies have shown the high validity of such data obtained from illicit drug user samples (Harrison, 1995).

Overall, we have illustrated that both crack and cocaine co-use are primary components of the diversified poly-drug use realities involving opioids and other drugs within street drug use populations in North America (see also Fischer et al., 2000a). Our study has provided preliminary evidence that co-users of cocaine and crack may be part of rather distinct groups, as described by key characteristics and outcomes relevant for public health; given these tentative correlations, more systematic investigation of these differences and the causal factors behind them – especially focusing on the processes of choice of drugs, the role of drug cultures and the link between depression and cocaine use – are called for as they may offer crucial evidence for targeted interventions.

Acknowledgements

The authors acknowledge funding from the CIHR for the IHTR »Illicit Opiate Addiction Research, Treatment and Policy«; Dr. Fischer also acknowledges funding support from a CIHR »New Investigator« award. The authors would like to thank the OPICAN investigators and research team members as well as study participants for their contributions to the study.

Conclusions/Suggestions for Policy and Practice

- Cocaine and crack co-use are highly prevalent elements in today’s poly-drug use realities of street drug use populations (e.g., illicit opioid users) in North American cities
- Co-use of cocaine and crack occur locally differentiated, as well as they appear to be associated with distinct risk behaviors and outcomes
- For crack co-users, a main defining characteristic is an extreme degree of social marginalization (e.g., absence of permanent housing, high crime involvement), which appears associated with health and drug use related risks
- Prevention and treatment interventions need to be targeted and to account for polydrug use realities including cocaine and crack co-use and offer comprehensive services which do not exclude or penalize for such behaviors, as well as interventions targeted specifically at these risk populations
- Targeted interventions should include measures to tackle the circumstances of extreme marginalisation in crack co-users, while frontline interventions for the high prevalence of depression are required for cocaine co-users.

References


**THEMENSCHWERPUNKT**

**Fischer et al. | Kokain und Crack Gebrauch bei kanadischen Opioid-Konsumenten**

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Eingereicht: 05.04.2005

Angenommen: 12.07.2005