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The American Journal of Drug and Alcohol Abuse, hereby notifies its readers that the article above was published with multiple errors and consequently its PubMed record must be considered incorrect. The errors have been corrected. The revised article has been reprinted below.

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Risks Surrounding Drug Trade Involvement Among Street-Involved Youth

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Abstract: Background: Street-involved youth have been shown to be involved in the street-level illicit drug trade in a number of jurisdictions, though little is known about risk factors and sequelae of this behavior. The present study was therefore conducted to investigate factors associated with the street-level drug trade involvement among street-based youth. Methods: We used logistic regression to examine factors associated with drug dealing among participants in the At-Risk Youth Study in Vancouver, Canada. We also examined motivations for drug trade involvement and types of drugs sold by participants. Results: Overall, 529 street-involved youth were followed during the study period, of whom 307 (58.0%) reported having been involved in the drug trade in the last six months. In a logistic regression analysis, crack cocaine use (Adjusted Odds Ratio [AOR] = 1.84, 95% CI: 1.28–2.67), homelessness (AOR = 1.58, 95% CI: 1.04-2.40), and self-reported police assault (AOR = 1.85, 95% CI: 1.14-3.00) were independently associated with drug dealing among cohort participants. Among participants who reported drug dealing, 263 (85.6%) individuals stated that the main reason that they sold drugs was to pay for their personal drug use. *Conclusions*: In our setting, street-involved youth implicated in the drug trade are characterized by drug-related and sociodemographic vulnerabilities. These individuals also appear to be motivated by drug dependence and report elevated levels of physical confrontation with police. Our findings have immediate implications for drug strategies targeting street-level drug dealing.

Keywords: Crack, drug trade, enforcement, homelessness, police, street youth

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BACKGROUND

It is generally accepted that there are approximately 1 million street-involved youth in the United States (1, 2), and approximately 150,000 such youth living on Canadian streets (3). No reliable worldwide estimates exist, though a 1993 report by UNICEF estimated that 100 million youth lived or worked on the street, including 40 million street-involved youth in Latin America, 25 to 30 million in Asia, 20 million in Europe, and over 10 million in Africa (4). While such population estimates are unreliable and difficult to produce, the many health-related harms for which street-involved youth populations are at high risk have been well described. These include high levels of injection and non-injection drug use (5–7), infectious disease transmission (8, 9), and involvement in the sex trade (10, 11). The presence of street-involved youth in a number of urban centres across the world also contributes to public disorder on city streets and may have a negative effect on the perceived safety of those living in affected communities (12).

The primary response to street-level illicit drug trade activity continues to be the application of street-based law enforcement (13–15). In Vancouver, where a large open-air illicit drug market exists in the city's Downtown Eastside neighbourhood, targeting of street disorder and street-level drug dealing has increased as the city prepares to host the 2010 Summer Olympic Games (15, 16). Concurrently, Canada's federal government has released a National Anti-Drug Strategy that places a renewed emphasis on the incarceration of those convicted of drug crimes and on the incarceration of youth in particular (17–19). This approach to illicit drug policy closely mirrors that of the United States (20). In Europe, while formal support for harm reduction exists through governing bodies such as the European Council and in specific European countries, the majority of resources allocated to combating illicit drug-related harm are nevertheless directed towards enforcement (21).

Despite the massive resources allocated towards the targeting of streetbased illicit drug dealers in a variety of sectors, few scientific studies have sought to characterize these individuals. In particular, data regarding the roles, associated behaviors and sociodemographic situation of street-involved youth implicated in the illicit drug trade are lacking. We therefore sought to characterize the prevalence of, and factors associated with, illicit drug trade involvement among a cohort of street-involved youth.

METHODS

Data for these analyses were collected through the At-Risk Youth Study (ARYS) in Vancouver, Canada (7). At-risk youth are recruited through street outreach efforts and self-referral. We defined youth as individuals between the ages

of 14 and 26, in line with previous epidemiologic studies of illicit drug use among youth in a variety of settings (6, 22–24) and with the World Health Organization definition for youth. To be eligible, study participants must also report using drugs other than marijuana in the last 30 days. At baseline and semi-annually, study participants complete an interviewer-administered questionnaire and provide blood samples for diagnostic testing. The questionnaire solicits demographic data as well as information concerning participants' drug use and other behavioral and economic data (including data regarding history of sexual and physical abuse, income sources, housing situation, incarceration experiences, involvement in the sex trade, and involvement in the drug trade), much of which is related specifically to experiences in the six months prior to the completion of the questionnaire. The study has been approved by the University of British Columbia/Providence Health Care Ethics Review Board, and all study participants provide written consent prior to enrolment.

Data obtained from participants interviewed between September 1, 2005 and July 31, 2007 were evaluated in the present study. For the present analysis, drug dealing was defined as receiving any money from selling drugs in the previous six months. Sociodemographic and drug using characteristics considered in these analyses were informed by previous investigations of street-involved youth in Vancouver (7, 25) and included: age, gender, country of birth (i.e., Canada vs. all others), experiences living in orphanages or foster homes, history of sexual or physical abuse, crystal methamphetamine use, injection cocaine use, injection heroin use, crack cocaine use, requiring or providing help injecting, injecting in public, injecting in a shooting gallery (i.e., an unsanctioned semipublic area in which illicit drugs are consumed), residency in the downtown eastside, homelessness, involvement in the sex trade, and self-reported police assault. All behavioral and drug use variables are identical to prior reports (7, 25, 26) and refer to behaviors in the previous six months. Participants who reported drug dealing were asked what types of drugs they sold, why they sold drugs and what specific role they played in the illicit drug trade. Finally, participants were asked what sources of income they would eliminate if they did not need money to spend on personal drug use and responses stating that drug dealing would be eliminated were recorded.

Univariate statistics were applied to determine factors associated with drug dealing in the previous six months. Categorical and explanatory variables were analyzed using Pearson's X^2 , normally distributed continuous variables were analyzed using t-tests for independent samples, and skewed continuous variables were analyzed using Mann-Whitney U tests. Variables found to be associated with the outcome of interest at $p \leq .05$ were then considered in a fixed logistic regression model. All statistical analyses were performed using SAS software version 9.1 (SAS, Cary, NC).

RESULTS

Overall, 529 street-involved youth were seen during the study period among whom 371 (70.1%) were male, 2.85% were HIV-positive, and 12.84% were HCV-positive. The average age of participants was 22.0 years old (Interquartile Range: 19.9–23.9). Overall, 307 (58.0%) reported drug dealing in the last six months.

As shown in Table 1, in univariate analyses, factors positively associated with drug dealing included: injection cocaine use (Odds Ratio [OR] 2.04, 95% Confidence Interval [CI]: 1.07-3.87); crack cocaine use (OR = 2.12, 95% CI: 1.49-3.02); providing help injecting (OR: 1.72, 95% CI: 1.06-2.79);

Drug dealing				
Characteristic*	No (%)	Yes (%)	Odds ratio (95% CI) †	p value
Injection cocaine use				
No	208 (93.7)	270 (87.9)		
Yes	14 (6.3)	37 (12.1)	2.04 (1.07-3.87)	.027
Crack cocaine use				
No	118 (53.2)	107 (34.9)		
Yes	104 (46.8)	200 (65.1)	2.12 (1.49-3.02)	<.001
Providing help injecting	5			
No	194 (87.4)	246 (80.1)		
Yes	28 (12.6)	61 (19.9)	1.72 (1.05-2.79)	.028
Injecting in public				
No	181 (81.5)	225 (73.3)		
Yes	41 (18.5)	82 (26.7)	1.61 (1.05-2.46)	.027
Homelessness				
No	66 (29.7)	59 (19.2)		
Yes	156 (70.3)	248 (80.8)	1.78 (1.19-2.67)	.005
Sex trade involvement				
No	204 (91.9)	265 (86.3)		
Yes	18 (8.1)	42 (13.7)	1.80 (1.00-3.21)	.046
Self-reported police ass	ault			
No	193 (86.9)	231 (75.2)		
Yes	29 (13.1)	76 (24.8)	2.19 (1.37-3.50)	<.001

Table 1. Characteristics associated with drug dealing use among street involved youth (n = 529)

*All variables refer to activities in the prior six months.

 † CI = Confidence Interval.

Note: Variables that did not reach significance in univariate analysis included: age, gender, country of birth, ethnicity, having lived in an orphanage or foster home, history of physical or sexual abuse, crystal methamphetamine use, injection heroin use, requiring help injecting, shooting gallery use, and residency in the downtown eastside.

Characteristic*	Adjusted odds ratio (95% CI) †	p value
Crack cocaine use		
Yes. vs. No	1.84 (1.28–2.67)	.001
Homelessness		
Yes. vs. No	1.58 (1.04–2.40)	.031
Self-reported police assault		
Yes vs. No	1.85 (1.14–3.00)	.013

Table 2. Multivariate logistic regression analysis of factors associated with drug trade involvement (n = 529)

*All variables refer to behavior in the prior six months.

 $^{\dagger}CI = Confidence Interval.$

Note: Model was adjusted for all variables found to be associated with drug trade involvement in univariate analysis at $p \leq .05$.

injecting in public (OR: 1.61, 95% CI: 1.05–2.45); homelessness (OR: 1.78, 95% CI: 1.19–2.66); involvement in the sex trade (OR: 1.80, 95% CI: 1.00–3.21); and having reported police assault (OR: 2.19, 95% CI: 1.37–3.50). We found no significant associations between drug dealing and age, gender, country of birth, experiences living in orphanages or foster homes, history of sexual or physical abuse, crystal methamphetamine use, injection heroin use, requiring help injecting, injecting in a shooting gallery and residency in the downtown eastside.

As shown in Table 2, in a logistic regression analysis, crack cocaine use (Adjusted Odds Ratio [AOR] = 1.84, 95% CI: 1.28-2.67), homelessness (AOR = 1.58, 95% CI: 1.04-2.40), and having reported police assault (AOR = 1.85, 95% CI: 1.14-3.00) were all significantly associated with drug dealing among cohort participants.

Of those 307 participants who reported drug dealing, 263 individuals (85.6%) stated that the main reason they sold drugs was to pay for their personal drug use. A further 22 individuals (7.2%) reported that they sold drugs to pay for food. As shown in Table 3, the largest proportion of participants reported selling marijuana (38.1%) or crack cocaine (35.2%), while other illicit drugs reported sold included crystal methamphetamine (24.1%), cocaine (16.9%), ecstasy (12.4%), heroin (12.1%), magic mushrooms (5.5%), and LSD (4.6%).

Those participants involved in drug dealing also reported on their specific roles within the drug economy. Two hundred and forty-one participants (78.5%) reported personally selling drugs; 86 (28.0%) participants reported acting as a 'middler' (i.e., coordinating a drug deal between a client and a dealer), and 18 participants (5.9%) reported acting as a 'holder' (i.e., carrying illicit drugs during a drug deal). Less than 5% of participants also reported carrying out other drug trade roles, including enforcement (i.e., providing security for drug dealers), cooking (i.e., illicit drug preparation), steering (i.e., soliciting clients

Type of drug sold	Number and percentage of participants who reported selling drug
Marijuana	117 (38.1%)
Crack cocaine	108 (35.2%)
Crystal methamphetamine	74 (24.1%)
Cocaine	52 (16.9%)
Ecstasy	38 (12.4%)
Heroin	37 (12.1%)
Magic mushrooms (psilocybin)	17 (5.5%)
Acid (LSD)	14 (4.6%)

Table 3. Illicit drugs reported sold by study participants (n = 307)

Note: Percentages add up to greater than 100% as a result of participants selling multiple drugs.

for a drug deal), and supplying illicit drugs to other drug dealers. Percentages add up to greater than 100% because participants reported performing multiple roles. Finally, participants were asked what sources of income they would suspend if they did not need money for their personal drug use. Of 227 participants, 106 (47.1%) individuals stated that they would cease selling drugs.

DISCUSSION

We found that over half of the street-involved youth participating in this study reported involvement in the illicit drug trade in the previous six months. Variables independently associated with involvement in the illicit drug trade included crack cocaine use, homelessness, and self-reported police assault. Additionally, marijuana and crack cocaine were reported sold by the most participants, and participants reported carrying out a variety of roles in support of the illicit drug trade, though the vast majority personally sold illicit drugs. Among individuals who reported drug dealing, the vast majority reported doing so in order to pay for their personal drug use.

Our findings suggest that street-involved youth who deal drugs do so in order to generate income for their personal drug use. The association we observed between homelessness and drug dealing also suggests that, contrary to the common perception of drug dealers as predatory or resource-rich (27), street-involved youth who deal drugs are often marked by extreme poverty and drug dependence. As such, our data indicate that street-involved youth who deal drugs may be at risk for a variety of health-related harms. The direct and indirect negative health effects of crack cocaine use have been well-documented and include elevated rates of HIV and HCV transmission, long-term physiological damage and mental illness (28), and an increased risk of sexual transmission through the previously identified association between crack cocaine use and sex trade involvement (29–31). Additionally, homeless individuals have been shown to be at higher risk of premature death (32) and may face significant barriers when attempting to access health care services (33, 34). Homeless individuals may also be at higher risk of street-level policing given their presence in highly monitored public spaces (35).

Our observation of an association between reporting of police assault and drug dealing complements previous data regarding the elevated levels of physical confrontation with police among street-level individuals involved in drug dealing in our study setting (36–38). While further longitudinal investigation of the specific nature of this association is required, our data suggests either that street-involved youth who deal drugs may be subjected to forceful apprehension by police or that police are in appropriately targeting these individuals outside of the context of an arrest or detainment. More specific data regarding the nature of such confrontations among this subpopulation is, however, needed to clarify this association. Regardless of the nature of this association, the effectiveness of a law enforcement approach in reducing the rate of drug dealing among streetinvolved youth may be limited by our finding and previous research demonstrating that such youth are most often motivated by drug dependence and face basic survival needs that may eclipse their concern for the legality of their incomegenerating activity (39-41). Specifically, a law enforcement approach may be unable to address the motivating factors such as poverty, drug dependence, and homelessness that drive youth participation in the illicit drug trade. The inability of such an approach to affect such predictors of involvement in the illicit drug trade may then critically undermine its effectiveness, as high-risk individuals who are incarcerated may simply return to a similar sociodemographic situation following a period of incarceration. While the Canadian federal government has recently announced a new National Anti-Drug Strategy, this strategy relies primarily on law enforcement and the incarceration of those involved in the illicit drug trade (17, 19). Concurrently, the federal government has increased criminal sanctions against youth involved in crime (18). However, given that over half of study participants stated that they would cease to deal drugs if they did not need to generate income for their personal drug use, interventions that reduce or prevent illicit drug use among this subpopulation may also be effective in reducing drug dealing. Additionally, while data regarding the public order benefits of street-level enforcement campaigns and the incarceration of illicit drug users and other vulnerable populations are scarce, such approaches have been previously shown to have the potential to contribute to severe health harms among these populations (42-47). Policy-makers should therefore prioritize effective, evidence-based treatment interventions in order to reduce the high rates of drug dealing among street-involved youth. In 2005, an estimated 73% of all federal funding for initiatives to combat drug-related problems were directed towards enforcement. In contrast, treatment initiatives made up 14% of all federal funding (48). Despite the launch of the National Anti-Drug

Strategy in 2007, there are no indications that this disparity in funding has been addressed.

Our study has several important limitations. Firstly, the cross-sectional design that we employed restricts the scope of our findings. As such, we were unable to determine the nature of the associations between drug dealing and crack cocaine use, homelessness, and police assault. We therefore caution against inferring causal relationships between variables and outcomes. Secondly, given that the data was based primarily on self-report, we may have underestimated socially undesirable behaviors such as drug dealing. Similarly, while youth reported police violence, in the context of this study we are unable to differentiate excessive use of force from the force required as part of conventional policing practices. Finally, ARYS is not a random sample, though it is believed to be representative of the study population (7).

We found that the majority of street-involved youth in our cohort reported dealing drugs, and that these individuals were more likely to be crack cocaine users and homeless, and to be motivated by drug dependence and basic survival needs. As well, the association that we observed between elevated levels of police confrontation and drug dealing among study participants suggests that street-involved youth who deal drugs are at heightened risk of physical harm. In this context, the Canadian federal government's renewed focus on enforcement and incarceration in combating the illicit drug trade may be ineffective as it fails to address the potential predictors of illicit drug trade involvement among street-involved youth. An evidence-based, public health approach to reducing the prevalence of youth involvement in the street-level illicit drug trade is therefore warranted.

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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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