

ORIGINAL ARTICLE

Implementation of Harm Reduction Toward Crack Users in Brazil: Barriers and Achievements

Andrea Domanico¹ and Monica Malta²

¹Porto Alegre Health Secretariat, Porto Alegre-RS, Brazil; ²Oswaldo Cruz Foundation—ENSP/FIOCRUZ, Rio de Janeiro, Brazil

From 2002 to 2005, we evaluated five Brazilian harm reduction programs ran by active drug users who distributed pipes, condoms, educational material, and provided referral to crack users. System-wide barriers identified: funds discontinuation and legislation barriers toward fieldwork. Major achievements: increased access to health, social, and psychological support. Crack-cocaine users experience a plethora of health/social problems, attenuated by low-threshold and user-friendly interventions, particularly those developed by other drug users. However, a stronger political commitment is needed to face a fast growing crack-cocaine epidemic in Brazil, aiming to ensure availability/continuity of funds, implementation of large-scale interventions, outreach workers training, and proper evaluation.

Keywords crack, cocaine, Brazil, program evaluation, harm reduction, HIV, AIDS, crack-cocaine

INTRODUCTION

In Brazil, the main “misused substance”¹ is cocaine (Hacker et al., 2006). Due to specific patterns of cocaine use—constant and repetitive use in a single day—active cocaine users frequently engage in risk behaviors to maintain their patterns of consumption (Latkin, Knowlton, & Sherman, 2001; Malta et al., 2008). Since the early 1990s, several studies have consistently reported a gradual transition toward crack cocaine of former cocaine snorters and/or injectors in Brazil, particularly in deprived neighborhoods of large metropolitan area (Burattini et al., 2005; de Carvalho & Seibel, 2009; de Oliveira et al., 2009; Dias, Ribeiro, Dunn, Sesso, & Laranjeira, 2008; Duailibi, Ribeiro, & Laranjeira, 2008; Hacker, Malta, Enriquez, & Bastos, 2005; Malta et al., 2008).

According to two Brazilian national household surveys conducted in late 1990 and early 2000, cocaine is consumed by a small share of the Brazilian population—2.3% (Duailibi et al., 2008). Highest rates are found in large metropolitan areas located in Brazilian South (3.6%) and Southeast (2.6%). Cocaine use is more common among male adolescents and young adults.

In 2004, the Brazilian Center for Information on Psychoactive Drugs (CEBRID) conducted a large survey in 27 Brazilian State capitals to evaluate drug use among street children and adolescents aged 10–18. The study evaluated 2,807 participants and identified high rates of snorted cocaine use in the previous month in Rio de Janeiro (45.2%), São Paulo (31%), Boa Vista, Roraima (26.5%), Brasília (23.9%), and Recife (20.3%). Frequent crack-cocaine use was also reported, ranging from 15% to 26% (Duailibi et al., 2008).

Children and adolescents on the streets in Brazil began using crack in the late 1980s, especially in the South and Southeast regions. There was a steady increase in consumption, as shown by consecutive national surveys conducted by CEBRID in 1987, 1989, 1993, 1997, and 2004 (Duailibi et al., 2008), patterns corroborated by other studies (Burattini et al., 2005; de Carvalho & Seibel, 2009; de Oliveira et al., 2009; Dias et al., 2008; Duailibi et al., 2008; Hacker et al., 2005; Malta et al., 2008).

Lower levels of education and income, pronounced social marginalization, as well as engagement in commercial sex have been demonstrated to be associated with HIV/AIDS and other sexually transmitted infections (STIs) among crack users from settings as diverse as the United States, Canada, South Africa, Australia, El Salvador, and Israel, among others (Boyd et al., 2008; Chettiar et al., 2010; Dickson-Gómez, Bodnar, Gueverra, Rodriguez, & Mauricio, 2006; Fischer et al., 2006; Leonard et al., 2008; Needle et al., 2008; Parry, Petersen,

Address correspondence to Andrea Domanico, Ph.D., M.P.H., Porto Alegre Health Secretariat, Porto Alegre-RS, Brazil; E-mail: andreadomanico@gmail.com

¹The journal’s style utilizes the category *substance abuse* as a diagnostic category. Substances are used or misused; living organisms are and can be abused. Editor’s note.

Carney, Dewing, & Needle, 2008; Roxburgh, Degenhardt, Copeland, & Laranca, 2008; Wechsberg et al., 2008).

There is a growing body of empirical evidence that demonstrates high prevalence rates of HIV/AIDS, other STIs, and tuberculosis among people who use crack cocaine (DeBeck et al., 2009; Malta et al., 2008; Story, Bothamley, & Hayward, 2008). Research results indicate that people who use crack are significantly more likely to report poorer overall physical health (Verthein, Haasen, Prinzleve, Degkwitz, & Krausz, 2001) and mental health problems (Falck, Wang, Siegal, & Carlson, 2004), are often socially isolated, and experience high degrees of poverty and homelessness (Fischer et al., 2006; Logan & Leukfeld, 2000; Ottaway & Erickson, 1997; Page-Shafer et al., 2002). It has been hypothesized that some of these health concerns are related to oral and facial burns and cuts that result from using less safe smoking equipment (e.g., can and/or broken glass), sharing of drug using equipment contaminated with blood or other risky practices such as "shotgunning"—one person blowing the smoke into another person's mouth (Haydon & Fischer, 2005; Perlman et al., 1997, 1999; Porter, Bonilla, & Drucker, 1997).

It has been demonstrated that crack users experience a synergy of health and social problems that increase their vulnerability toward HIV/AIDS and other infectious diseases in settings as diverse as the United States, Canada, South Africa, Australia, El Salvador, Israel, among others (Bell et al., 2010; Boyd et al., 2008; Chettiar et al., 2010; Dickson-Gómez et al., 2006; Leonard et al., 2008; Needle et al., 2008; Parry et al., 2008; Roxburgh et al., 2008; Wechsberg et al., 2008).

The vast majority of harm reduction programs targeting crack smokers have addressed sexual risk reduction (Rotheram-Borus, Rhodes, Desmond, & Weiss, 2010; Ross, Timpson, Williams, & Bowen, 2007), usually not including on their strategies the distribution of pipes and other equipments that could foster a *safer* crack smoking, following the same strategies adopted by syringe exchange programs. Despite this widespread prevalence of smoking crack among Brazilian drug users, particularly among people engaged in sex work and/or living in streets, HBV/HCV, STIs, and HIV-related prevention needs of crack smokers have largely been ignored in the development and implementation of harm reduction programs for this highly vulnerable population (Pechansky et al., 2007).

To the best of our knowledge, the first initiatives of this kind were conducted in the United States and Canada. In the United States, an innovative strategy was developed from 2002 to 2004 in Hartford, Connecticut, by the Risk Avoidance Partnership Project (RAP). This group implemented and tested an intervention to change the social context of risk for exposure to transmissible diseases among heroin and cocaine users in an urban context. The project provided an intensive training to drug users to become Peer/Public Health Advocates and to deliver a prevention modeling intervention to their drug-using and non-drug using network members (Weeks et al., 2006, 2009, 2009a). In 2004, Canadian organizations started a similar initiative that also provided drug users training to

become peer-educators and included on their daily activities the distribution of safer crack-smoking equipments (comprising Pyrex stems, metal screens, mouthpieces, and wooden push sticks) to harm reduction program clients (Boyd et al., 2008; Garmaise, 2004; Leonard et al., 2008). Canadian harm reduction guidelines for safer crack smoking recommend a single-use glass tube with a rubber or latex mouthpiece and a small gauge brass mesh screen at the end of the tube on which the rock of crack is placed before heating (Crack Users Project, 2010). In the absence of those safer equipments, Brazilian crack users use hand-made pipes, aluminum cans, or metal pipes. Heat is conducted intensely and swiftly through the metal pipe or can as the rock of crack is heated and the vapors inhaled.

Crack smokers often experience oral lesions including burns, blisters, open sores inside the mouth, or/and on lips and gums. These lesions are caused by and sustained from contact of the mouth and lips with hot smoke, hot glass, or hot metal (Centers for Disease Control and Prevention (CDC), 2010; Faruque, Edlin, & McCoy, 1996; Inciardi, 1993; Mitchell-Lewis, Phelan, Kelly, Bradley, & Lamster, 1994; Porter & Bonilla, 1993; Porter et al., 1997). This is of particular concern for HCV because of the virus' ability to maintain its infectivity in the environment and the high prevalence of HCV among illicit drug users (CDC, 1998).

Recently, it has been suggested that these injuries can promote HCV and HIV transmission through blood-to-blood contact while sharing noninjection drug use implements, which include crack pipes (Collins et al., 2005; McMahan & Tortu, 2003; Tortu, Neaigus, McMahan, & Hagen, 2001; Tortu, McMahan, Pouget, & Hamid, 2004). Crack pipes may become contaminated with blood or other bodily fluids from the mouths of crack smokers, which may lead to HCV transmission and infection from other pathogens (Conry-Cantilena et al., 1996; Haydon, Chorny, & Fischer, 2005). A recent study confirmed the biological plausibility of HCV transmission through sharing crack pipes when HCV was identified on a crack pipe (Fischer, Powis, Firestone Cruz, Rudzinski, & Rehm, 2008).

As a result of both the increasing Brazilian crack-cocaine epidemic (Andrade et al., 2001; Dunn, Laranjeira, Da Silveira, Formigoni, & Ferri, 1996; Dunn & Laranjeira, 1999; Nunes, Andrade, Galvão-Castro, Bastos, & Reingold, 2007; Oliveira & Nappo, 2008) and growing scientific evidence of high prevalence of HIV/AIDS, tuberculosis, and HBV/HCV among this population (Edlin et al., 1994; Pechansky et al., 2006), the Brazilian STD/AIDS and Viral Hepatitis Department² started five pilot harm reduction programs in 2002, all specifically developed by and for crack-cocaine users and including on their strategies the distribution of harm reducing crack smoking equipment (wood pipes, sunblock lipstick, and a silicone mouthpiece that could be easily adapted to different pipes). All pilot programs had active drug users as key actors, working both as peer educators, and as

²The Brazilian STD/AIDS and Viral Hepatitis Department was created in 1986 by the Surveillance Unit of Brazilian Ministry of Health

program managers. This initiative acknowledged that trained active drug users could be change agents and role models for their peers, being able to conduct successful harm reduction strategies.

Drug users' organizations, nongovernmental organizations (NGOs), and networks are key drivers behind the harm reduction response in many parts of the world. At the international level, numerous NGOs support and advocate for a harm reduction approach, as do some in the human rights field, such as Human Rights Watch. Harm reduction networks now exist in every region of the world and continue to make important contributions at the regional and international levels. However, the engagement of civil society and drug users' organizations in national policy making on drugs varies dramatically from country to country [International Harm Reduction Association (IHRA), 2010]. For instance, the Australian Injecting and Illicit Drug Users' League (AIVL), formed in the late 1980s had developed several key activities, ranging from harm reduction training and interventions to human rights advocacy in the national and international arena, being a very successful initiative led by and for drug users. Canada also houses important initiatives of drug users' organizations such as the Vancouver Area Network of Drugs Users (VANDU) and key civil society organizations working directly with crack users, as Street Health. The International Network of People Who Use Drugs (INPUD) is another example of a leading strategy developed by and for people who use drugs. The five pilot programs herein evaluated were developed based on those successful strategies developed by and for drug users and organized strategies similar to other harm reduction initiatives designed toward people who use crack-cocaine conducted in the UK, France, Canada, and the United States (Crack Users Project, 2010; Espoir Goutte d'Or, 2010; GLADA Crack Cocaine Strategy, 2010; Janssen, Gibson, Bowen, Spittal, & Petersen, 2009; Weeks et al., 2006, 2009, 2009a).

This study aims to characterize the operation of Brazil's pilot-studies led by active crack-cocaine users and its acceptability. This initiative took an important step forward toward the development of prevention strategies targeting crack-cocaine users in Brazil, by including in the activities the distribution of and training about safer smoking equipment. As far as we know, that was the first initiative that included HIV/AIDS, STIs, and other infectious disease prevention with the distribution of crack-smoking equipment conducted in a developing country context and having full governmental support. India followed Brazil's experience and started supporting harm reduction strategies toward crack-cocaine users with governmental funds in late 2000s [Asian Network of People Who Use Drugs (ANPUD), 2010].

METHODS

The study was conducted in five states that implemented crack-cocaine pilot harm reduction programs: Juiz de Fora, São Paulo, Florianópolis, Salvador, Ponta Grossa, and Santos. The following qualitative methods were

adopted: observations in selected venues, brief interviews with all program coordinators (5 active crack-cocaine users), and 25 in-depth interviews with crack-cocaine users accessed by each program and peer educators (both active and former drug users) working for each program.

Active/former drug users were eligible for this study if he or she was aged 18 and older and was engaged in a harm reduction program targeting crack-cocaine users during 30 days or more. Participants could not be intoxicated during the data collection. All program coordinators and outreach workers were invited to participate, and at least one active drug user accessed by each program was also invited. The study principal investigator (AD) is a well-known human rights activist in the field of drug addiction, and coordinated the first harm reduction program targeting crack-cocaine users from Brazil. Her experience and knowledge increased trustiness of participants.

Data collection began with field observations at a number of sites known to be "hot spots" (crack using and/or trafficking sites) in each city and was conducted between 2002 and 2005. The time of field observations varied to cover morning, afternoon, evening, and late night hours in all five cities. A second step comprised in-depth interview with 30 key actors—harm reduction coordinator, peer educators (both active and former drug users), and crack-users accessed by each harm reduction program. Participants were selected using a convenience sample: those who were available during field observation hours and were willing to participate in a 30 min interview were recruited on a first-come first-serve basis until we reach 30 participants.

Those interviews aimed to evaluate the implementation and daily difficulties faced by each program and by their target population. Interview topics included: sexual/drug use behavior; involvement and perception of harm reduction programs targeting crack-users; perceptions and experiences related to those pilot studies targeting crack-users; and challenges faced in the daily implementation of or access to interventions aimed to decrease the vulnerability of crack-cocaine users toward HIV, other STIs, HBV, HCV, and TB.

All transcripts were analyzed using principles of grounded theory (Strauss & Corbin, 1990). Selected quotes were included to illustrate major research findings reported by the interviewees. The selection of quotes aimed at covering all expressed viewpoints while avoiding redundancy. All transcripts were reviewed and independently coded by two investigators, and coding discrepancies were discussed to reach an agreement. During this process, the domain structure was continually reassessed and underwent subsequent revisions.

The Brazilian Harm Reduction Initiative Toward Crack Users

In April, 2002, the Brazilian STD/AIDS and Viral Hepatitis Department had a meeting with representatives from Brazilian NGOs working with harm reduction strategies, in order to follow-up the initiatives targeting drug using population. During this period, strategies targeted mainly

injection drug users; however, a few NGO representatives shared their concern toward the growing number of crack-cocaine users. As a result of this concern, the Brazilian STD/AIDS and Viral Hepatitis Department decided to implement five pilot harm reduction programs targeting crack-cocaine users, developed in cities with a large crack-cocaine population in the early 2000s: Juiz de Fora, São Paulo, Florianópolis Salvador, and Ponta Grossa. The strategy included distribution of wood pipes, sunblock lipstick, and a silicone mouthpiece that could be easily adapted to different pipes. Accessed participants also received condoms, HIV/AIDS, TB, HBV, HCV, and STI preventive information as well as peer-education and referral to health facilities and other public services when needed/requested.

The intervention needed to be culturally adapted to different settings. For example, in settings where the NGO accessed injection drug users (IDU), active or former IDU who worked as peer educators reported a strong resistance to accessing crack users. According to those peer educators, due to the specific patterns of crack-cocaine use (constant and repetitive use in a single day), this subgroup was most of the time experiencing intoxicated or craving states, and therefore were not open for any preventive initiative. A second strategy was to hire active and former crack-cocaine users to be trained as peer educators, so they could more easily access their peers. This second initiative also failed, largely because after a few hours working in selected “hot spots,” the vast majority of hired peer educators started using crack and stopped the intervention itself. The third and most successful initiative proposed a “buddy system,” where an active crack-cocaine user worked as the main peer-educator together with a former drug user also trained as a peer-educator—similar strategies were already conducted (Dickson-Gómez et al., 2006, Dickson-Gomez, 2010). The active crack-cocaine user knew all “hot spots” and the vast majority of crack-cocaine users, and the former user supported his or her “buddy” to stay in abstinence during all intervention. Initially, the intervention was developed to be conducted during nighttime; however, this format was also changed after a few weeks, since peer educators reported that active users were more accessible around lunchtime, when they didn’t start using crack and were more open to prevention information in general. Outreach work was organized both on “hot spots” and shelters, since the vast majority of Brazilian crack-cocaine users are also homeless and access local shelters to receive meals or take a shower.

The study was considered exempt from Institutional Review Board Review by the Bahia Federal University Review Board.

RESULTS

Sociodemographic and Project Key Characteristics

All harm reduction programs targeting crack-cocaine users under activity during the period of this study were evaluated ($N = 5$). Basic sociodemographic characteristics of 30 participants interviewed are described in

TABLE 1. Basic sociodemographic characteristics of 30 participants interviewed, Brazil, 2006.

Description	<i>N</i> (%)
Age	
Mean \pm SD	28.7 \pm 5.9
Range	19–40
Gender	
Male	17 (56.7)
Female	13 (43.3)
Role on Project	
Coordinator	5 (16.7)
Outreach worker	20 (66.6)
Participant	5 (16.7)
Drug-consuming habits	
Crack-cocaine use	18 (60.0)
IDU	5 (16.7)
Former DU/IDU	2 (6.7)
Never used illicit drugs	5 (16.6)
Income activities	
Project coordinator	5 (16.7)
Sex work	4 (13.3)
Craftsmanship	4 (13.3)
Trainee	3 (10.0)
Drug dealing	1 (3.3)
Unemployed	11 (36.7)
NA	2 (6.7)
Participants murdered a few months after the interview	2 (6.7)

Table 1. Briefly, we interviewed all program coordinators ($N = 5$, all active crack-cocaine users), all outreach workers ($N = 20$, the vast majority active drug users), and five participants (active crack-cocaine users). A slight majority of participants were male (56.7%) and active crack-cocaine users (60.0%).

Key aspects of the five pilot harm reduction programs analyzed are described in Table 2. Project staff usually comprised psychologists and social workers, and all interventions had active and former drug users as outreach workers acting as a “buddy system,” where the active crack-cocaine was usually the leading peer-educator and the former drug user’s main role was to support his or her “buddy” to stay in abstinence during all intervention. All projects distributed safer crack-smoking equipments and offered education and information materials and referral for health and other public services (e.g., shelters). The majority of evaluated projects struggled with funds discontinuation and police harassment.

In-Depth Interview Results

All programs targeted crack-cocaine users and received financial support exclusively from the Brazilian STD/AIDS and Viral Hepatitis Department. All program managers reported difficulty in identifying additional donors, mostly because crack-cocaine users were not perceived as a key vulnerable population for HIV/AIDS and other STIs in Brazil in the early 2000s.

TABLE 2. Description of core harm reduction program activities targeting crack-cocaine users, Brazil, 2006.

State	Core team	Intervention description	Major challenges
Project 1: Juiz de Fora	7 professionals: 2 Psychologists 1 Social workers 4 Outreach workers: Active drug users 80 Crack user accessed	<ul style="list-style-type: none"> • Interventions developed by the core team, discussed and evaluated by accessed drug users. • Outreach work conducted by active drug users • Places: abandoned park, sex work area, drug-using/traffic areas • Distribution: condom, crack kit (pipes, hand swab), flyers • Public health and social services referral • Community center offering workshops, peer education, and income generation activities • Support of a private company to develop and produce wood pipes 	<ul style="list-style-type: none"> • Police law enforcement during outreach work • Gang fight and police violence during outreach work • Grants discontinuation • State court petition against the Project (2002) • Lack of proper outreach workers training to provide comprehensive health counseling • Strategies: Meetings with community, police political leaders, and media to disseminate the importance of preventive initiatives toward drug users. Advocacy in local/national assembly deputy.
Project 2: Florianopolis	6 professionals: 1 Psychologists 1 Social Workers 4 Outreach workers: Active and former drug users 60 crack user accessed	<ul style="list-style-type: none"> • Interventions developed by the core team. • Outreach work conducted by active/former drug users for five days a week in the afternoon • Places: abandoned buildings, parks, streets, and major drug-using/traffic areas during the afternoon (never at night) • Distribution: wood pipes, condom, and flyers 	<ul style="list-style-type: none"> • Constant team arguments due to field problems and active drug use during outreach work • High employee turnover due to poor working conditions and active drug use of outreach workers • Gang fight and police violence during outreach work • Lack of supervision and proper development of interventions directly toward drug users needs (e.g., referral, shelters) • Strategies: Weekly staff meetings to address conflicts and difficulties faced by field team. Human rights advocacy in local and national fora (e.g. drug policy meetings, local/national assembly deputy).
Project 3: São Paulo	13 professionals: 5 Psychologists 1 Journalists 3 Social workers Outreach workers: 4 Active and former drug users 120 Crack user accessed	<ul style="list-style-type: none"> • Interventions developed by the core team, discussed and evaluated by accessed drug users. • Outreach work conducted by active/former drug users three days a week (3 outreach workers per area) • Places: abandoned buildings, parks, streets, and major drug-using/traffic areas during the afternoon (never at night) • Distribution: condom, crack kit (lipstick, silicone mouthpiece, hand swab), flyers • Mobile unit to transport drug users into health facilities • "Movie in the plaza": free movie presentation followed by discussion • Partnership with public health service to provide TB testing and treatment • Community center offering safer sex workshops, harm reduction information, women weekly group, and video. • Support of a private company to develop and produce special lipstick • Public health and social services referral 	<ul style="list-style-type: none"> • Grants discontinuation • Police violence during outreach work • High employee turnover due to poor working conditions and active drug use of outreach workers • Strategies: Scheduled meetings with police and political leaders that never happened because the police always changed the time or the day. Media interviews to disseminate the importance of preventive initiatives toward drug users.

(Continued on next page)

TABLE 2. Description of core harm reduction program activities targeting crack-cocaine users, Brazil, 2006. (Continued)

State	Core team	Intervention description	Major challenges
Project 4: Salvador	6 professionals: 1 Psychologists 1 Social Worker 4 Outreach workers: Active and former drug users 90 crack user accessed	<ul style="list-style-type: none"> • Interventions developed by the core team, discussed and evaluated by accessed drug users. • NGO initially located inside a local university, and latter in a separate building • Outreach work conducted by active/former drug users. Preventive kit also available at hot spots and community members houses 24/7 • Distribution: condom, pipe, and flyers • Workshop for crack-cocaine to develop a pipe with PVC, conducted in the community center • Monthly group meetings to discuss prevention, harm reduction, and other issues (male and female groups) • Close partnership with public health services, including training of nurses and trainees to offer harm reduction counseling 	<ul style="list-style-type: none"> • Law enforcement and police violence during outreach work • Grants discontinuation • Strategies: Scheduled meetings with researchers from the Bahia Federal University to foster collaborative projects. Nowadays, the project is fully integrated in the university budget.
Project 5: Ponta Grossa	5 professionals: 1 Social worker 4 Outreach workers: Active and former drug users 80 crack user accessed	<ul style="list-style-type: none"> • Interventions developed by the core team • Outreach work conducted by active/former drug users in the afternoon. • Places: abandoned buildings, sex work area, drug-using/traffic areas • Distribution: condom, pipe, and flyers • Workshops with different activities: (1) bamboo pipe development, (2) health and harm reduction discussion, (3) human rights discussion • Constant support of public health services, media, and police • Public health and social services referral 	<ul style="list-style-type: none"> • Prejudice against drug users in health services. • Strategies: meetings with health services coordinators and health workers.

Why managers are so skeptical to finance intervention projects targeting crack-cocaine users? I guess there are a lot of issues, including lack of political will and resources', or even prejudice. I don't know, it seems like they cannot see the close connection between crack and AIDS or other diseases. [Project 2 Manager]

The discontinuation of funds was a key challenge reported by all program managers, and the lack of alternative donors influenced high turnover rates of trained staff (more than 60% of trained personnel quitted their outreach work activities before ending the first fiscal year), therefore jeopardizing the intervention effectiveness:

There are a lot of motivations [for high turnover]: difficulties related to the outreach work itself, low payment, lack of recognition of outreach work as a professional activity, there is a high turnover. . . Like, we don't receive our support, then those trained folks go out, and look for another activity, and they usually don't come back. It's hard to work like that. [Project 2 Manager]

The engagement of active crack-cocaine users in the development and evaluation of interventions was reported as a key aspect toward the success and acceptability of different interventions. According to Project 2 manager, they started their intervention distributing wood pipes, which were not well accepted by crack-cocaine users from this state. After a few meetings with active drug users, the project team was informed that this pipe was too big and not easily hidden if the police arrived. Those frequent meetings led to the inclusion of silicone mouthpiece that could be easily used with a broad range of pipes, and sun-block lipstick to prevent blisters and open sores.

The Project 4 manager also corroborates the key role of active crack-cocaine users on the development and implementation of their initiatives. According to him, during field observations, they were able to see a broad range of handmade pipes being used by crack-cocaine users, and the field team got really surprised by drug users'

creativity. By engaging active drug users in a few meetings, they decided to start a workshop for the development of pipes. With a small support from a local University, and partnership of a few professors, they were able to develop a pipe made by PVC, well developed according to crack-users standards and effective to prevent cuts, burns, blisters, and open sores inside the mouth or/and on lips and gums.

Active and former crack-cocaine users were key for the development of successful strategies, since they were able to identify "hot spots," provide adequate intervention hours, and facilitate the intervention team's access to hard to reach areas (e.g., slums and drug traffic areas). Those participants also helped health professionals and project managers in the intervention evaluation and in the development of culturally adequate strategies and pipes. On the contrary, active/former crack-cocaine users faced strong police violence while working as outreach workers (such as being arrested for distributing pipes), and were hardly seen as public health agents by health professionals. Lack of proper legislation to protect those outreach workers was a key problem to assure their safety from arrest while working in slums and other crack-using areas. The harm reduction model encourages consideration of human rights and citizenship, and those outreach workers were viewed as changing agents by project teams and accessed drug users, but outside this arena they usually continued to be seen as someone engaged in illicit activities that should be incarcerated and/or should engage in mandatory treatment.

Harm reduction major challenge is to overcome prejudice and moral barriers that we face every day. You are discriminated for your job, no matter if you are working with health, human rights of incarcerated persons, sex workers, drug users. . . I guess the challenge is to humanize people, and harm reduction is really a broad and inclusive strategy, because its major focus is the humanization, something that can break the walls. . . [Project 5 Manager]

A consensus among all projects managers was the police harassment. Reports of having equipment confiscated or broken by police were very common, as well as public and media opposition. One project even faced a State Court Petition to discontinue harm reduction initiatives targeting crack-cocaine users, initiated by a lawyer who had access to a harm reduction kit (wood pipe, sunblock lipstick, and condom). The lawyer was interviewed in a sensationalist TV program, and the discussion about harm reduction toward crack-cocaine users became frontpage news. The project received strong support from several NGOs and from the Ministry of Health, and the case was closed by the State Court. A few months latter, a local television organized a series of interviews about this project, presenting its successful stories.

The street work is really difficult, repression, and violence episodes happen with drug users and field team, they take the equipments paid with public resources, and due to the mayor 'clean operation', they treat badly all homeless, are rude and violent with outreach workers. . . Some days we feel really sad, even desperate. [Project 2 Manager]

We needed to negotiate with them [police officials], then we had a meeting to talk about pipe distribution. The guy told us that everything was nice, but he wanted a study demonstrating crack cocaine users exposition [to HIV/AIDS, HBV/HCV and TB] and told us that he wouldn't harass anyone, but. . . He would reinforce the law if he got someone with a pipe. . . So, we got scared and decided to establish a few strategies. First we had a specific group that will receive pipes, and secondly they will only receive it in our office. [Project 4 Manager]

Active crack-cocaine users working as community outreach workers were a key aspect for the success of currently described initiatives. However, due to their lack of formal professional qualification (usually less than high school graduation), they were hired with low payments (federal minimum wage, 283 USD/month) to observe the legislation for hiring professionals with federal grants.

As a consequence, some project manager hired, for instance, a nurse for twice her actual effort within the project (e.g., 40 hours a week, while she was working only 20 hours), so she could give half of her income to complement the payment of an active drug user working as outreach worker. Although it was pivotal for the intervention success to include active crack-cocaine users in the field work, their formal integration in the intervention team faced legal problems that were not anticipated and were very difficult to overcome while using governmental financial support. Outreach workers also experienced frequent discontinuation of payment while still working in the field, mostly because project managers were not able to secure grants on a continuous basis. Key barriers include discontinuation of funding opportunity and/or auditing problems with grant donors (Brazilian STD/AIDS and Viral Hepatitis Department or local Health Secretariats from each municipality).

Another key observation was the lack of formal training and supervision of field workers in general (active/former drug users, nurses, psychologists. . .). A few projects did not provide their team with basic information about drug use and misuse, infectious diseases, human rights, and other key aspects. As a consequence, the undertrained staff missed the opportunity to offer referral for professional-training centers, shelters, employment services, and health treatment while accessing active crack-cocaine users in slums and other hard to reach areas.

Although the simple distribution of safer crack-smoking resources is not enough, it seems to have a direct impact on crack-cocaine users' practices. Project participants explained that while the availability of clean equipment had not affected their frequency of crack smoking, they acknowledged that the provision of clean materials by active or former crack-cocaine users had made their practices safer:

Like, the guy goes to his dealer to get a rock, but he needs a lot of stuff, a pipe, a place. . . So, if he goes to a friends place [active user who is an outreach worker] where he can find everything he needs, he won't share his equipment, there are a lot of folks who just go there to use. . . So, it's important to have everything available, got it? [Outreach worker from Project 4]

This peer strategy also offered a way to adapt educational material to an appropriate knowledge level, by pilot testing flyers, folders, and other educational materials or even by offering the opportunity of projects clients to actively participate on the materials development. Peer support and the engagement of active crack-cocaine users on each project staff also improved attendance of active crack-cocaine users to educational activities aiming at promoting safer behaviors (e.g., safer crack-smoking practices, safer sex. . .).

The projects also offered a platform for addressing mental health, addiction, human rights, and relationship issues with sexual partners and family members. Projects provided group discussion coordinated by active and former crack-cocaine users, addressing issues related to health and social problems faced by this specific population and offering an opportunity for project participants to share key information (e.g., where to access better shelters and/or cheap housing, where to look for jobs and/or child care, how to access governmental financial support for those unemployed, etc.). This strategy was particularly important in an indigent population with limited resources and reasons to mistrust authority figures.

During these group discussions led by peer-educators, health professionals were sometimes invited to deliver a brief presentation or participate on a “question & answer” group discussion with project clients. During those meetings, all participants (outreach workers and project clients) could clarify their doubts, request medical/psychological appointments, be referred to specific social support (missing documents, shelter, food coupons), and so on. However, drug users usually experienced difficulties to access health services, and some project managers developed additional strategies to assure their appointments:

They go to the health services only if they are accompanied by someone from our team. We started working with referral, but quickly we figured it out that it wasn't working. So, we decided that someone needed to take them to the health service they needed, and they finally got their appointments. . . Yes, they receive their treatment, but usually are put as the last one on line. I mean, it's pivotal to have someone from our team there, so we can assure their access to testing, treatment or whatever they need [Project 2 Manager]

DISCUSSION

These pilot projects were the first initiative of this kind (providing infectious disease prevention + distribution of crack-smoking equipment) to be developed in a developing country context with full government support—India followed the Brazilian initiative in the late 2000s (AN-PUD, 2010; IHRA, 2010). In developed countries, there have been HIV prevention programs targeting crack users for decades (since the 1980s), however, those initiatives started only in 2000s in the Latin American context, where in addition to cannabis, the major illicit drug consumed is cocaine and crack-cocaine (Hacker et al., 2005). All studies received full financial support from the government—the first Latin American initiative of this kind to be conducted in the region.

The study findings provide preliminary insights into the acceptability of harm reduction strategies targeting street-involved crack from Brazil. Pipe sharing and reutilization, in addition to frequent burns and oral lesions support findings of earlier researchers concerned with increased risk of crack users' exposure to blood borne pathogens (Haydon & Fischer, 2005; Malchy, Bungay, & Johnson, 2008; Porter et al., 1997). The use of less-safe equipment such as can and handmade PVC pipes pose specific risks to those who use crack. Those materials break apart when heated and particles can be inhaled, causing mouth, throat, and lung damage (Porter et al., 1997) which may explain, in part, the high incidence of breathing difficulties reported by Project Managers. Shortage of harm reduction supplies associated with equipment confiscation by police influenced lack of equipments, jeopardizing preventive initiatives, and may contribute to equipment sharing among crack-cocaine users (Garmaise, 2007). Canada crack-cocaine harm reduction strategies also faced strong legislation barriers and public opposition (Garmaise, 2007; Symington, 2007), as had other initiatives developed in China and Vietnam targeting drug users (Hammett et al., 2007).

Several contextual factors influence active crack-cocaine users to successfully promote health and well being of other drug users as outreach workers (Weeks et al., 2006, 2009, 2009a). Lack of proper training and supervision, strategies toward risk prevention (e.g., staff HBV vaccination), safe places to conduct interventions, and police violence highlight the broader social and structural forces at play within the realm of harm reduction toward crack users including poverty, gender, and the law.

Further studies and interventions are required to determine the contextual factors that influence crack-cocaine equipment sharing and the influence of these factors for strategies aimed at reducing the harms associated with crack use. In addition, further interventions must take into consideration the key role of former and, most important, active crack-cocaine users to facilitate and conduct outreach work (Hughes, 1999; Weeks et al., 2006, 2009, 2009a). Drug users can easily access their peers and key “hot spots” where interventions should be conducted; with additional training and supervision, those key actors can successfully act as changing agents (Latkin, 1998; Latkin, Hua, & Davey, 2004; Mercure, Tetu, Lamonde, & Cote, 2008). The RAP initiative conducted in Hartford, Connecticut, identified significant behavioral risk reduction among participants and documented how the engagement of active drug users as peer educators enhanced their lives and fortified their intention to act as “role models” for their peers (Weeks et al., 2006, 2009, 2009a).

Interventions should also focus on social and structural factors that influence people's lives beyond the scope of individual drug using habits and risk behavior. No previous study had examined the implications of police destruction or apprehension of crack smoking equipment, yet these practices already occurred in other settings such as Canada (Malchy et al., 2008). Small and colleagues (2006) reported that intensified police activity targeting

injection drug users led to riskier drug practices including using in unsafe settings and “rushed” injections.

Other researchers have demonstrated that women are at particular risk for violence when smoking crack (Butters & Erickson, 2003; Malta et al., 2008; Murphy & Rosenbaum, 1992; Shannon et al., 2008). The politics of street life, including the relationships between and among crack dealers, crack users, police officers, and sex workers, must be incorporated into the planning of realistic programming targeting crack users in order to create a holistic response to the barriers for testing and treatment access, as well as access to a broad range of psychosocial interventions for these highly vulnerable individuals (Nunes et al., 2007).

The positive response by participants toward using safer smoking equipment, the need for free smoking kits, and government support demonstrates that there is both a need and an interest for safer crack use education and programming to be incorporated into mainstream health program planning in Brazil. However, funds discontinuation and lack of alternative donors are key barriers yet to be overcome in a developing country context.

STUDY LIMITATIONS

This qualitative study did not allow for an examination of the nuances of crack use practices such as the nature and extent of mouthpiece sharing practices or whether individuals participated in other potentially harmful practices, such as “shotgunning.” However, those pilot studies were highly important in demonstrating the need for more rigorous examination of the health concerns faced by people who use crack cocaine, critical evaluation of programs designed to reduce crack-cocaine related harm, and further research on the social dynamics of crack use.

CONCLUSIONS

Brazilian policy makers should continue supporting groundbreaking initiatives aimed at promoting social change, active citizenship, and participation of people who use crack-cocaine in the development and implementation of initiatives targeting their community and peers. With a timely response to a fast growing crack-cocaine epidemic in Brazil, harm reduction strategies based on human rights principles need to continue high on the political agenda.

THE AUTHORS



A. Domanico, psychologist, PhD, MPH, is a Visiting Research Assistant Psychologist in the Integrated Substance Abuse Programs, Department of Psychiatry and Biobehavioral Sciences at the David Geffen School of Medicine at UCLA, Los Angeles, USA. She has more than 20 years of experience working in the field of drug abuse and drug policy. Dr Domanico is a human rights

activist and former employee of the Brazilian Ministry of Health with large experience in harm reduction strategies, HIV/AIDS, and Hepatitis prevention and treatment and advocacy strategies. During 2009/2010 she was a Hubert H. Humphrey Fellow at the Mental Health Department, Johns Hopkins Bloomberg School of Public Health, Baltimore.



M. Malta, Ph.D., M.P.H., is an Associated Researcher at the Social Science Department, National School of Public Health (DCS/ENSP) from Oswaldo Cruz Foundation, Rio de Janeiro, Brazil. She has been working for 15 years in the field of HIV/AIDS and substance abuse and has (co-) authored several papers and/or book chapters on drug use, HIV/AIDS, and related themes. Dr Malta has

also worked on multiple collaborative projects sponsored by the CDC, NIH, Ford Foundation, and WHO, among others. During 2004/2005 she was a Hubert H. Humphrey Fellow at the Mental Health Department, Johns Hopkins Bloomberg School of Public Health, Baltimore.

GLOSSARY

Harm Reduction: Harm reduction, or harm minimization, refers to a range of pragmatic and evidence-based public health policies designed to reduce the harmful consequences associated with drug use, abuse, and dependence.

HBV: The infectious agent of Hepatitis B. The virus causes inflammation of the liver and is spread by direct contact with infected blood and infected bodily fluids (e.g., through unprotected sex).

HCV: The infectious agent of hepatitis C. The virus was formerly known as non-A non-B hepatitis and is spread by direct contact with infected blood.

HIV: Human Immunodeficiency Virus, the virus that causes AIDS.

STI: Sexually Transmitted Infection.

TB: Tuberculosis, an infectious disease characterized by the formation of abnormal hard swellings in tissues of the body, especially in the lungs.

REFERENCES

- Andrade, T., Lurie, P., Medina, M. G., Anderson, K., & Dourado, I. (2001). The opening of South America's first needle exchange program and an epidemic of crack cocaine use in Salvador, Bahia-Brazil. *AIDS and Behavior*, 5(1):51–64.
- Asian Network of People Who Use Drugs (ANPUD). (2010). Retrieved October 1, 2010, from <http://www.anpud.org/ANPUD/Home.html>.
- Bell, C., Metsch, L. R., Vogenthaler, N., Cardenas, G., Rodriguez, A., Locascio, V., et al. (2010). Never in care: Characteristics of HIV-infected crack cocaine users in 2 US cities who have never

- been to outpatient HIV care. *Journal of Acquired Immune Deficiency Syndromes*, 54(4), 376–380.
- Boyd, S., Johnson, J. L., & Moffat, B. (2008). Opportunities to learn and barriers to change: crack cocaine use in the Downtown Eastside of Vancouver. *Harm Reduction Journal*, 5, 34.
- Burattini, M. N., Strazza, L., Paoliello, A. A., de Carvalho, H. B., de Azevedo, R. S., Coutinho, F. A., et al. (2005). The change from intravenous to crack cocaine and its impact on reducing HIV incidence in Brazilian prisons. *International Journal of STD and AIDS*, 16(12), 836–837.
- Butters, J., & Erickson, P. G. (2003). Meeting the health care needs of female crack users: A Canadian example. *Womens Health*, 37(37), 1–17.
- Centers for Disease Control and Prevention (CDC). (1998). Recommendations for prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. Centers for Disease Control and Prevention. *Morbidity and Mortality Weekly Report Recommendations and Reports*, 47(RR-19), 1–39.
- Centers for Disease Control and Prevention. (2010). Viral Hepatitis. Retrieved September 27, 2010, from <http://www.cdc.gov/hepatitis/index.htm>.
- Chettiar, J., Shannon, K., Wood, E., Zhang, R., & Kerr, T. (2010). Survival sex work involvement among street-involved youth who use drugs in a Canadian setting. *Journal of Public Health (Oxford)*, 32(3), 322–327.
- Cohen, E., Navaline, H., & Metzger, D. (1994). HIV-risk behaviors for HIV: A comparison between crack-abusing and opioid-abusing African-American women. *Journal of Psychoactive Drugs*, 26(3), 233–241.
- Collins, C. L., Kerr, T., Kuyper, L. M., Li, K., Tyndall, M. W., Marsh, D. C., et al. (2005). Potential uptake and correlates of willingness to use a supervised smoking facility for noninjection illicit drug use. *Journal of Urban Health-Bulletin of the New York Academy of Medicine*, 82(2), 276–284.
- Conry-Cantilena, C., VanRaden, M., Gibble, J., Melpolder, J., Shakil, A. O., Viladomiu, L., et al. (1996). Routes of infection, viremia, and liver disease in blood donors found to have hepatitis C virus infection. *New England Journal of Medicine*, 334(26), 1691–1696.
- Crack Users Project (CUP). (2010). Street Health. Retrieved October 4, 2010, from <http://www.streethhealth.ca/Downloads/CUP-Manual.pdf>.
- DeBeck, K., Kerr, T., Li, K., Fischer, B., Buxton, J., Montaner, J., et al. (2009). Smoking of crack cocaine as a risk factor for HIV infection among people who use injection drugs. *CMAJ*, 181(9), 585–589.
- de Carvalho, H. B., & Seibel, S. D. (2009). Crack cocaine use and its relationship with violence and HIV. *Clinics (Sao Paulo)*, 64(9), 857–866.
- de Oliveira, L. G., Barroso, L. P., Silveira, C. M., Sanchez, Z. V., De Carvalho Ponce, J., Vaz, L. J., et al. (2009). Europsychological assessment of current and past crack cocaine users. *Substance Use and Misuse*, 44(13), 1941–1957.
- Dias, A. C., Ribeiro, M., Dunn, J., Sesso, R., & Laranjeira, R. (2008). Follow-up study of crack cocaine users: Situation of the patients after 2, 5, and 12 years. *Substance Abuse*, 29(3), 71–79.
- Dickson-Gomez, J. (2010). Can drug users be effective change agents? Yes, but much still needs to change. *Substance Use and Misuse*, 45(1-2), 154–160.
- Dickson-Gómez, J., Bodnar, G., Gueverra, A., Rodríguez, K., & Mauricio, G. (2006). Childhood sexual abuse and HIV risk among crack-using commercial sex workers in San Salvador, El Salvador: A qualitative analysis. *Medical Anthropology Quarterly*, 20(4), 545–574.
- Duailibi, L. B., Ribeiro, M., & Laranjeira, R. (2008). Profile of cocaine and crack users in Brazil. *Cadernos de Saúde Pública*, 24(Suppl 4), s545–s557.
- Dunn, J., & Laranjeira, R. R. (1999). Cocaine—profiles, drug histories, and patterns use of patients from Brazil. *Substance Use and Misuse*, 34(11), 1527–1548.
- Dunn, J., Laranjeira, R. R., Da Silveira, D. X., Formigoni, M. L., & Ferri, C. P. (1996). Crack cocaine: An increase in use among patients attending clinics in São Paulo: 1990–1993. *Substance Use and Misuse*, 31(4), 519–527.
- Edlin, B. R., Irwin, K. L., Faruque, S., McCoy, C. B., Word, C., Ser-rano, Y., et al. (1994). Intersecting epidemics crack-cocaine use and HIV infection among inner-city young adults. *New England Journal of Medicine*, 331(21), 1422–1427.
- Espoir Goutte d'Or (EGO). (2010). Retrieved October 4, 2010, from <http://www.ego.asso.fr/>
- Falck, R., Wang, J., Siegal, H., & Carlson, R. (2004). The prevalence of psychiatric disorders among a community sample of crack cocaine users. An exploratory study with practical implications. *Journal of Nervous and Mental Disorders*, 192(7), 503–507.
- Faruque, S., Edlin, B. R., & McCoy, C. B. (1996). Crack cocaine smoking and oral sores in three inner-city neighborhoods. *Journal of Acquired Immune Deficiency Syndromes*, 13(1), 87–92.
- Fischer, B., Powis, J., Firestone Cruz, M., Rudzinski, K., & Rehm, J. (2008). Hepatitis C virus transmission among oral crack users: viral detection on crack paraphernalia. *European Journal of Gastroenterology and Hepatology*, 20(1), 29–32.
- Fischer, B., Rehm, J., Patra, J., Kalousek, K., Haydon, E., Tyndall, M., et al. (2006). Crack across Canada: Comparing crack users and crack non-users in a Canadian multi-city cohort of illicit opioid users. *Addiction*, 101(12), 1760–1770.
- Garmaise, D. (2004). Groups distribute harm-reduction kits to crack users. *HIV/AIDS Policy and Law Review*, 9(3), 30–31.
- Garmaise, D. (2007). Ottawa police accused of undermining crack distribution program. *HIV/AIDS Policy and Law Review*, 12(1), 27.
- GLADA Crack Cocaine Strategy 2005/8. (2010). Retrieved October 4, 2010, from http://static.london.gov.uk/mayor/health/drugs_and_alcohol/docs/GLADACCstrategy.pdf.
- Hacker, M. A., Leite, I. C., Renton, A., Torres, T. G., Gracie, R., & Bastos, F. I. (2006). Reconstructing the AIDS epidemic among injection drug users in Brazil. *Cadernos de Saúde Pública*, 22(4), 751–760.
- Hacker, M. A., Malta, M., Enriquez, M., & Bastos, F. I. (2005). Human immunodeficiency virus, AIDS, and drug consumption in South America and the Caribbean: epidemiological evidence and initiatives to curb the epidemic. *Revista Panamericana de Salud Pública*, 18(4-5), 303–313.
- Hammitt, T. M., Des Jarlais, D., Johnston, P., Kling, R., Ngu, D., Liu, W., et al. (2007). HIV prevention for injection drug users in China and Vietnam: Policy and research considerations. *Global Public Health*, 2(2), 125–139.
- Haydon, E., Chorny, Y., & Fischer, B. (2005). Crack use and public health (with a specific focus on hepatitis C): Epidemiology, risk factors and interventions. Final draft report Ottawa. Public Health Agency of Canada.
- Haydon, E., & Fischer, B. (2005). Crack use as a public health problem in Canada: Call for an evaluation of 'safer crack use kits'. *Canadian Journal of Public Health—Revue Canadienne De Sante Publique*, 96(3), 185–188.
- Hughes, J. J. (1999). Paying injection drug users to educate and recruit their peers: Why participant-driven interventions are an

- ethical public health model. *Quality Management in Health Care*, 7(4), 4–12.
- Inciardi, J. A. (1993). Crack cocaine in the Americas. In M. G. Monteiro & J. A. Inciardi (Eds.), *Sao Paulo: CEBRID—Centro Brasileiro de Informações sobre Drogas Psicotrópicas (Brazilian Center for Information About Psychotropic Drugs)* (pp. 63–75). Brazil-United States: Binational Research.
- International Harm Reduction Association (IHRA). (2010). The Global State of Harm Reduction 2010: Key issues for broadening the response. London: IHRA, Retrieved October 4, 2010, from http://www.ihra.net/files/2010/06/29/GlobalState2010_Web.pdf.
- Janssen, P. A., Gibson, K., Bowen, R., Spittal, P. M., & Petersen, K. L. (2009). Peer support using a mobile access van promotes safety and harm reduction strategies among sex trade workers in Vancouver's Downtown Eastside. *Journal of Urban Health—Bulletin of the New York Academy of Medicine*, 86(5), 804–809.
- Latkin, C. A. (1998). Outreach in natural settings: The use of peer leaders for HIV prevention among injecting drug users' networks. *Public Health Reports*, 113(Suppl 1), 151–159.
- Latkin, C. A., Hua, W., & Davey, M. A. (2004). Factors associated with peer HIV prevention outreach in drug-using communities. *AIDS Education and Prevention*, 16(6), 499–508.
- Latkin, C. A., Knowlton, A. R., & Sherman, S. (2001). Routes of drug administration, differential affiliation, and lifestyle stability among cocaine and opiate users: Implications to HIV prevention. *Journal of Substance Abuse*, 13(1–2), 89–102.
- Leonard, L., DeRubeis, E., Pelude, L., Medd, E., Birkett, N., & Seto, J. (2008). "I inject less as I have easier access to pipes": Injecting, and sharing of crack-smoking materials, decline as safer crack-smoking resources are distributed. *The International Journal on Drug Policy*, 19(3), 255–264.
- Logan, T., & Leukfeld, C. (2000). Sexual and drug use behaviours among female crack users: A multi-site sample. *Drug and Alcohol Dependence*, 58(3), 237–245.
- Malchy, L., Bungay, V., & Johnson, J. (2008). Documenting practices and perceptions of 'safer' crack use: A Canadian pilot study. *The International Journal on Drug Policy*, 19(4), 339–341.
- Malta, M., Monteiro, S., Lima, R. M., Bauken, S., Marco, A., Zuim, G. C., et al. (2008). HIV/AIDS risk among female sex workers who use crack in Southern Brazil. *Revista de Saúde Pública*, 42(5), 830–837.
- McMahon, J. M., & Tortu, S. (2003). A potential hidden source of hepatitis C infection among noninjecting drug users. *Journal of Psychoactive Drugs*, 35(4), 455–460.
- Mercure, S. A., Tetu, I., Lamonde, S., & Cote F. (2008). Guides de rue working group. Seeing is believing: An educational outreach activity on disinfection practices. *Harm Reduction Journal*, 12, 5–7.
- Mitchell-Lewis, D. A., Phelan, J. A., Kelly, R. B., Bradley, J. J., & Lamster, I. B. (1994). Identifying oral lesions associated with crack cocaine use. *Journal of the American Dental Association*, 125, 1104–1108, 1110.
- Murphy, S., & Rosenbaum, M. (1992). Women who use cocaine too much: Smoking crack vs. snorting cocaine. *Journal of Psychoactive Drugs*, 24(4), 381–388.
- Needle, R., Kroeger, K., Belani, H., Achrekar, A., Parry, C. D., & Dewing, S. (2008). Sex, drugs, and HIV: Rapid assessment of HIV risk behaviors among street-based drug using sex workers in Durban, South Africa. *Social Science and Medicine*, 67(9), 1447–1455.
- Nunes, C. L., Andrade, T., Galvão-Castro, B., Bastos, F. I., & Reingold, A. (2007). Assessing risk behaviors and prevalence of sexually transmitted and blood-borne infections among female crack cocaine users in Salvador–Bahia, Brazil. *The Brazilian Journal of Infectious Diseases*, 11(6), 561–566.
- Oliveira, L. G., & Nappo, S. A. (2008). Characterization of the crack cocaine culture in the city of São Paulo: A controlled pattern of use. *Revista de Saúde Pública*, 42(4), 664–671.
- Ottaway, C. A., & Erickson, P. G. (1997). Frequent medical visits by cocaine using subjects in a Canadian community: An invisible problem for health practitioners. *Journal of Substance Abuse Treatment*, 14(5), 423–429.
- Page-Shafer, K. A., Cahoon-Young, B., Klausner, J. D., Morrow, S., Molitor, F., Ruiz, J., et al. (2002). Hepatitis C virus infection in young, low-income women: The role of sexually transmitted infection as a potential cofactor for HCV infection. *American Journal of Public Health*, 92(4), 670–676.
- Parry, C., Petersen, P., Carney, T., Dewing, S., & Needle, R. (2008). Rapid assessment of drug use and sexual HIV risk patterns among vulnerable drug-using populations in Cape Town, Durban and Pretoria, South Africa. *SAHARA Journal*, 5(3), 113–119.
- Pechansky, F., Bassani, D. G., Diemen, L., Kessler, F., Leukefeld, C. G., Surratt, H. L., et al. (2007). Using thought mapping and structured stories to decrease HIV risk behaviors among cocaine injectors and crack smokers in the South of Brazil. *Revista Brasileira de Psiquiatria*, 29(3), 233–240.
- Pechansky, F., Woody, G., Inciardi, J., Surratt, H., Kessler, F., Von Diemen, L., et al. (2006). HIV seroprevalence among drug users: An analysis of selected variables based on 10 years of data collection in Porto Alegre, Brazil. *Drug and Alcohol Dependence*, 82(Suppl 1), S109–S113.
- Perlman, D. C., Henman, A. R., Kochems, L., Paone, D., Salomon, N., & Des Jarlais, D. C. (1999). Doing a shotgun: A drug use practice and its relationship to sexual behaviors and infection risk. *Social Science and Medicine*, 48(10), 1141–1148.
- Perlman, D. C., Perkins, M. P., Paone, D., Kochems, L., Salomon, N., Friedmann, P., et al. (1997). "Shotgunning" as an illicit drug smoking practice. *Journal of Substance Abuse Treatment*, 14(1), 3–9.
- Porter, J., & Bonilla, L. (1993). Crack users' cracked lips: An additional HIV risk factor. *American Journal of Public Health*, 83(10), 1490–1491.
- Porter, J., Bonilla, L., & Drucker, E. (1997). Methods of smoking crack as a potential risk factor for HIV infection: Crack smokers' perceptions and behavior. *Contemporary Drug Problems*, 24, 19–347.
- Ross, M. W., Timpson, S. C., Williams, M. L., & Bowen, A. (2007). The impact of HIV-related interventions on HIV risk behavior in a community sample of African American crack cocaine users. *AIDS Care*, 19(5), 608–616.
- Rotheram-Borus, M. J., Rhodes, F., Desmond, K., & Weiss, R. E. (2010). Reducing HIV risks among active injection drug and crack users: The safety counts program. *AIDS and Behavior*, 14(3), 658–668.
- Roxburgh, A., Degenhardt, L., Copeland, J., & Larance, B. (2008). Drug dependence and associated risks among female street-based sex workers in the greater Sydney area, Australia. *Substance Use and Misuse*, 43(8–9), 1202–1217.
- Shannon, K., Rusch, M., Morgan, R., Oleson, M., Kerr, T., & Tyndall, M. W. (2008). HIV and HCV prevalence and gender-specific risk profiles of crack cocaine smokers and dual users of injection drugs. *Substance Use and Misuse*, 43(3–4), 521–534.

- Small, W., Kerr, T., Charette, J., Schechter, M. T., & Spittal, P. M. (2006). Impacts of intensified police activity on injection drug users: Evidence from an ethnographic investigation. *The International Journal on Drug Policy, 17*(2), 85–95.
- Story, A., Bothamley, G., & Hayward, A. (2008). Crack cocaine and infectious tuberculosis. *Emerging Infectious Diseases, 14*(9):1466–1469.
- Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park: Sage.
- Strike, C., Leonard, L., Millison, M., Anstice, S., Berkley, N., & Medd, E. (2006). *Ontario needle exchange programs: Best practice recommendations*. Toronto, Ontario: Toronto Ontario Needle Exchange Coordinating Committee.
- Symington, A. (2007). Ottawa: crack pipe program cancelled by city council. *HIV AIDS Policy Law Rev, 12*(2-3):29–30.
- Tortu, S., McMahon, J., Pouget, E., & Hamid, R. (2004). Sharing of noninjection drug-use implements as a risk factor for hepatitis C. *Substance Use and Misuse, 39*(2), 211–224.
- Tortu, S., Neaigus, A., McMahon, J., & Hagen, D. (2001). Hepatitis C among noninjecting drug users: A report. *Substance Use and Misuse, 36*(4), 523–534.
- Verthein, U., Haasen, C., Prinzleve, M., Degkwitz, P., & Krausz, M. (2001). Cocaine use and the utilization of drug help services by consumers of the open drug scene in Hamburg. *European Addiction Research, 7*(4), 176–183.
- Wechsberg, W. M., Luseno, W., Riehm, K., Karg, R., Browne, F., & Parry, C. (2008). Substance use and sexual risk within the context of gender inequality in South Africa. *Substance Use and Misuse, 43*(8-9):1186–1201.
- Weeks, M. R., Convey, M., Dickson-Gomez, J., Li, J., Radda, K., Martinez, M., et al. (2009). Changing drug users' risk environments: Peer health advocates as multi-level community change agents. *American Journal of Community Psychology, 43*(3–4), 330–344.
- Weeks, M. R., Dickson-Gomez, J., Mosack, K. E., Convey, M., Martinez, M., & Clair, S. (2006). The risk avoidance partnership: Training active drug users as peer health advocates. *Journal of Drug Issues, 36*(3), 541–570.
- Weeks, M. R., Li, J., Dickson-Gomez, J., Convey, M., Martinez, M., Radda, K., et al. (2009a). Outcomes of a peer HIV prevention program with injection drug and crack users: The Risk Avoidance Partnership. *Substance Use and Misuse, 44*(2), 253–281.