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The impact of crack pipe distribution on drug use and healthcare utilization

Jagoe, Leegay

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UNIVERSITY OF CALGARY

The impact of crack pipe distribution on drug use and healthcare utilization

by

Leegay M. Jagoe

A THESIS

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Abstract

Safeworks is an Alberta Health Services program in Calgary that was distributing crack pipes as part of public health harm reduction. A survey was conducted with 179 respondents (131 male and 48 female) who received crack pipes from Safeworks. Fifty-six percent of females were Aboriginal and 70.2% of males were Caucasian. Forty-four percent were Hepatitis C positive and 4.4% were HIV positive. Sixty-three percent lived in homeless shelters. Sixty-six percent of respondents increased their access to other Safeworks services since commencement of pipe distribution. Seventy-one percent used a mouthpiece on their pipe, and, 78% in the past year had never burned or cracked their lips or had only done so once or twice. Ninety-five percent usually used glass or pyrex pipes. Fifty-four percent reported smoking more crack when they had their own pipe. Drug injecting frequency decreased for 28.4%. Sixty-six percent shared pipes. The public health implications of the findings are discussed.

Acknowledgments

I would first and foremost like to acknowledge the clients of Safeworks for being so gracious throughout this process. People were open with their stories and were excited to be involved in the research. People who are addicted to crack cocaine, particularly if they are also living in poverty, and are homeless, are among the most discriminated people in our country. Many of the general public view them as sub-human. Politicians play politics with their health because they give in to general public views, rather than advocate for evidence based practice in health care. I would also be remiss if I did not thank the Safeworks staff for advertising and promoting the research to clients. They politely tolerated me when we worked together in the van and I made our already busy evenings even more so.

My gratitude towards the Safeworks staff extends beyond this research. On August 15, 2011, the Alberta Health Services Executive emailed us their decision to stop the Safeworks crack pipe distribution program, and instructed us to discontinue this service immediately. There were no discussions with the Safeworks staff prior to this decision. This put tremendous strain on our team and on the clients and we are hoping this decision will be reversed in the near future.

Second, I am very thankful for the generous financial support provided to me by the Alberta Community Council on HIV (ACCH), specifically the grant they provided (Community Based Research Grant) which covered the cost of gift certificates for respondents.

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Chapter 1: Introduction

1.1 Background

1.1.1 Increased prevalence of crack cocaine smoking in Canada and Calgary

Fischer, Rehm, Patra, Kalousek, Haydon, Tyndall and El-Guebaly (2006) conducted a review of existing survey data (the OPICAN survey) collected in 2002 among people in Vancouver, Edmonton, Toronto, Montreal, and Quebec City. The survey respondents were individuals who used illicit opioid and other drugs (n = 677). One conclusion Fischer et al. (2006) made from reviewing the 2002 survey data was that crack cocaine use (i.e. smoking crack cocaine using a pipe) has become increasingly prevalent across Canada amongst people who use illicit drugs. Members of an advocacy and support group in Calgary for people who use drugs (*Grateful or Dead*) stated that crack cocaine is the most common illicit drug to be found on the streets of Calgary (personal communication, October 2009). There is an Alberta Health Services public health program in Calgary called *Safeworks*. The staff of *Safeworks* work with people who use drugs; the primary focus (as a public health team) is on supporting them to prevent the spread of blood borne or sexually transmitted infections such as Human Immunodeficiency Virus (HIV), Hepatitis C Virus (HCV), and syphilis. The staff of *Safeworks* offer needle exchange as one strategy for the prevention of infection spread, as well as other services such as immunizations, wound care, health assessment, provision of condoms, addictions counseling, and referrals to relevant programs and services. The Coordinator of the *Safeworks* program found that the numbers of needles distributed had decreased. She hypothesized that the reason for the decrease

was due to crack cocaine becoming the drug of choice, and smoking was the preferred route of administration (D. Nielsen, personal communication October 1, 2009).

1.1.2 Disease transmission and crack cocaine smoking

Disease transmission related to crack cocaine smoking is a public health concern. The type of pipe (see Figure 1.1 below), the filter, and the frequency of use pose a risk for transmitting the HCV.



Figure 1.1 An example of a stem commonly used as a crack pipe, including a filter of steel wool (i.e. Brilo)

The HCV is spread by blood contact; due to the common practice of sharing pipes and having oral sores blood borne infections such as HCV are spread (Fischer, Powis, Firestone Cruz, Rudzinski, & Rehm, 2008; Neaigus, Gyarmathy, Zhao, Miller, Friedman, & Des Jarlais, 2007; Porter, Bonilla, & Drucker, 1997; Shannon, Rusch, Morgan, Oleson, Kerr, & Tyndall, 2008; Tortu, McMahon, Pouget, & Hamid, 2004).

The link between smoking crack cocaine and HIV transmission has not been as well demonstrated as HCV. However several researchers have reported an association between crack cocaine smoking and HIV transmission (DeBeck, Kerr, Li, Fischer, Buxton, Montaner, & Wood, 2009; McCoy, Lai, Metsch, Messiah, & Zhao, 2004). It has also been found that when crack pipes are more readily available, people who smoke and inject crack tend to smoke it more and inject it less which further decreases the risk of HCV and HIV transmission. Leonard, DeRubeis, Pelude, Medd, Birkett, and Seto (2008) analyzed data from interviews in Ottawa with people who were street involved and who injected drugs and smoked crack cocaine. They found that individuals decreased their injecting behaviors when crack pipes became available.

1.1.3 Crack pipe distribution programs

Crack pipe distribution programs have been just as controversial as needle exchange programs were because there is a belief that both programs condone drug use and possibly increase drug use (Haydon & Fischer, 2005). A major goal for health care professionals in crack pipe distribution programs is to decrease the transmission of HCV and HIV through sharing of crack pipes. In addition, those who use the programs are brought into contact with health and social services personnel (Canadian HIV/AIDS Legal Network, 2008). There are many programs across Canada that offer needle exchange, and some of those have introduced crack pipe distribution to their services. Vancouver, Red Deer, Ottawa, Toronto, and Calgary are some cities where crack pipes are available through harm reduction programs. Safeworks, an Alberta Health Services program in Calgary, began distributing crack pipes to clients on November 21, 2008. Unfortunately in August

2011, the Executive of Alberta Health Services instructed Safeworks staff to discontinue distributing crack pipes and other supplies related to safer crack smoking (screens, mouthpieces, and push sticks), citing possible legal issues for the staff as the reason (Wilt, 2011, August 15). Alberta Health Services Executive were concerned that providing crack pipes might be illegal for the staff and for the organization. An opinion letter is being written by Alberta Justice and Alberta Health Services Executive were waiting on this before a decision was made on the future of the program.

1.2 Purpose of the Study

This study was conducted between June 7, 2010 and April 1, 2011, before crack pipe distribution by Safeworks ceased. The purpose of this study was to survey people (mainly homeless) in Calgary who accessed the services of Safeworks, and who were smoking crack cocaine. The author wanted to determine the impact the Safeworks crack pipe distribution had on drug use behavior and Safeworks service utilization behaviors.

1.3 Research Objectives

The primary objective was to:

- Determine whether the Safeworks crack pipe distribution program changed crack pipe sharing behavior.

Secondary objectives were to:

- Determine whether the Safeworks crack pipe distribution program changed crack smoking frequency, drug injecting frequency, and service utilization for other health issues (e.g. health education, support in general, support with quitting drugs, testing

for sexually transmitted infections, HIV, hepatitis A, B, C, vaccinations, condoms, wound care, health assessment, and referrals).

- Obtain a demographic profile of people who obtain crack pipes from Safeworks.
- Estimate, from self-report, how many in the sample surveyed had HCV and HIV.

1.4 Key Terms

1.4.1 Crack Cocaine

Cocaine that has not been neutralized by an acid to make powder cocaine. Crack cocaine is in a rock crystal form that can be heated and its vapors are then inhaled (National Institute on Drug Abuse, 2010).

1.4.2 Crack Pipe

Many common items (e.g. pop cans and tire gauges) may be used to smoke crack cocaine, but the pipe most commonly referred to in this study is a glass or *Pyrex* stem, open on both ends (see Figure 1.1 on page 2 for an example of a glass pipe).

1.4.3 Hepatitis C Virus (HCV)

The HCV was first characterized in the late 1980s. It is an RNA flavivirus with six major genotypes and more than 50 subtypes (Wong & Lee, 2006). There have been major antiviral advances in recent years but no vaccine is available to date. HCV may be transmitted when the blood of an infected individual comes into contact with the blood of another individual. Mechanisms involved in transmission include sharing needles and other drug injection supplies, sharing crack pipes, blood transfusion, tattoos, body piercing,

certain types of sexual activities, and sharing personal items such as razors and nail clippers (Public Health Agency of Canada, 2009). More than 350 000 people worldwide die from HCV related liver diseases every year (World Health Organization, 2012).

1.4.4 Harm Reduction

Harm reduction involves policies, programs, and projects, which aim to reduce the health, social and economic harms associated with substance use (International Harm Reduction Association, 2009). For example, people who inject drugs are vulnerable to contracting infections such as HIV, hepatitis B and hepatitis C because of the practice of sharing needles and other paraphernalia and providing needles and syringes reduces the risk of infections (Braine, Des Jarlais, Ahmad, Purchase, & Turner, 2004; Stark, Herrmann, Ehrhardt, & Bienzle, 2006). Newcombe (2010) describes eight core harm reduction interventions: provision of drug taking equipment (especially needle exchange), health care for people who use drugs (e.g. vaccines and testing), substitute prescribing (e.g. methadone), information and education on safer drug use, antidotes and treatments for overdose, testing of drug products, and drug law and drug users' rights.

Healthcare professionals who take a harm reduction approach recognize that some individuals are not ready to engage with abstinence based drug treatment services. Given that individuals are engaging in high risk behaviors through their drug use, help can be offered to them in the form of suggesting risk reduction methods (e.g. preventing overdose, using clean needles, not sharing crack pipes, supervised consumption facilities, and substitution therapy such as methadone) (International Harm Reduction Association, 2009). Harm reduction programs usually adopt outreach approaches so that they are

literally meeting their clients where they are at in their natural settings and where they are at in their addiction.

The Safeworks harm reduction program is provided by a team of nurses, social workers, and outreach workers who provide services from a van and from offices at two homeless shelters in Calgary. They provide supplies for the safer injection of drugs; needles, alcohol swabs, sterile water, tourniquets, filters, cookers, acidifiers, and sharps containers. Other harm reduction interventions they offer are health care, and information and education on safer drug use.

Harm reduction is a term that is also used in a broader context, unrelated to substance use. Some activities such as vehicle, boat, and bike travel are inherently risky. To mitigate the risk, individuals adopt protective measures such as wearing seat belts, putting children into car seats, wearing life jackets, and wearing helmets. Harm reduction is also used to describe safer alcohol use. Examples of this are having a designated driver rather than driving intoxicated, drinking establishments that stop the sale of alcohol to those obviously intoxicated, and safe grads for grade 12 students.

1.4.5 Human Immunodeficiency Virus (HIV)

The Human Immunodeficiency Virus (HIV) is the virus that causes Acquired Immunodeficiency Syndrome (AIDS). There are three types of HIV designated as HIV-1, HIV-2, and HIV-3; the term 'HIV', in North America, primarily refers to HIV-1 and HIV-2. HIV is a retrovirus and the earliest known case of HIV in a human was in 1959 (Centers for Disease Control and Prevention, 2012). HIV transmission is a complex process: an HIV-positive person has to have a sufficient viral load in their body fluids (blood, semen, vaginal

fluid, anal fluid or breast milk) to infect another person. The virus must gain access to the blood of an uninfected person. Transmission can occur through: unprotected vaginal or anal sex; vertical transmission (from a mother to her fetus or infant); sharing needles and other supplies while injecting drugs; blood transfusions, and other activities such as tattoos and piercings. HIV may also enter the bloodstream through disruption of the integrity of the skin (for example, wounds or open sores) or by passing through a mucous membrane such as those lining the vagina, rectum, and the urethra (Canadian AIDS Treatment Information Exchange, 2009).

1.4.6 Homelessness

The Canadian definition of homelessness encompasses a range of housing and shelter circumstances, with people being without any shelter at one end and being insecurely housed at the other (Canadian Homelessness Research Network, 2012). The definition includes being absolutely homeless and living on the street or in places not intended for human habitation, living in emergency shelter, being provisionally accommodated (temporary or lacking security of tenure), and at risk of homelessness. The term risk of homelessness refers to people who are not homeless but whose current economic and/or housing situation is precarious and does not meet safety and public health standards.

1.5 Significance of the Study

This is the first study to be conducted on crack pipe distribution in Alberta. The sample size of 179 was the largest to date among surveys involving crack pipe distribution programs in Canada.

Chapter 2: Review of the Literature

Crack pipe distribution is new in Canada (the earliest formal program started in 2004 in Toronto), compared to needle exchange distribution which began in Canada during the mid 1980's and early 1990's (Haydon & Fischer, 2005). The literature is scant regarding crack pipe distribution; no published research from Alberta was recovered. A search of the online database Proquest, one of the world's largest theses and dissertation databases (August 24, 2013) revealed 91 theses or dissertations using the search term *crack cocaine smoking* and none were about crack pipe distribution programs.

An online search of medicine and nursing databases (August 24, 2013) revealed the following: The Cumulative Index to Nursing and Allied Health Literature plus (CINAHL) (a nursing and allied health research database providing full text for more than 770 journals) using the search term *crack smoking* with no limits resulted in 91 articles. The major focus of the search was crack pipe distribution programs and the impact they have on crack use (use of clean intact pipes, pipe sharing, crack consumption, crack injection) and service utilization. Of those 91 articles, only four focused on crack pipe distribution programs. Use of the search term *crack pipe distribution program* yielded only one article in CINAHL.

The PubMed search (a resource of the US National Library of Medicine National Institute of Health, and comprised of more than 21 million citations for biomedical literature), using *crack cocaine smoking* as the search term resulted in 325 articles, of which, five focused on crack pipe distribution programs. Other sources of information were websites and printed material from well known sources in the field of HIV, HCV, and substance use: Canadian HIV AIDS Legal Network, Public Health Agency of Canada, Health

Canada, Canadian AIDS Treatment Information Exchange, Alberta Alcohol and Drug Abuse Commission, Alberta Health and Wellness, International Harm Reduction Association, Communicable Disease Control and Prevention, and the World Health Organization.

2.1 Crack Cocaine use common in Canada

Oral crack cocaine use by inhaling the vapourized substance using a pipe has become increasingly prevalent across Canada amongst people who use illicit drugs (Fischer et al., 2006). Health Canada conducted the Canadian Addiction Survey (2005) by recruiting Canadians aged 15 and over for a telephone interview through random digit dialing of households in 21 regions of Canada. Health Canada (2005) demonstrated that self-reported use of cocaine and crack cocaine, ever in their lifetime, amongst Canadians increased from 3.5% in 1989 to 10.6% in 2004 (n = 13,909).

Crack cocaine is the most commonly used illegal drug in Vancouver's Downtown Eastside (Community Health and Safety Evaluation (CHASE) Project Team, 2005). Researchers with the CHASE project interviewed participants (n = 3530) from Vancouver's Downtown Eastside in face to face surveys between January 2003 and December 2004. Approximately 82% reported non injection drug use and 38% reported injection drug use. The most commonly reported drug taken by a non-injection route (even compared to alcohol and marijuana) was crack cocaine. Heroin use (mostly injected) is on the decline in Vancouver, which is similar to Calgary's noted decrease in injection drugs and increase in crack cocaine smoking. Three possible reasons for crack cocaine's popularity, based on this investigator's observations through discussions with clients who use drugs, are basic

supply and demand (it is what drug dealers are offering), crack cocaine is lower priced than powder cocaine, and smoking is easier than injecting.

The Public Health Agency of Canada (2006) conducted the I-Track study in which a convenience sample (n = 3031) of individuals who injected drugs were surveyed from seven needle exchange programs (Edmonton, Regina, Sudbury, Toronto, Victoria, Winnipeg, and Quebec (including Ottawa)). Researchers also conducted anonymous HIV (n = 2933) and HCV (n = 2842) testing on respondents. Crack cocaine was the drug respondents most commonly took by a non-injecting route in the previous six months.

Grateful or Dead is a Calgary support group for people who use drugs either currently or in the past. In order to obtain membership, individuals must have addictions to “hard” drugs (not only alcohol and marijuana) and must have spent much of their time on the streets. Grateful or Dead meets twice a month usually at one of the homeless shelters or at a downtown health centre (Sheldon M. Chumir), and two staff from Safeworks facilitate the group. Group members state that crack cocaine is the most common illicit drug to be found on the streets of Calgary (personal communication October, 2009).

One of the main addiction treatment programs in Alberta, the former Alberta Alcohol and Drug Abuse Commission (AADAC) in a 2008 report, stated that of the 25,831 adults 18 and older who received addictions services in Alberta between April 2007 and March 2008, 44% reported using cocaine in the 12 months prior to treatment (Alberta Alcohol and Drug Abuse Commission, 2008). This is compared to 24% who reported using opiates in the 12 months prior to treatment. It may be difficult to accurately measure crack

cocaine use, however based on the data obtained from the above surveys, conversations, and drug rehabilitation programs, it is shown that crack cocaine is one of the most prevalent illegal drugs used in Canada.

2.2 Disease transmission and crack cocaine smoking

Disease transmission related to crack cocaine smoking is a public health concern. The type of “high” produced and the way that crack is smoked contribute to the possibility of transmission of disease. The short duration of the crack cocaine high (typically five to fifteen minutes) results in repeated consumption, sometimes 30 to 40 doses or more in a 24 hour period (Porter et al., 1997). A wide variety of items can be used to smoke crack cocaine such as tins cans, plastic pens, copper tubing, wrench sockets, pill bottles, and metal and glass tubes (Porter et al., 1997). Most commonly crack is smoked through a glass tube (also referred to as a stem or a pipe) that is held vertically to balance the crack on a filter, which is commonly brass wool, wadded into a ball and inserted into the end of the pipe. Once the crack is on the filter, the end of the device is lit, vaporizing the crack, which is then inhaled. Porter et al. (1997) found that although people prefer the glass stems, they are difficult to obtain because the police often raid the stores that sell glass pipes. Glass stems cause less injuries due to burning than metal because they do not conduct the heat as quickly. People may also use a lip protector (plastic or rubber tubing) on the stem to further protect their lips from cuts and burns.

2.3 Pipes and filter contribute to disease transmission

The pipe, the filter used and the frequency of use impact the risk of transmitting the HCV. The HCV is transmitted through blood to blood contact with someone infected with

HCV, such as through sharing needles for injecting drugs, via contaminated tattoo needles, or via blood transfusion (Public Health Agency of Canada, 2009). More than 350 000 people worldwide die from HCV related liver diseases every year (World Health Organization, 2012). The blood to blood transmission of HCV is possible when pipes are shared and there are sores on the lips or in the mouth. Sores are common when smoking crack as users burn their lips on hot pipes, or cut their lips on jagged edged pipes such as those created by broken glass or soda pop cans (Fischer et al., 2008; Neaigus et al., 2007; Porter et al., 1997; Shannon et al., 2008; Tortu et al., 2004). Macias, Palacios, Claro, Vargas, Vergara, Mira, Merchante, Corzo, and Pineda (2008) studied 182 individuals in Seville, Spain to evaluate the factors associated with HCV infection among people who use drugs and who had not had previous intravenous drug exposure but did smoke crack cocaine. The researchers tested the participants' blood for HCV and conducted interviews with them about their risk behaviors. They found that sharing equipment for crack inhalation was associated with HCV infection ($p = 0.003$).

2.4 Injecting drugs and the HCV risk

In Canada, injection drug use is the predominant risk factor for HCV acquisition, due to sharing needles, syringes, and other injection equipment. Injecting accounts for 70-80% of newly acquired HCV cases in Canada (Public Health Agency of Canada, 2009). As of December 2007 approximately 242,500 Canadians had been infected with HCV (Public Health Agency of Canada, 2009). Sharing injection equipment carries a higher risk of transmission than sharing pipes because infected blood directly enters the bloodstream through the injection site into the vein. Transmission from smoking crack involves blood

(infected with HCV) from a pipe entering through a crack or lesion on the lips or inside the mouth, and then into the bloodstream. Over 64% (n = 1946) of respondents in the previously mentioned I-Track Study reported that in the previous six months they had taken crack by a non-injection route (Public Health Agency of Canada, 2006). The implication is that there are many people who potentially have HCV due to their injection use who are also vectors for HCV spread through crack pipe sharing.

2.5 HIV infection and smoking crack cocaine

Much of the research on HIV infection and smoking crack cocaine indicates that the higher prevalence of HIV infection among crack smokers is associated with high-risk sexual practices. One study demonstrating high risk practices associated with crack smoking was conducted by Edlin, Irwin, Faruque, McCoy, Word, Serrano, Inciardi, Bowser, Schilling, and Holmberg (1994). They studied crack smokers and non crack smokers (n = 1967) in New York, Miami, and San Francisco. They conducted interviews and obtained samples of blood for HIV. In New York and Miami, HIV infection was 2.3 times more prevalent among crack smokers than among nonsmokers. However, when high-risk sexual practices were controlled for, crack smoking was not significantly associated with HIV infection (p value was not reported).

DeBeck et al. (2009) reported that smoking crack cocaine is a risk factor for HIV infection among people who also use injection drugs, even when high-risk sexual practice and injection drug use were controlled for. Wood et al. (2009) analyzed existing data from the Vancouver Injection Drug Users Study (IDUS) and conducted a secondary data analysis. The IDUS research spanned 1996 to 2005 and involved completion of a questionnaire at

baseline and semi-annually, and the provision of a blood sample for serologic HIV testing. Data from a total of $n = 1048$ subjects of the IDUS were included in the analysis. After using a hazard ratio to adjust for HIV risk behaviors such as daily drug injection, sex work, unprotected sex, and syringe borrowing, the researchers found an association between daily crack smoking and HIV seroconversion ($p < 0.05$, HR 4.01, 95% CI 1.79, 8.96).

2.6 Crack pipe distribution programs

Crack pipe distribution programs have, perhaps, been as controversial among the general Canadian public as needle exchange programs (Haydon & Fischer, 2005; Pauly, Goldstone, McCall, Gold, & Payne, 2007). Two Canadian newspapers printed articles regarding crack pipe distribution programs. In 2005 Ottawa City Council voted in favor of a motion regarding discontinuation of the city's public health crack pipe distribution program (Weeks, 2005, April 22). In 2011 the Calgary Sun printed a story titled 'Pipe dreams aplenty. Critics smoking mad at notion of giving addicts crack pipe kits' (Dormer, 2011, August 2). There is a belief that crack pipe and needle distribution programs condone drug use and enable people who use drugs to continue to do so, as evidenced by a statement from Alberta Wildrose party leader Danielle Smith who stated "...harm reduction is good, but the focus should be on treatment...To me when you're dealing with people who have addictions, you're trying to assist them in getting free of their addictions rather than enabling it" (Dormer, 2011, August 2).

Health professionals in crack pipe and needle exchange programs adopt a harm reduction approach (International Harm Reduction Association, 2009), which is based on the premise that people who use drugs may be inflicting considerable harm to themselves.

It is important to emphasize that the concept underpinning the programs (and the staff working in them) is not to promote drug use but rather to promote *safer* use which may ultimately lead to a reduction or cessation of use (International Harm Reduction Association, 2009). There is no evidence to support the concern that supplying people with crack pipes encourages drug use (Canadian HIV/AIDS Legal Network, 2008).

There are many publicly and privately funded programs across Canada, that have needle exchange programs, some of which have introduced crack pipe distribution. Vancouver, Red Deer, Ottawa, Toronto, and Calgary are examples of cities where crack pipes are available through harm reduction programs introduced in 2007 or 2008 (Canadian HIV/AIDS Legal Network, 2008). The Safeworks program in Calgary began distributing crack pipes to clients on November 21, 2008. The history of the Safeworks crack pipe distribution program serves to illustrate the controversy of such programs. On August 15, 2011, the Executive of Alberta Health Services informed the Safeworks program staff that they were to stop crack pipe distribution immediately. Several weeks prior to this, there had been much publicity in the media (as mentioned above) about the Safeworks crack pipe distribution program. Alberta Health Services Executive stated the reason for halting crack pipe distribution was the potential legal implications (Dormer, 2011, August 18). Alberta Health Services is in the process of seeking direction from the crown prosecutor's office to clarify whether crack pipe distribution is akin to distribution of drug paraphernalia thereby leaving staff and the organization open to criminal charges. It is legal in Canada to give or sell sterile syringes to injection drug users (Canadian HIV/AIDS Legal Network, 2005). To date, Safeworks has not reinstated the crack pipe distribution

component of their program. There has been no more discussion in the public media regarding the legal issues with crack pipe distribution.

2.7 Prevent disease transmission through crack pipe distribution programs

The rationale behind crack pipe distribution is to decrease injury to the lips and mouth and to decrease sharing behaviors, thereby reducing the risk of HIV and HCV transmission. If it can be shown that pipe sharing decreases when individuals obtain their own intact Safeworks pipes for free; then it can be argued that there will be a risk reduction of HCV and HIV transmission.

Malchy, Bungay, Johnson, and Buxton (2011) surveyed people in Vancouver (n = 177) who received safer crack use kits, including pyrex crack pipes, from the research team. Questionnaires were administered by a team of researchers in local Vancouver service agencies over three to five months to men and women living or “hanging out” in Vancouver’s inner city. Participants were surveyed (n = 106) post distribution of the kits. They found that 98% (n = 105) of respondents used the pipes, and 79% (n = 84) used the pipe mouthpieces. It was concluded that targeted crack kit distribution made safer items more accessible. They also concluded that its impact on safer use practice was limited because researchers also found that there was an increase in the use of pipes and mouthpieces that had been previously used by others.

Boyd, Johnson, and Moffat (2008) conducted qualitative interviews with 27 men and women who had received safer crack kit from the SCORE program in Vancouver’s downtown eastside (Safer Crack Use, Outreach, Research and Education project). Their findings revealed that the ways crack was smoked was shaped by the “realities of people’s

lives". Many participants reported they usually smoked in small groups which often meant they shared equipment (pipes). Many also stated they needed to get high and were in a hurry to do so (often smoking in public places and afraid of being caught) which meant that people were not always thinking about the safest use. They found that crack use practices are difficult to change but respondents reported they made change if they were simple and if they heard messages often from outreach workers.

It has also been found that when crack pipes are more readily available, people who smoke and inject crack tend to smoke more and inject less. From a harm reduction perspective this is beneficial as it decreases the chance of transmission of HCV and HIV. Other health-related harms of injecting drugs are abscesses, thrombosis, septicemia, endocarditis, arterial damage and limited venous access (Strike et al., 2013). Leonard et al. (2008) found that individuals decreased injecting when crack pipes became available. The researchers conducted interviews with men and women in Ottawa who injected drugs and smoked crack. Interviews were conducted six months before Ottawa's crack pipe distribution commenced, and at one, six, and twelve months post program commencement. Participation in each phase of the evaluation was independent of participation in each of the other phases therefore individual changes of respondents could not be measured. The majority of participants (56%) reported that their frequency of injecting had not changed (n = 83), but a large proportion (40%) reported that their frequency of injecting drugs had declined (n = 59).

2.8 Relationship building through crack pipe distribution programs

When individuals obtain their pipes from a health service agency, a goal of the health professional is that there will be a gradual development of a trusting relationship between the health care professional and the person who is using crack. It is believed that a trusting relationship with a health care professional will contribute to the health of the individual (Hamric, Spross, & Hanson, 2009). The health of individuals will be enhanced because they have support in managing their daily issues and they have access to health education. In addition, the health professional has an opportunity to assess their health status and encourage them to access other health services in a timely fashion. Through this relationship, the professional can encourage individuals to engage in safer drug use practices and can support them when they are ready to stop their drug use. One month after commencement of crack pipe distribution, the Ottawa program cited above demonstrated a 140% increase in service demands (O'Byrne & Holmes, 2008), indicating the opportunity for increased interactions with health care professionals.

In summary the findings from the research indicate that crack cocaine use has increased in Canada and Calgary. Hepatitis C and HIV may be spread through crack cocaine smoking. Crack pipe distribution programs have met with criticism from politicians and the general public in Ottawa and Calgary. Crack use practices are very difficult to change, especially when the realities of peoples' lives are taken into account, but clients do take pipes when programs offer them. Other changes such as using a mouthpiece and using alternative filters to Brilo are more likely to be adopted if the product is easy to use and if outreach staff and peers consistently promote the health benefits.

Gaps in the literature include examining other services that crack pipe distribution programs may offer and how those contribute to the overall health of individuals. The investigator in the current study addressed the gaps by asking which of the other Safeworks health services people accessed. Inquiring into whether individuals thought their crack smoking increased when pipes were made available was also unique to this study.

Chapter 3: Method

In the present study, a survey was conducted with 179 adults in Calgary who had received crack pipes from the Alberta Health Services program, Safeworks. Respondents were asked to complete a 43 item questionnaire concerning their drug use, health status, and use of the Safeworks program (see Appendix X). The Crack Pipe Use Questionnaire was developed specifically for data collection in this study. The data were analyzed using the IBM Statistical Package for the Social Sciences (IBM SPSS© 2012).

3.1 Population

The population of interest for the survey were adult males and females aged 18 and older in Calgary, who were homeless, who smoked crack cocaine and had received a crack pipe from Safeworks.

3.2 Selection of Study Participants

Respondents were asked by the investigator if they would like to take part in the research. Participants also initiated involvement in the research because they had seen a poster, had heard about the research from Safeworks clients, staff, other professionals, or had heard about it from respondents who had already taken part in the research.

3.3 Inclusion Criteria

To be eligible for inclusion into the study the following criteria had to be met;

Respondents were:

- 18 years of age or older. After the investigator completed data collection, it was recognized that one person who had been surveyed was, in fact, 17 years old, and was excluded from the study; the sample size was reduced from 180 to 179.
- Current crack smokers. Individuals who had recently quit smoking crack cocaine in the last few months, but had smoked it for years, and had received crack pipes from Safeworks, were included in the sample.
- In receipt of a crack pipe from Safeworks. Many people were not included in the study as there was no proof they had received a crack pipe from Safeworks. The Safeworks staff maintain an electronic record on each client they see. Information collected includes any supplies received (crack pipes, needles, condoms, etc.). If there was no record of the individuals having received a crack pipe from Safeworks, they were not allowed to participate.
- Homeless (see definition page eight).

3.4 Exclusion Criteria

Individuals who were not included in the study were those determined to be too intoxicated or if the interaction was deemed unsafe by the investigator. Some intoxicated individuals were invited to return on another occasion to participate in the study.

Individuals were only allowed to complete the questionnaire once. It was anticipated, and found to be the case, that respondents would try to take part in the research more than once in order to obtain the \$10 gift certificate. In an attempt to prevent individuals from being surveyed more than once, the investigator collected information about each respondent. The information gathered was: their Safeworks code name,

culture, distinguishing characteristics, birth year, gender, date, and location the questionnaire was completed (see Appendix B). Individuals were excluded if they had already completed the questionnaire.

3.5 Sample Size

The sample size of 179 was anchored in the primary objective of crack pipe sharing behavior, which was based on the number of homeless or near homeless who were estimated to be smoking crack in Calgary. It is difficult to be exact, but based on numbers published in Calgary's 2008 Homeless Count, there were approximately 4000 homeless per night in Calgary (City of Calgary, 2008). Of those 4000, 3600 were adults 18 and older. Hwang (2001) reported that the prevalence of drug use disorders among the homeless is 30% and he stated that crack cocaine and marijuana are the illicit drugs most often used by homeless people in Canada. Based on Hwang's research, if 30% of homeless individuals have a drug use disorder, it was estimated that there were 1080 homeless that have a drug use disorder in Calgary. The 2004 Health Canada I-Track study followed 794 people who injected drugs in Toronto, Regina, Sudbury and Victoria. Of the 794 people who injected drugs, approximately half (52.2%) of them had also used crack in the last six months (Health Canada, 2004).

Based on the results from these previous studies, it was conservatively estimated that 30% of Calgary's 3600 homeless adults (1080) would have a drug use disorder. Of those 1080, it was estimated that at least 50% would smoke crack, providing a population of $N = 540$. The investigator was prepared to accept a 6% margin of error (MOE) with 95% confidence intervals (CI's) and a 50% response rate. Based on a population of 540, a 6%

MOE, 95% CI's, and a 50% response rate, a sample size of 180 was required. As mentioned previously, one subject had to be excluded during the data analysis phase because although he had stated he was 18 years old, his birth date revealed he was only 17, therefore the final sample size was 179.

3.6 Recruitment

Recruitment occurred mainly through word of mouth however posters and flyers were also used (see Appendix C). Respondents were recruited through the Safeworks van, and at the Safeworks fixed site locations at the Calgary Drop In Centre, the Salvation Army Centre of Hope, and Sheldon Chumir Health Centre. The investigator, other Safeworks staff, staff at other agencies Safeworks frequented, members of the Grateful or Dead group, and respondents themselves, all helped to recruit individuals into the study. Posters were displayed in high traffic areas and flyers were left for distribution at the Calgary Drop In Centre, the Salvation Army Centre of Hope, Sheldon Chumir Health Centre, the Mustard Seed Foothills Shelter, Alpha House Shelter, CUPS Health Centre, and Renfrew Recovery Centre.

3.7 Instrument

A questionnaire was used to collect the data (see Appendix A) and the items were completed by face to face interviews. The investigator completed the questionnaire based on the respondents' replies to the items. The questionnaire was developed by the researchers. Face and content validity was determined by two University of Calgary, Faculty of Nursing Professors, six members of the Grateful or Dead group (clients of Safeworks, four staff of the Safeworks program, and one member of staff of a program

similar to Safeworks located in Edmonton, called *Streetworks*. Face validity is the extent to which an instrument looks like it will measure what it intends to measure and content validity is the degree to which an instrument represents the breadth of content for the concept being measured (Polit & Beck, 2008). All individuals involved in helping to determine face and content validity received a copy of the questionnaire and subsequently gave their input in person, via telephone, or via email. Items were added or deleted or changed based on this feedback.

The investigator drafted the initial questionnaire based on her nursing experience working with the population and from the results of other similar questionnaires found in the literature. The initial questionnaire had 23 items and the final questionnaire had 43 items. The initial questionnaire was revised based on input from several interested parties (as mentioned above) who read the questionnaire and gave verbal and written feedback. The input focused on making the items clearer with more use of common street jargon while at the same time gathering additional information from respondents about their drug use and the use of Safeworks' services. The questionnaire was completed by the investigator based on the clients' responses.

The final version of the questionnaire had a total of 43 items that were subdivided into four sections. The first section had six items to determine demographic information. There were five items in section two that focused on cigarette and crack smoking. Section three had 24 items focusing on drug use in the past year, and service utilization. The eight items in section four related to the respondents' HCV and HIV status. Respondents were

given a ten dollar gift certificate of their choice from either Tim Horton's or Safeway upon completion of the questionnaire.

3.8 Procedure

The investigator (a Safeworks staff person) completed the questionnaires with the clients at the Safeworks offices in the Calgary Drop-In Centre, the Salvation Army Centre of Hope, and the Sheldon Chumir Health Centre. Questionnaires were also completed in the Safeworks outreach van, at Grateful or Dead meetings, and at drug treatment facilities where Safeworks outreach was being provided.

Questionnaires were completed between June 7, 2010 and April 1, 2011 at the following locations and in the following numbers: 113 at the Calgary Drop In Centre Safeworks office, 30 in the Safeworks Van, 28 at the Salvation Army Centre of Hope Safeworks office, four at Grateful or Dead meetings, four at drug treatment centres, and one at the Sheldon Chumir Health Centre Safeworks office.

3.9 Data Analysis

All data collection, coding, entry, and cleaning was performed by the author. The Statistical Package for the Social Sciences (IBM SPSS©2012) was used for statistical analysis. The results of statistical tests were considered significant if p values were less than or equal to 0.05 and 95% CI were used. The primary objective was to assess any change in crack pipe sharing behavior. A change in crack pipe sharing behavior was intended to be defined as a decrease in sharing behavior by respondents using pipes obtained from Safeworks.

The analysis consisted of computing frequencies for all of the data. Descriptive statistics (minimum, maximum, mean, range, median, and standard deviation) were computed. Chi-Square cross tabulations were used to assess whether there were relationships between two categorical variables (for example, crack pipe sharing and other variables such as gender, ethnicity, current accommodation, how much is spent on crack, and how often individuals received a pipe from Safeworks). A one sample Chi-Square was used to test the difference between the observed and expected responses to the question of whether crack smoking increased in relation to respondents possessing their own pipes. Interval and ratio data were analyzed using independent t-tests and one way ANOVAs, to test the differences between means (t-test) and the relationship between several independent and dependent variables (one way ANOVA). An example of one of the t-tests was an analysis of the relationship between whether individuals injected less when they had their own pipe and their age, and age they started crack, and how many years they had used crack. ANOVA was used to measure relationships between change in crack pipe sharing and age, age they started crack, and how many years they had smoked it.

3.10 Ethical Considerations

Ethical approval for this study was received from the University of Calgary Conjoint Health Research Ethics Board (CHREB). The consent form was read by the investigator to the respondents as some respondents were unable to read. Signed consent was required for the research to take place. Individuals who could not read or write, signed with an X or another mark of their choice (see Appendix D for consent form). Privacy was provided to each respondent, and every effort was made not to have another Safeworks staff present at

the time of the interview. Where that was not possible such as in the Safeworks van where two staff were always present, respondents were required to verbally consent to having an additional person present. Respondents sometimes declined the need for total privacy, choosing instead to have their friend or partner present during the interaction. Respondents were allowed to decline answering items they did not feel comfortable answering and they were told they would still receive the gift certificate. Respondents were reminded that answering the questions would not change the care they received from Safeworks. No data that might identify the respondents were entered into SPSS. The only persons having access to the research materials were the investigator, her supervisor, and one committee member. All results in the thesis and in any subsequent publications or presentations will be reported as aggregate data. All research material will be stored in a locked cabinet in a secure office at the University of Calgary, Faculty of Nursing. All data will be erased and shredded, as appropriate, after 12 years.

Chapter 4: Results

A total of 179 adults in Calgary (18 and over) were surveyed for this study. The 179 respondents represented a convenience sample of adults in Calgary who had received a crack pipe from the Alberta Health Services Safeworks program, and who were homeless at the time, or had been frequently homeless in the past. Questionnaires were completed between June 7, 2010 and April 1, 2011. There were four major research objectives that framed the survey items, and the results are presented according to each of the objectives. The results were considered statistically significant if the p value was ≤ 0.05 , and 95% confidence intervals are reported.

The first objective was to obtain a demographic profile of people who obtained crack pipes from Safeworks. Demographic characteristics are provided and the respondents' history of crack cocaine use is described. Objective two was to estimate how many in the sample have HCV and HIV. The number of respondents who had been tested for HCV and HIV is provided, as well as the self reported results of the tests. Objective three was to determine whether the Safeworks crack pipe distribution program changed crack smoking frequency, drug injecting frequency, and service utilization. The results that are presented include: drugs used most often in the past year, frequency of crack smoking, amount spent on crack, frequency of receiving pipes, changes in crack smoking since the introduction of pipe distribution, changes in intravenous drug injection since introduction of pipe distribution, and amount and type of Safeworks services accessed since Safeworks started to provide pipes. Objective four was to determine whether the Safeworks crack pipe distribution program changed crack pipe sharing behavior. The data presented are:

the use of crack mouthpieces, pipe sharing and pipe sharing change, frequency of burned or cracked lips, what was typically used for a pipe, and the average number of days the pipes were used for.

4.1 Research Objective 1: Obtain a demographic profile of people who obtain crack pipes from Safeworks

The demographic characteristics presented are: age, relationship status, ethnicity, current accommodation, and accommodation in the past year. The respondents are also described in terms of their history of cocaine use: the age crack cocaine was first smoked, and years of smoking crack cocaine. Table 4-1 below displays a summary of the age characteristics of the sample.

Table 4.1 Age by gender

Age (years)	Male n = 131	Female n = 48
Mean	40	37
Minimum	20	18
Maximum	67	61
Range	47	43
Median	40.0	38.5
Standard deviation	10.2	8.5

As may be seen from Table 4.1, the sample consisted of 131 males and 48 females. There was one respondent who self identified as transgendered, from male to female, and

that individual was categorized as female. The mean ages for male and female respondents were 40 years (sd = 10.12) and 37 years (sd = 8.5) respectively. There was a statistically significant difference ($t = 1.94$, $df = 177$, $p = 0.05$) between the mean age of males and females who were surveyed.

The respondents were asked whether they were single or in a relationship, and the results are displayed on Table 4.2 below.

Table 4.2 Relationship status by gender

Relationship status	Male n (%)	Female n (%)	Total n (%)
Single	105 (80.2%)	18 (37.5%)	123 (68.7%)
In a Relationship	26 (19.8%)	30 (62.5%)	56 (31.3%)
Total	131	48	179

As seen in Table 4.2, most male respondents were single and most females were in a relationship. Chi-Square analysis revealed this difference was statistically significant (Chi-Square = 30.09, $df = 1$, $p < 0.001$).

In Figure 4.1, the ethnicity of males is illustrated.

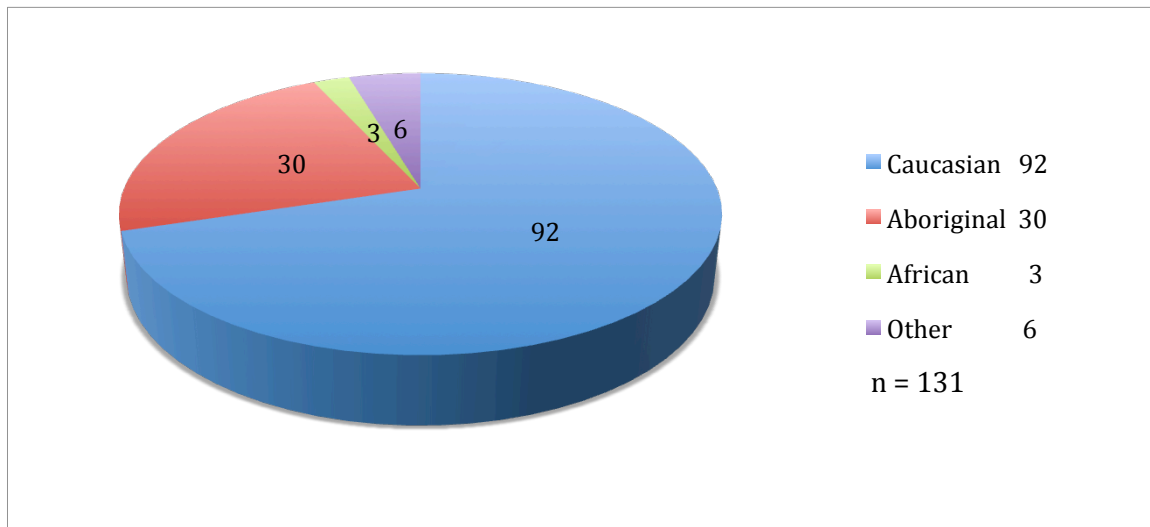


Figure 4.1 Ethnicity – Males

As seen in Figure 4.1, the majority of males reported their ethnicity as being Caucasian (70.2%). The next most common ethnicity reported by males was Aboriginal (22.9%).

In Figure 4.2, the ethnicity of females is illustrated.

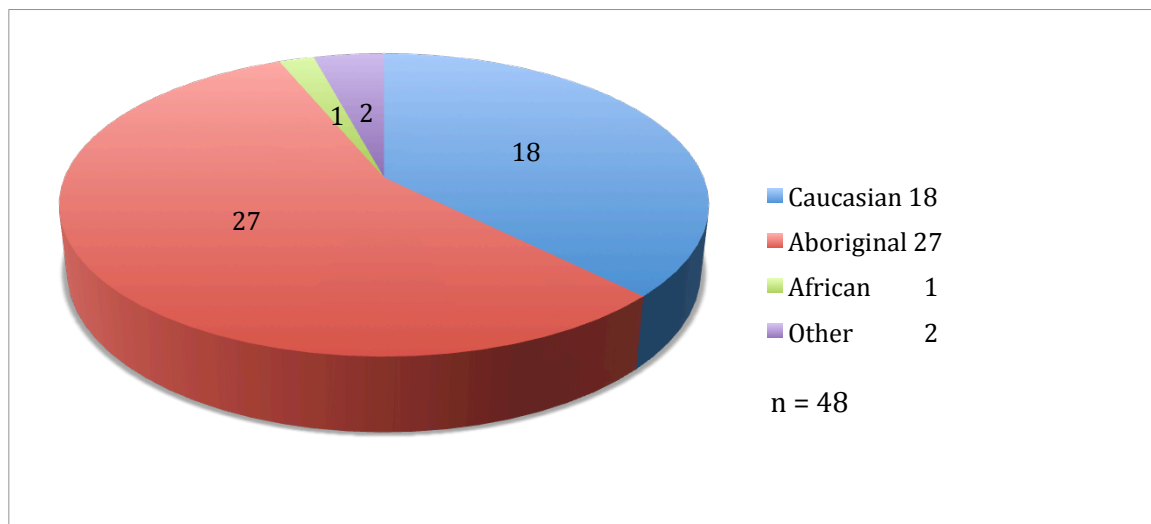


Figure 4.2 Ethnicity - Females

As seen in Figure 4.2, the majority of females reported their ethnicity as Aboriginal (56.3%). There was a statistically significant difference between males and females with respect to ethnicity (Chi-Square 18.41, df = 3, $p < 0.001$).

In Figure 4.3, the locations where males were residing at the time of the survey are displayed (current accommodation).

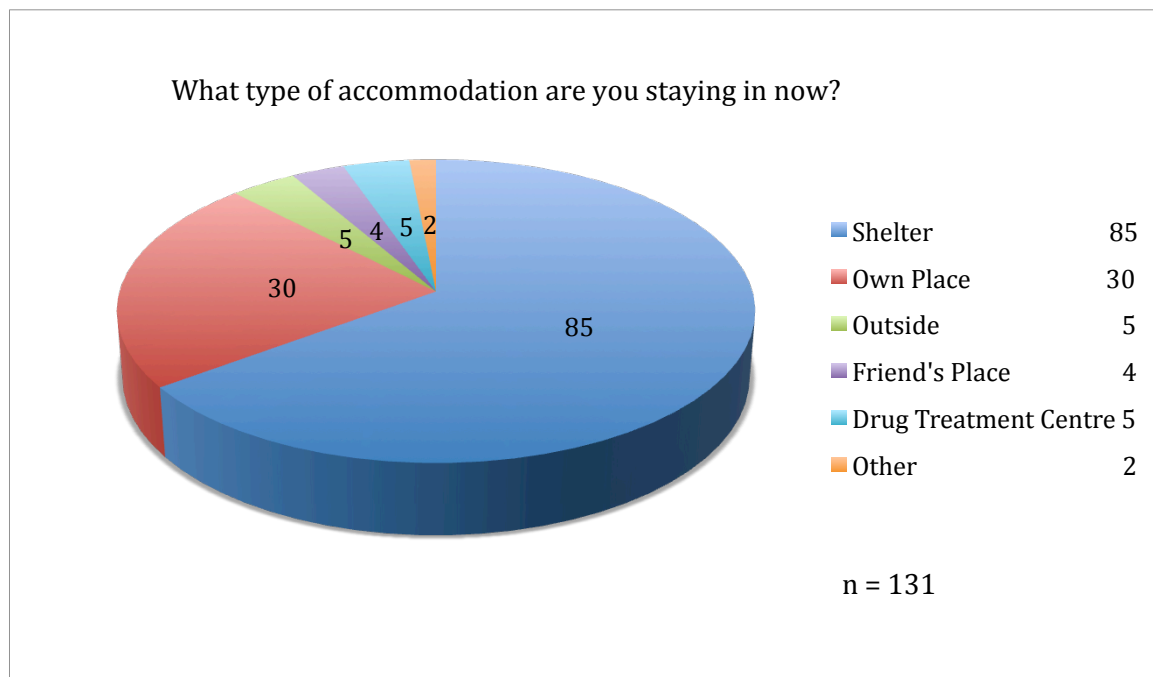


Figure 4.3 Current accommodation – Males

As displayed in Figure 4-3, the most common response for current accommodation for males was a shelter (64.9%). Males who were living in their own place accounted for 22.9%.

In Figure 4.4, the locations where females were residing at the time of the survey are displayed (current accommodation).

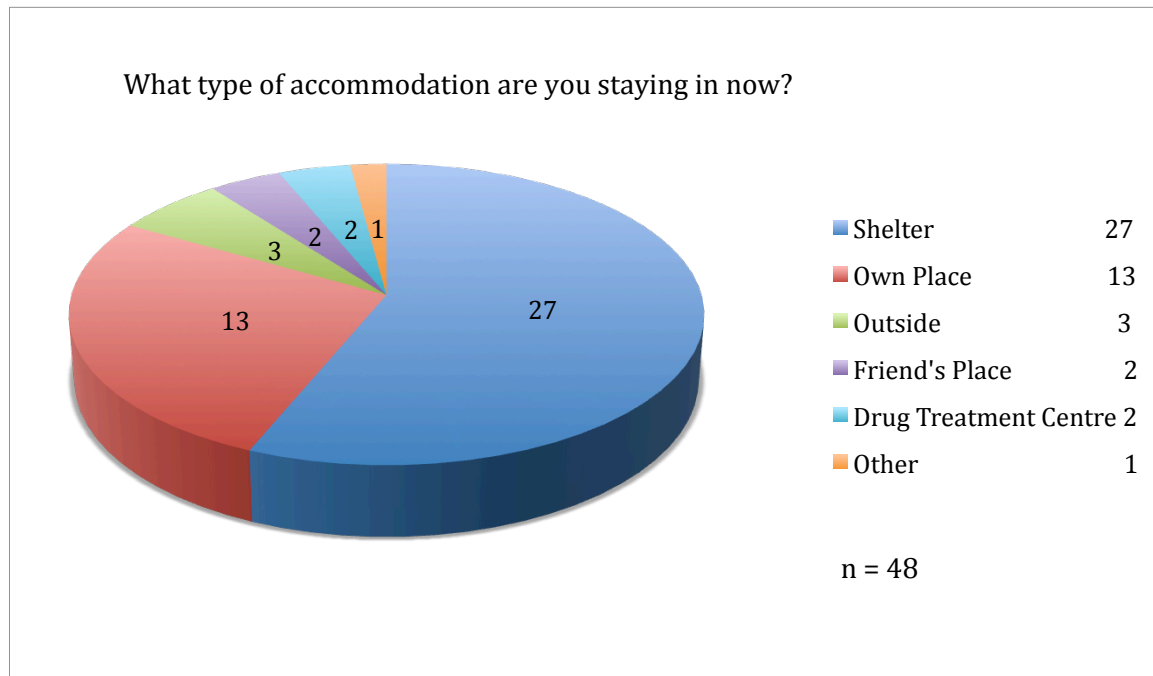


Figure 4.4 Current accommodation – Females

As shown in Figure 4.4, the most common response for current accommodation for females was shelter (56.3%). Females who were living in their own place accounted for 27.1%. There was no statistically significant difference between men and women regarding their current accommodation (Chi-Square = 1.35, df = 5, p = 0.93).

Respondents were asked to name all the places they had lived in the past year (they could choose multiple responses). The results are displayed in Figure 4.5.

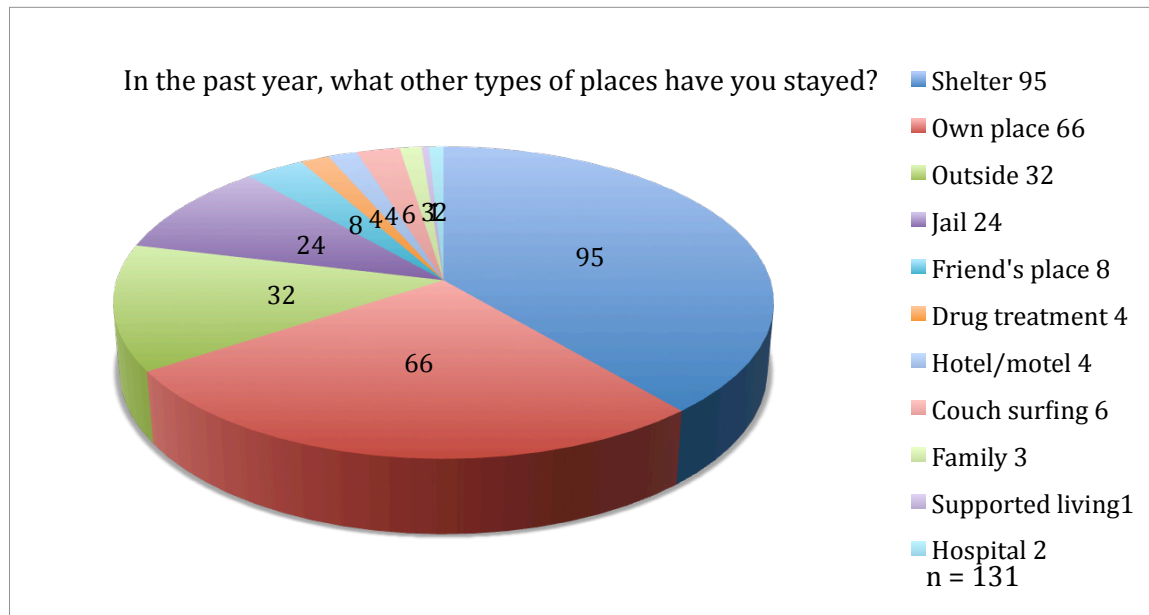


Figure 4.5 Accommodation in the past year – Males

As seen in Figure 4-5, the number of males who had lived in shelters over the past year was $n = 95/131$ (72.5%). Respondents could choose multiple responses if they had lived in more than one place over the past year. The number of males who had lived in their own place over the past year was $n = 66/131$ (50.4%). The number of males who had lived outside in the past year was $n = 32/131$ (24.4%), and there were $n = 24/131$ (18.3%) who had been in jail in the past year.

In Figure 4.6 the results are displayed for accommodation for females in the past year.

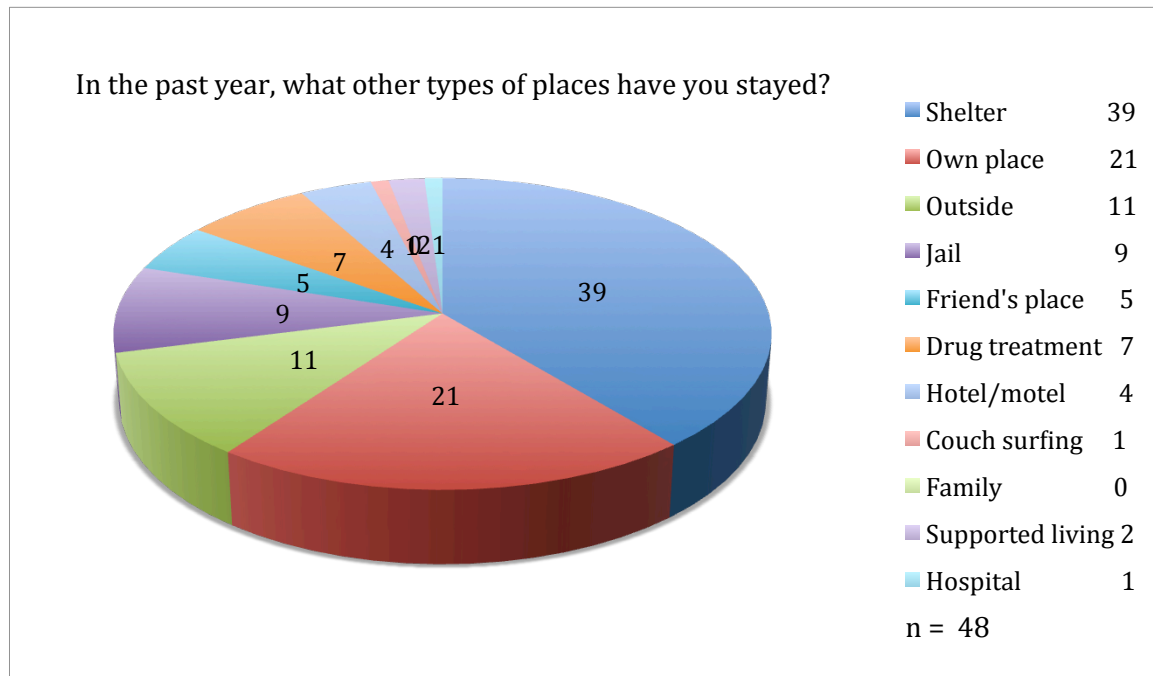


Figure 4.6 Accommodation in the past year – Females

As seen in Figure 4.6, the number of females who had lived in shelters over the past year was $n = 39/48$ (81.3%). Respondents could choose multiple responses if they had lived in more than one place over the past year. The number of females who had lived in their own place over the past year was $n = 21/48$ (43.8%). The number of females had lived outside in the past year was $n = 11/48$ (22.9%), and there were $n = 9/48$ (18.8%) who had been in jail in the past year. There was a statistically significant difference between males and females regarding accommodation in the past year (Chi-Square = 8.10, $df = 1$, $p = 0.004$).

Respondents were asked to recall the age they started smoking crack cocaine. The results are shown on Table 4.3.

Table 4.3 Age started smoking crack cocaine by gender

Age (years)	Male n = 130	Female n = 48
Mean	27	26
Minimum	8	12
Maximum	54	52
Range	46	40
Median	25.0	24.5
Standard Deviation	10.75	9.20

As may be seen on Table 4.3, the mean age of starting crack cocaine was very similar for males (27 years, sd = 10.75) and females (26 years, sd = 9.20). The minimum (8 years for males and 12 years for females) and maximum ages (54 years for males and 52 years for females) were also similar. There was no statistically significant difference between males and females ($t = 0.82$, $df = 176$, $p = 0.41$) with respect to age of starting crack cocaine.

Respondents were asked to report the number of years they had smoked crack cocaine. The results are displayed on Table 4.4.

Table 4.4 Years smoking crack cocaine by gender

Age (years)	Male n=130	Female n=48
Mean	12	10
Minimum	1	1
Maximum	38	32
Range	37	31
Median	11	9
Standard Deviation	7.55	6.33

As seen on Table 4.4, the mean number of years males smoked crack cocaine was 12 years (sd = 7.55), and the mean number of years females smoked crack cocaine was 10 years (sd = 6.33). The minimum number of years both genders smoked crack cocaine was one year. The maximum number of years males smoked crack cocaine was 38 years and the maximum number of years females smoked crack cocaine was 31 years. There was no statistically significant difference between the genders regarding the number of years they had smoked crack cocaine ($t = 1.43$, $df = 176$, $p = 0.15$).

4.2 Research Objective 2: Estimate, from self-report, how many in the sample have HCV and HIV

The results presented here relate to subjects who were tested for HCV and HIV, and the results of their last tests. In this section it is noted that the total number of respondents

varied as some respondents did not remember whether they had been tested, or the results of the tests.

Respondents were asked whether they had been tested for HCV. Responses are displayed on Table 4.5.

Table 4.5 Self reported ever tested for Hepatitis C Virus by gender

Tested for HCV	Male n (%)	Female n (%)	Total n (%)
Yes	110 (87.3%)	44 (93.6%)	154 (89.0%)
No	16 (12.7%)	3 (6.4%)	19 (11.0%)
Total	126	47	173

As may be seen on Table 4.5 the majority of the sample ($n = 154/173$, 89.0%) had been tested for HCV ($n = 6$ respondents did not remember if they had been tested). Males and females responded similarly, with $n = 110/126$ males (87.3%) being tested, and $n = 44/47$ (93.6%) females being tested. There was no statistically significant difference between males and females regarding whether they had been tested for HCV (Chi-Square = 1.40, $df = 1$, $p = 0.24$).

Respondents were asked to report the result of their last HCV test; the results are presented on Table 4.6.

Table 4.6 Self reported result of last Hepatitis C test by gender

Result of last HCV test	Male n (%)	Female n (%)	Total n (%)
Positive	54 (43.9%)	20 (42.6%)	74 (43.5%)
Negative	54 (43.9%)	23 (48.9%)	77 (45.3%)
Indeterminate	0 (0.0%)	1 (2.1%)	1 (0.6%)
Never Tested	15 (12.2%)	3 (6.4%)	18 (10.6%)
Total	123	47	170

As seen on Table 4.6, 43.5% tested positive for HCV, and 45.3% tested negative for HCV by self report (n = 9 did not remember the results of their last HCV test). As may be seen 12.2% of the males and 6.4% of the females stated they were never tested for HCV. There was no statistically significant difference between males and females in regards to the result of their last HCV test (Chi-Square = 3.91, df = 3, p = 0.27).

Respondents were asked whether they had been tested for HIV, and their responses are provided on Table 4.7.

Table 4.7 Self reported ever tested for Human Immunodeficiency Virus by gender

Tested for HIV	Male n (%)	Female n (%)	Total n (%)
Yes	116 (89.2%)	47 (97.9%)	163 (91.6%)
No	14 (10.8%)	1 (2.1%)	15 (8.4%)
Total	130	48	178

As may be seen on Table 4.7, the majority of the respondents (91.6%) had been tested for HIV. The difference between males and females for ever being tested for HIV approached statistical significance (Chi-Square = 3.43, df = 1, p = 0.06). There were 10.8% of males and 2.1% of females who had never been tested for HIV.

Respondents were asked to state the result of their last HIV test and those results are displayed on Table 4.8.

Table 4.8 Self reported result of last Human Immunodeficiency Virus test by gender

Result of last HIV Test	Male n (%)	Female n (%)	Total n (%)
Positive	4 (3.5%)	3 (6.5%)	7 (4.4%)
Negative	109 (96.5%)	43 (93.5%)	152 (95.6%)
Total	113	46	159

As may be seen on Table 4.8, 95.6% self reported that the result of their last HIV test was negative, whereas 4.4% stated their last HIV test was positive. It is noted that in Table 4.7, 178 respondents stated they had been tested for HIV, however 159 respondents (Table 4.8) reported on the result of their last HIV test. The reason for this discrepancy is that some subjects did not return for their results after being tested and therefore did not know the result of their last HIV test. There was no statistically significant difference between males and females on HIV status (Chi-Square = 0.69, df = 1, p = 0.41) based on their last self reported test.

Research Objective 3: Determine whether the Safeworks crack pipe distribution program changed crack smoking frequency, drug injecting frequency, and service utilization

The survey results presented in this section are: drugs smoked, snorted or eaten most often in the past year, frequency of crack smoking, amount spent per day on crack, frequency of receiving crack pipes from Safeworks, crack smoking increase in relation to possessing own crack pipe, drugs injected intravenously most often in the past year, whether subjects injected less when they had their own crack pipe, amount of Safeworks services accessed since Safeworks started giving out pipes, and what types of other Safeworks services respondents were accessing.

Respondents were asked which drugs they had smoked, snorted, or eaten (*not injected*) most often in the past year. The male responses are detailed in Figure 4.7.

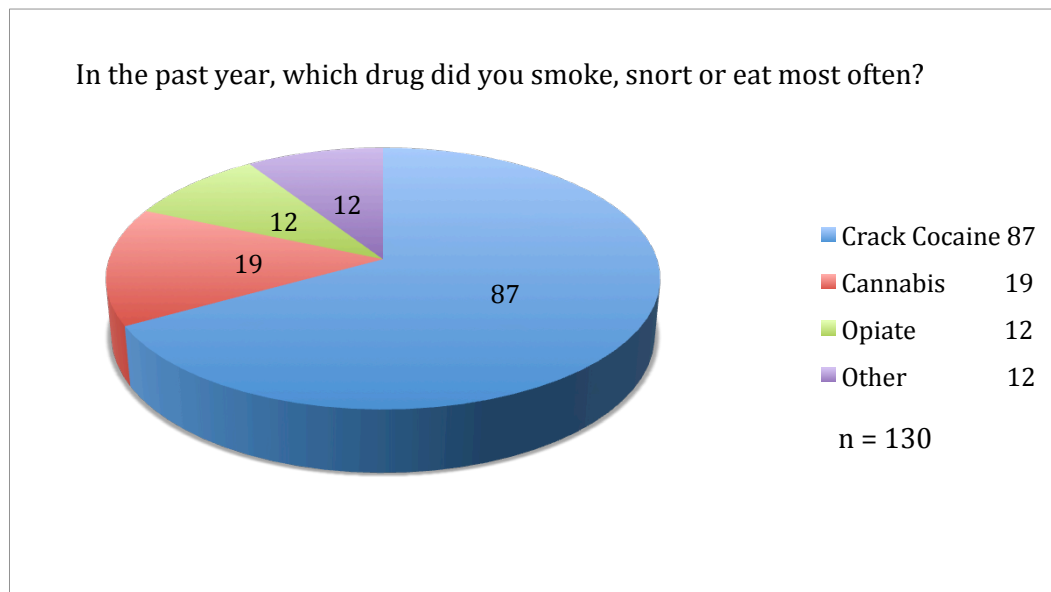


Figure 4.7 Drug smoked, snorted, and eaten most often in the past year – Males

As seen in Figure 4.7, crack cocaine was the drug most often smoked, snorted, or eaten (*not injected*) by males in the past year (66.9%). Cannabis was the next most frequent drug used in the past year by males (14.6%).

The female responses to the question in the past year which drug did you smoke, snort, or eat most often are displayed in Figure 4.8.

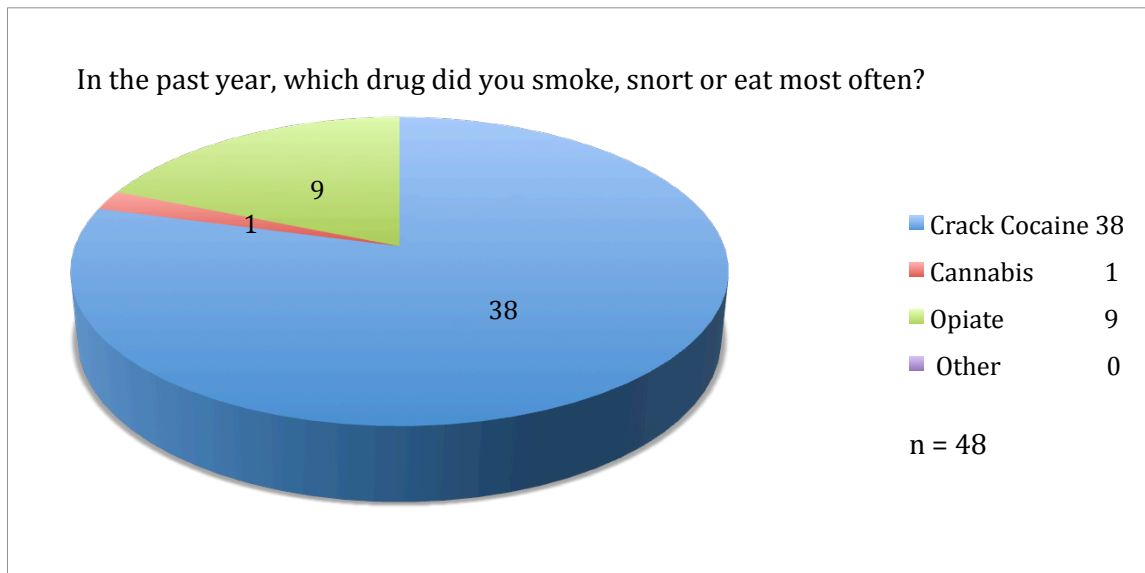


Figure 4.8 Drug smoked, snorted, and eaten most often in the past year - Females

As displayed in Figure 4.8, crack cocaine was the drug most often smoked, snorted, or eaten (*not injected*) by females in the past year (79.2%). Opiates were the next most frequent drug category used in the past year by females (18.8%). There was a statistically significant difference between males and females regarding the drug either smoked, snorted, or eaten (*not injected*) most often in the past year (Chi-Square = 12.77, df = 3, p = 0.005).

Respondents were asked how often they smoked crack cocaine, and the males responses are presented in Figure 4.9.

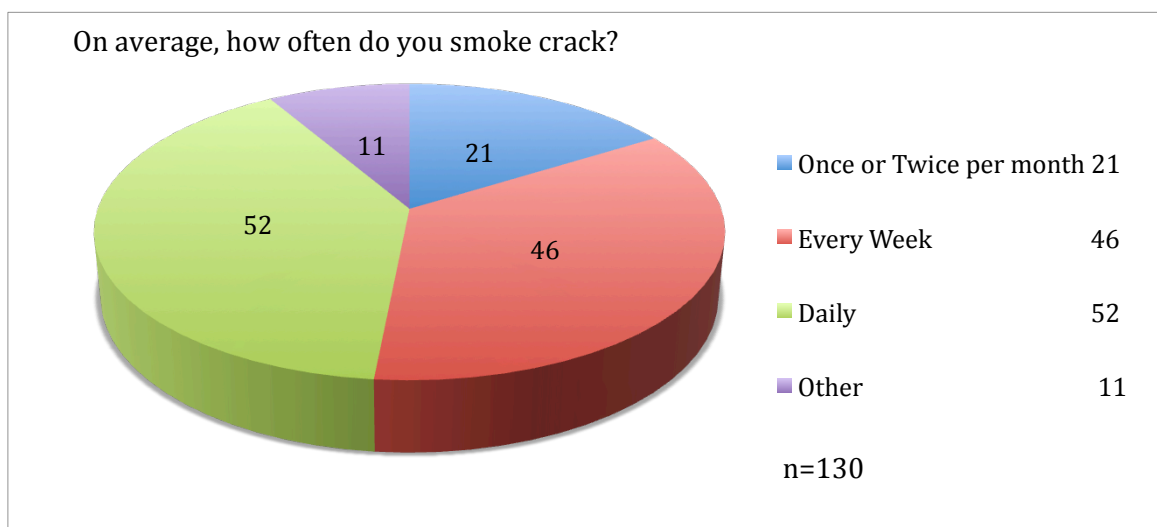


Figure 4.9 Frequency of crack smoking – Males

As seen in Figure 4.9, the most common response by males was that they smoked crack cocaine daily (40.0%). This was followed closely by those males who smoked crack cocaine every week (35.4%).

The females responses to the question of how often crack was smoked are presented in Figure 4.10.

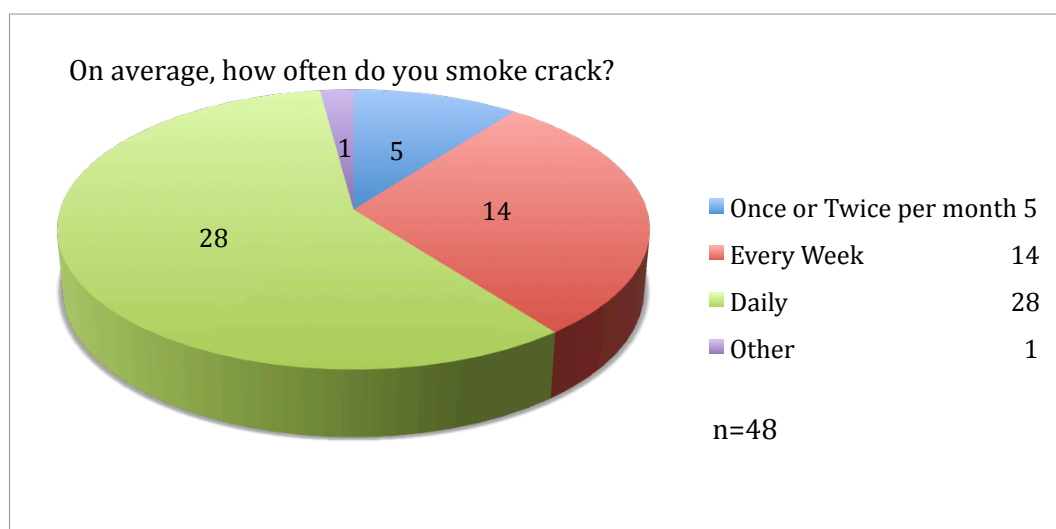


Figure 4.10 Frequency of crack smoking – Females

As may be seen in Figure 4.10, the most common response by females was that they smoked crack cocaine daily (58.3%). Similar to males, 29.2% of the females smoked crack cocaine every week ($n = 14/48$). There was no statistically significant difference between males and females on how frequently they smoked crack cocaine (Chi-Square = 5.93, $df = 3$, $p = 0.12$).

Respondents were asked to answer how much they typically spent on crack cocaine per day or per time (if they did not use every day). The male responses are provided in Figure 4.11.

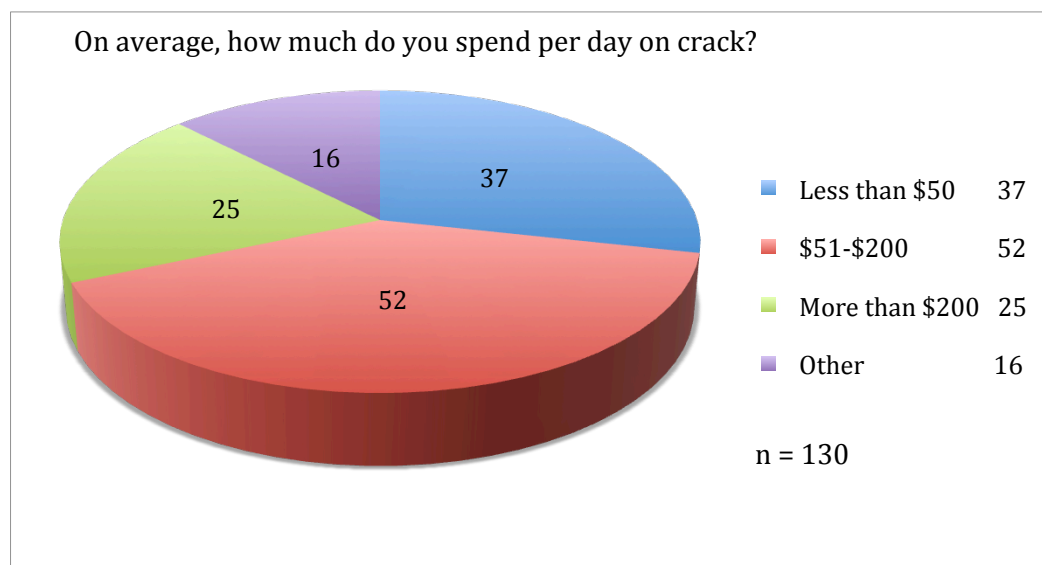


Figure 4.11 Amount spent per day on crack – Males

As seen in Figure 4.11, 40.0% of males typically spent \$51 to \$200 per day or per time on crack cocaine. The next most common response from males was that they spent less than \$50 per day or per time on crack cocaine (28.5%). Those who spent more than \$200 per day or per time accounted for 19.2% of male respondents.

The female results to the question of how much was spent per day (or per time if they did not use every day) are provided in Figure 4.12.

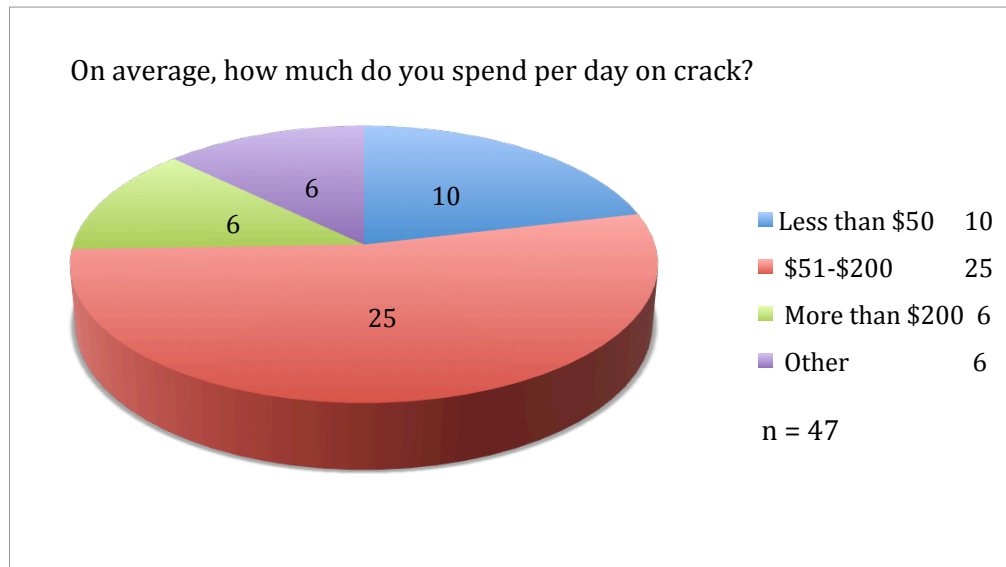


Figure 4.12 Amount spent per day on crack – Females

As shown in Figure 4.12, the most common response among females was also that they typically spent \$51 to \$200 per day or per time on crack cocaine ($n = 25/47$ (53.2%)). There was no statistically significant difference between males and females on average amount spent per day on crack (Chi-Square = 2.88, $df = 3$, $p = 0.41$).

Respondents were asked how often they received a crack pipe from Safeworks.

Male responses are presented in Figure 4.13.

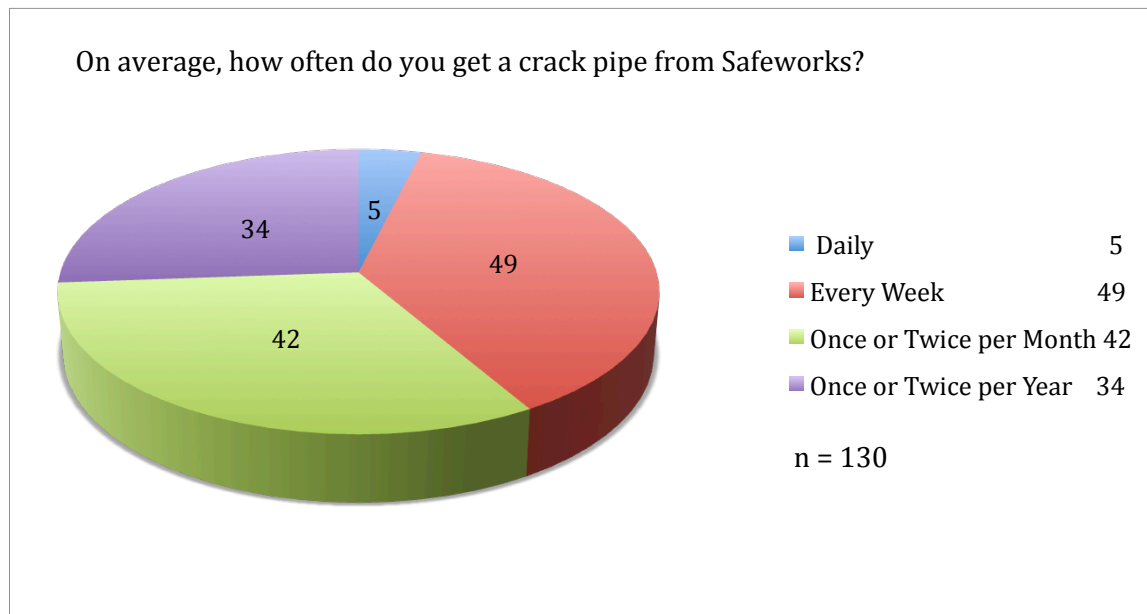


Figure 4.13 Frequency of receiving crack pipe from Safeworks – Males

As shown in Figure 4.13, the most common response from males was that they received crack pipes from Safeworks every week ($n = 49/130$ (37.7%)). This was followed closely by males who received crack pipes from Safeworks once or twice per month ($n = 42/130$ (32.3%)). Males who received a pipe from Safeworks once or twice per year accounted for 26.2% of this sample.

The female responses to the question of how often a crack pipe was received from Safeworks are presented in Figure 4.14.

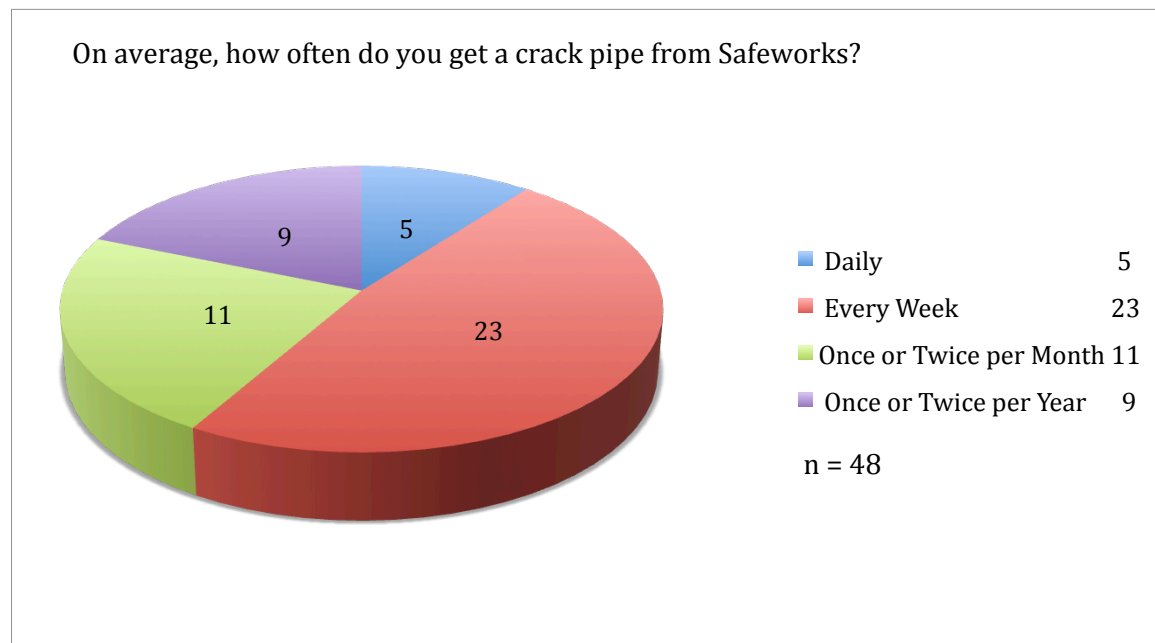


Figure 4.14 Frequency of receiving crack pipe from Safeworks - Females

As may be seen from Figure 4.14, the most common response from females was that they received crack pipes from Safeworks every week (47.9%) followed by once or twice per month (22.9%). There was no significant difference between males and females when comparing the frequency of receiving crack pipes from Safeworks (Chi-Square = 5.43, df = 3, $p = 0.14$).

Respondents were asked whether they smoked more crack because they had their own crack pipe. Responses are provided on Table 4.9.

Table 4.9 Increase in crack smoking in relation to crack pipe possession

(Do you smoke more crack when you have your own pipe?)

Crack smoking increase	Male n (%)	Female n (%)	Total n (%)
Yes	66 (51.6%)	29 (61.7%)	95 (54.3%)
No	63 (48.4%)	18 (38.3%)	80 (45.7%)
Total	128	47	175

As may be seen from Table 4.9, $n = 95/175$ (54.3%) of respondents smoked more crack when they had their own pipe, compared to 45.7% of respondents ($n = 80/175$) who did not increase their crack smoking. There were four respondents who did not know whether their crack smoking increased when they had their own pipe. There was no significant difference between males and females on whether their crack smoking increased in relation to possessing their own crack pipes (Chi-Square = 1.42, $df = 1$, $p = 0.23$).

A Chi-Square is a Goodness of fit test designed to make inferences about the existence of a relationship between two categorical variables (Polit, 1996). A one sample Chi-Square calculation was used to determine whether the difference between all respondents who smoked more crack compared with those who did not smoke more crack was statistically significant. The results of this calculation are presented on Table 4.10.

Table 4.10 Calculation of the Chi-Square statistic for smoking crack in relation to pipe possession

Do you smoke more crack?	Observed frequency O	Expected frequency E	(O-E)	(O-E) ²	(O-E) ² /E
Yes	95	88	7	49	0.557
No	81	88	-7	49	0.557
Totals	176	176			χ^2

The Chi-Square test contrasts the observed frequencies in each cell of a contingency table with expected frequencies. The Chi-Square calculated value in this case (X^2) is 1.114. The Chi-Square table value is 3.84 ($p = 0.05$, $df = 1$). The null hypothesis is that there is no difference between smoking more crack and not smoking more crack. Since the calculated value of $X^2(1) = 1.114 < 3.84$, there is insufficient evidence to reject the null hypothesis, therefore, smoking more crack and not smoking more crack are statistically independent.

Respondents were asked to report which drug they injected intravenously most often in the past year. Only $n = 76$ respondents injected drugs in the past year. The responses from males are presented in Figure 4.15.

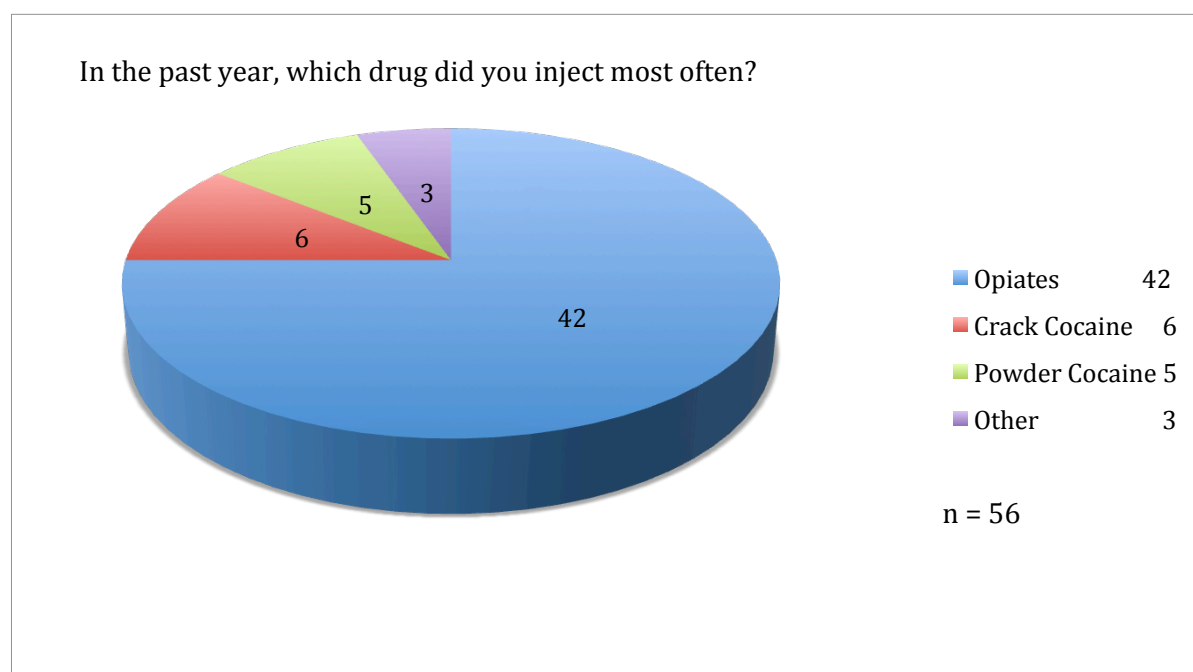


Figure 4.15 Drug injected intravenously most often in past year-Males

As shown in Figure 4.15, opiates were the drug that males most often injected intravenously in the past year (75.0%). The female responses to the question of which drug they injected intravenously most often in the past year are presented in Figure 4.16.

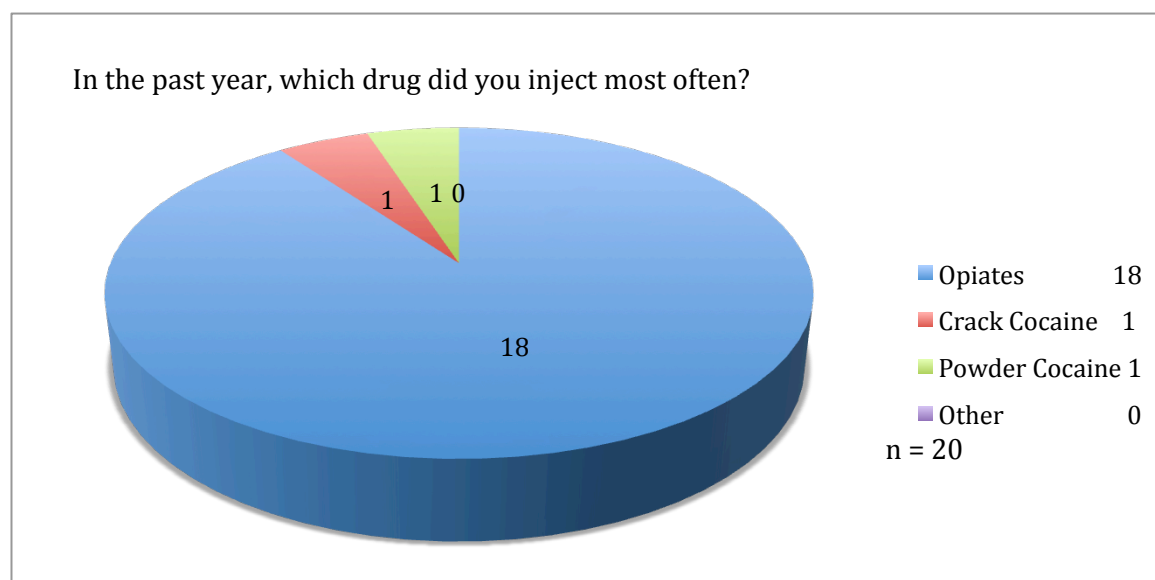


Figure 4.16 Drug injected intravenously most often in past year -Females

As displayed in Figure 4.16, opiates were also most often injected intravenously by females in the past year (90.0%). There was no statistically significant difference between males and females regarding drug most often injected intravenously in the past year (Chi-Square = 2.30, df = 3, p = 0.51).

Respondents were asked whether they injected less because they had their own pipe. Results are reported on Table 4.11.

Table 4.11 Injecting behavior and pipe possession by gender (Do you inject less when you have your own pipe?)

Inject less when have own pipe	Male n (%)	Female n (%)	Total n (%)
Yes	16 (30.2%)	5 (23.8%)	21 (28.4%)
No	37 (69.8%)	16 (76.2%)	53 (71.6%)
Total	53	21	74

As may be seen on Table 4.11, 71.6% of respondents did not inject less when they had their own pipe (n = 53/74). There was no statistically significant difference between males and females regarding injecting behavior (Chi-Square = 0.30, df = 1, p = 0.58).

On Table 4.12, the responses to how often respondents accessed Safeworks services since Safeworks started to give out pipes are presented.

Table 4.12 Frequency of services accessed since Safeworks started distributing pipes by gender (Since Safeworks started to give out pipes how often do you use their (other) services?)

Frequency of service use	Male n (%)	Female n (%)	Total n (%)
A lot less	1 (0.8%)	0 (0.0%)	1 (0.6%)
Somewhat less	1 (0.8%)	0 (0.0%)	1 (0.6%)
About the same	47 (36.2%)	12 (25.0%)	59 (33.1%)
Somewhat more	51 (39.2%)	22 (45.8%)	73 (41.0%)
A lot more	30 (23.1%)	14 (29.2%)	44 (24.7%)
Total	130	48	178

As shown on Table 4.12, 65.7% of the sample (n = 117/178) accessed Safeworks services somewhat more or a lot more since pipe distribution was initiated. The remaining 33.1% of the sample (with the exception of two respondents) accessed Safeworks services about the same as before crack pipes were distributed (n = 59/178). There was no statistically significant difference between males and females on accessing services since Safeworks started giving out pipes (Chi-Square = 2.95, df = 4, p = 0.57).

Respondents were asked to indicate the Safeworks services they accessed; their responses are listed on Table 4.13.

Table 4.13 Safeworks services accessed by gender (What other services do you use?)

Types of Safeworks service	Male n = 131	Female n = 48	Total n = 179
Needle exchange	49 (37.1%)	19 (39.6%)	68 (37.8%)
Vaccines	42 (31.8%)	19 (39.6%)	61 (33.9%)
Testing (eg: HIV, HCV, Syphilis, etc.)	41 (31.1%)	19 (39.6%)	60 (33.3%)
Condoms	31 (23.5%)	24 (50.0%)	55 (30.6%)
Talking to staff	41 (31.1%)	11 (22.9%)	52 (28.9%)
Health assessment	27 (20.5%)	9 (18.8%)	36 (20.0%)
Referrals	17 (12.9%)	5 (10.4%)	22 (12.2%)
Wound care	18 (13.6%)	2 (4.2%)	20 (11.1%)

As shown on Table 4.13, the top four Safeworks services accessed (respondents could choose more than one response), were needle exchange (37.8%), vaccinations (33.9%), testing (33.3%), and obtaining condoms (30.6%).

4.4 Research Objective 4 (the primary objective): Determine whether the Safeworks crack pipe distribution program changed crack pipe sharing behavior.

The data presented here are: how frequently subjects used mouthpieces on their pipes, whether they shared pipes, the frequency of burned or cracked lips in the past year, the device used for a pipe, the number of days the crack pipe lasted, how often pipes were shared in the past month and the past, and the change in frequency of pipe sharing between the past month compared to one year ago.

In Figure 4.17 the male results to the question of use of a mouthpiece are presented.

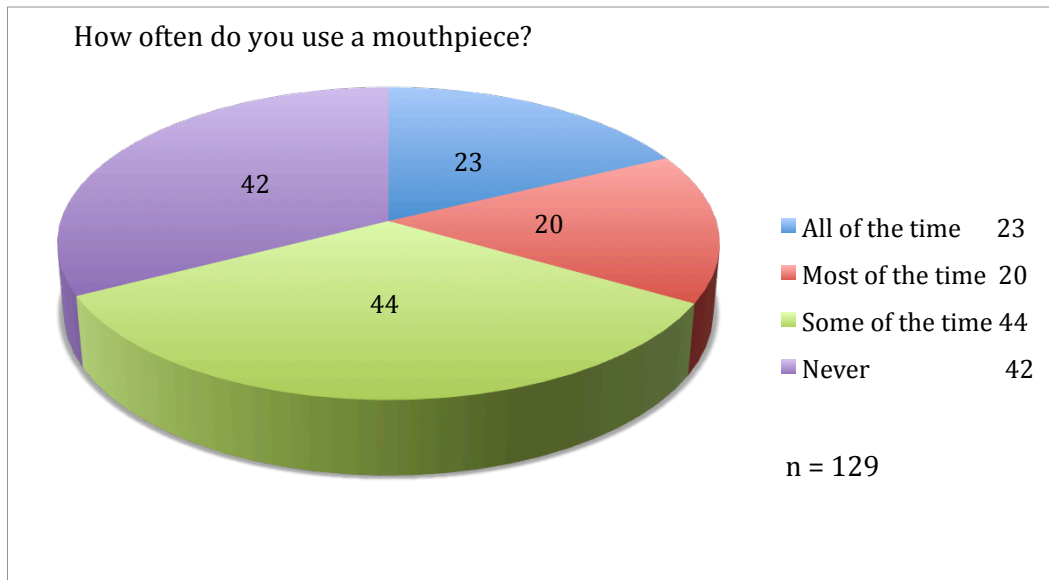


Figure 4.17 Crack pipe mouthpiece use – Males

As may be seen in Figure 4.17, 34.1% of the males used a mouthpiece on their crack pipe 'Some of the time' ($n = 44/129$), followed closely by 32.6% who responded 'Never' ($n = 42/129$). As may be seen 67.4% of the males used mouthpieces some, most, or all of the time ($n = 87/129$), indicating that most males were using mouthpieces compared to the 32.6% who never used a mouthpiece ($n = 42/129$).

In Figure 4.18 results to the question of mouthpiece use for females are presented.

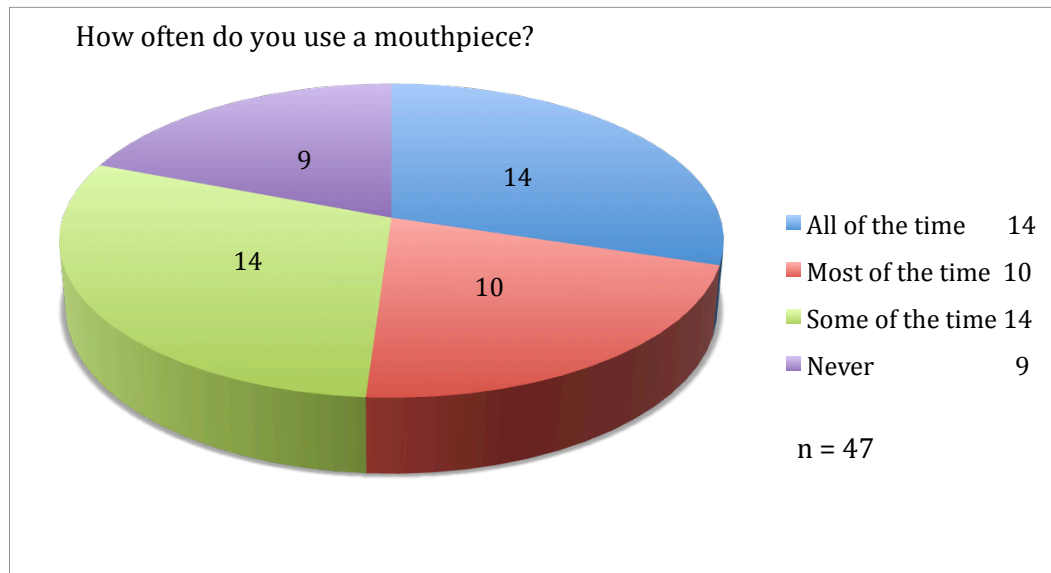


Figure 4.18 Crack pipe mouthpiece use – Females

As may be seen in Figure 4.18, the same percentage (29.8%) of females used a mouthpiece 'All of the time' and 'Some of the time' ($n = 14/47$). There were 21.3% of females who used a mouthpiece 'Most of the time' ($n = 10/47$). The combined responses of 'Some', 'Most' and 'All of the time' ($n = 38/47$) resulted in 80.9% using a mouthpiece at least some of the time compared to 'Never' using a mouthpiece ($n = 9/47$ (19.2%)). The difference between males and females on use of a crack pipe mouthpiece was not statistically significant (Chi-square = 5.35, $df = 3$, $p = 0.15$).

The responses to the question of whether respondents shared crack pipes are listed on Table 4.14 below.

Table 4.14 Crack pipe sharing by gender (When you have your own pipe, do you share that pipe with someone else?)

Crack pipe sharing	Male n (%)	Female n (%)	Total n (%)
Yes	44 (33.6%)	17 (35.4%)	61 (34.1%)
No	32 (24.4%)	14 (29.2%)	46 (25.7%)
Sometimes	55 (42.0%)	17 (35.4%)	73 (40.2%)
Total	131	48	179

As may be seen on Table 4.14, 74.3% did share a crack pipe with others when they had their own pipe (combined result of sometimes and yes). Crack pipe sharing behavior differences between males and females was not statistically significant (Chi-Square = 0.72, $df = 2$, $p = 0.70$).

In Figures 4.19 and 4.20, the results of frequency of burned or cracked lips in the past year due to crack pipe or Brilo steel wool filter are presented. The results for how often males burned or cracked their lips are displayed in Figure 4.19.

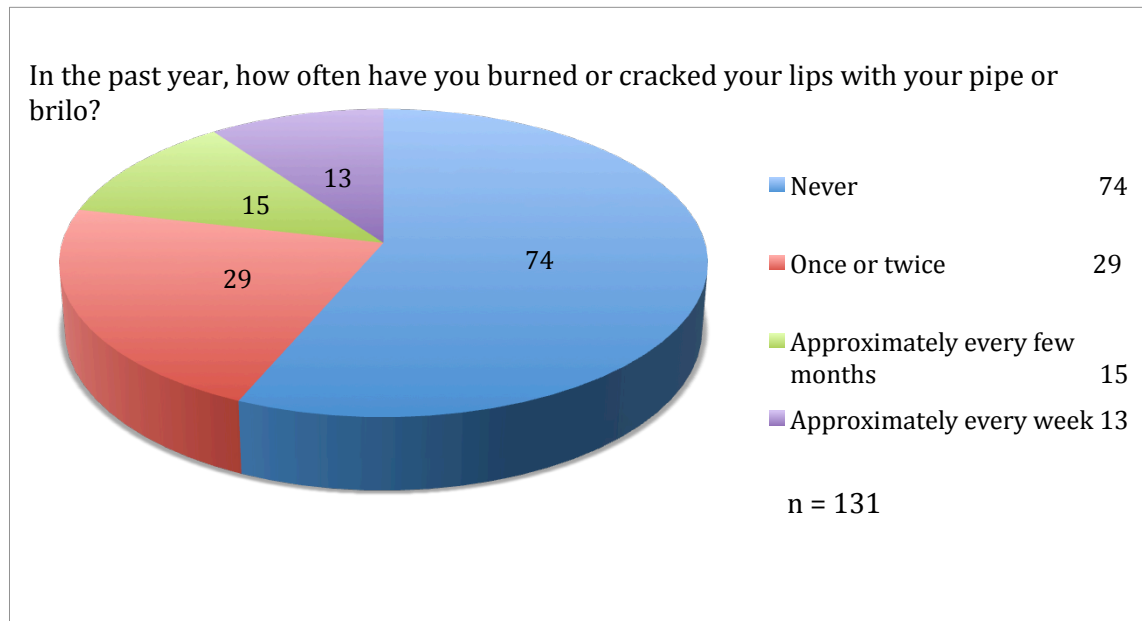


Figure 4.19 Frequency of burned or cracked lips in past year - Males

As seen in Figure 4.19, 56.5% of males stated they never burned or cracked their lips on pipes or Brilo in the past year ($n=74/131$). There were 22.1% of males who burned or cracked their lips once or twice in the past year ($n = 29/131$); whereas only 9.9% had burned or cracked lips every week ($n = 13/131$).

The results for how often females burned or cracked their lips are displayed in Figure 4.20.

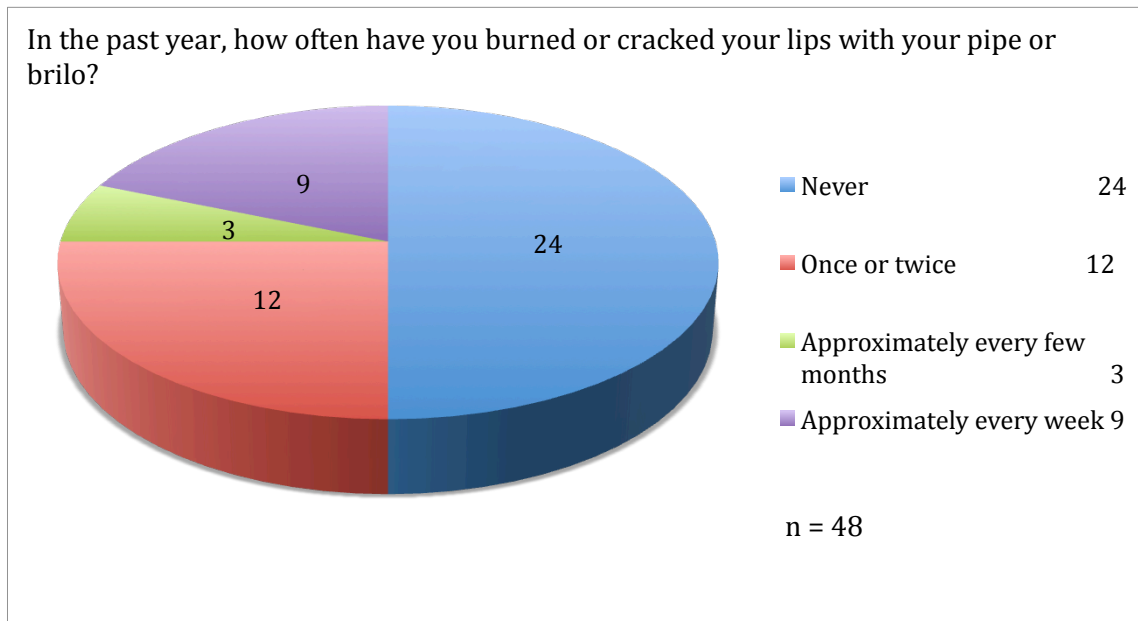


Figure 4.20 Frequency of burned or cracked lips in past year - Females

As seen in Figure 4.20, 50.0 % of females had never burned or cracked their lips ($n = 24/48$) in the previous year. Twenty-five percent of the females burned or cracked their lips once or twice ($n = 12/48$) and 6.3% stated they burned or cracked their lips every few months ($n = 3/48$). There was no statistically significant difference between males and females on frequency of burned or cracked lips in the past year (Chi-Square = 3.56, $df = 3$, $p = 0.31$).

Respondents were asked what type of pipe they usually used to smoke crack; the responses are listed on Table 4.15.

Table 4.15 Type of crack pipe used by gender

Usual type of pipe	Male n (%)	Female n (%)	Total n (%)
Pyrex or glass stem	124 (94.7%)	47 (97.9%)	171 (95.5%)
Other e.g. metal tube, aluminum can	7 (5.3%)	1 (2.1%)	8 (4.5%)
Total	131	48	179

As seen on Table 4.15, $n = 171/179$ subjects (95.5%) usually used a pyrex or glass stem for a pipe. The difference between the genders on what type of pipe they usually used was not statistically significant (Chi-Square = 0.88, $df = 1$, $p = 0.35$). Examples of “other” pipes included pop or beer cans, metal tubes, pot pipes, and tire guages.

Subjects were asked how many days their crack pipe typically lasted. The results for the males are presented in Figure 4.21.

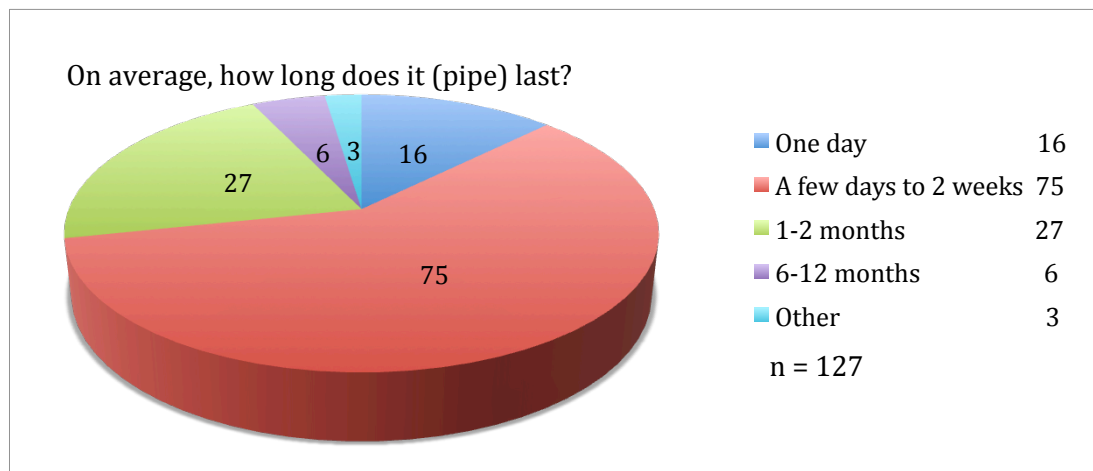


Figure 4.21 Number of days crack pipe typically lasts – Males

As may be seen in Figure 4.21, 59.1% of males had crack pipes that typically lasted a few days to two weeks ($n = 75/127$). This was followed by 21.3% of respondents who indicated that their pipe typically lasted one to two months ($n = 27/127$).

Responses for the women are shown in Figure 4.22.

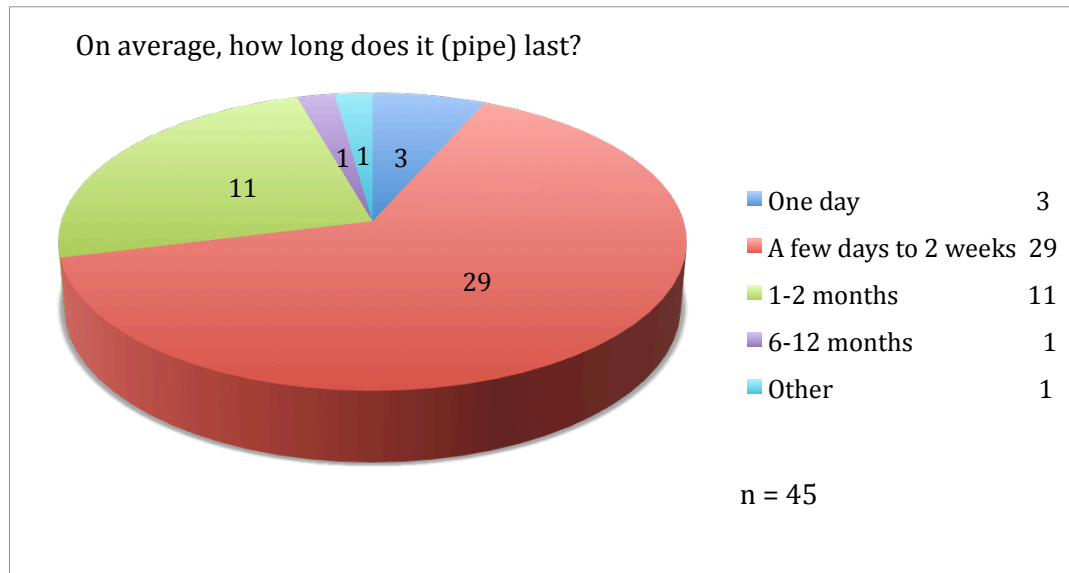


Figure 4.22 Number of days crack pipe typically lasts – Females

As may be seen in Figure 4.22, 64.4% of female respondents had crack pipes that typically lasted was a few days to two weeks ($n = 29/45$). There was no statistically significant difference between the genders on the number of days their pipes would typically last (Chi-Square = 1.88, $df = 4$, $p = 0.76$).

Respondents were asked how often they shared their pipe in the previous month. In Figure 4.23 the male responses to this question are displayed.

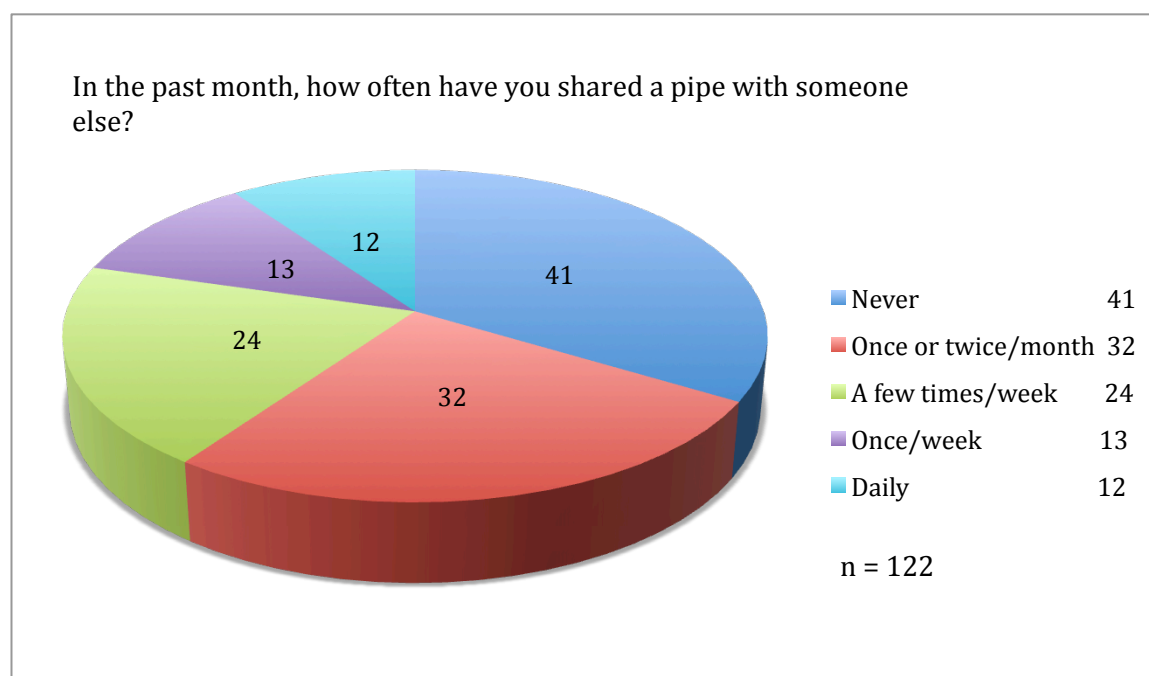


Figure 4.23 How often shared pipe in past month - Males

As seen in Figure 4.23, $n = 41/122$ (32.0%) males never shared their pipe in the previous month. Those males who shared their pipe once or twice in the previous month accounted for $n = 32/122$ (26.2%). Those who shared their pipe a few times per week accounted for $n = 24/122$ (19.7%).

In Figure 4.24, the frequency with which females shared pipes in the past month is displayed.

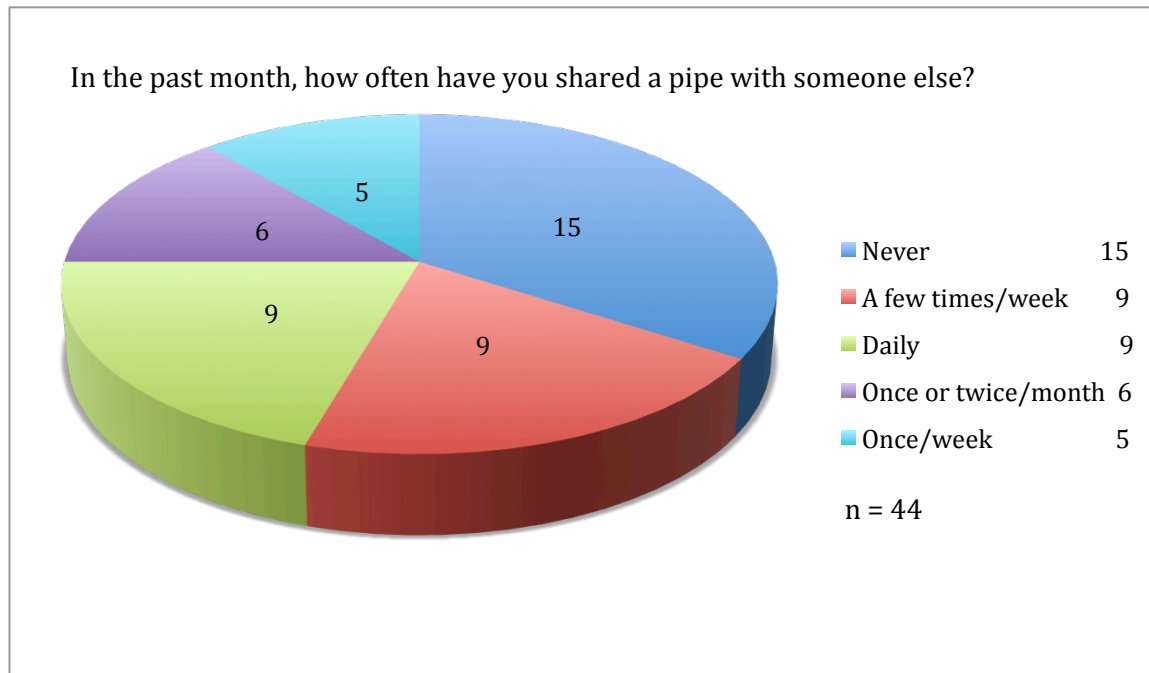


Figure 4.24 How often shared pipe in past month – Females

As may be seen in Figure 4.24, the most frequent response from females was that they didn't share their pipe in the past month ($n = 15/44$ (34.1%)). The same percentage (20.5%) of females shared their pipes daily ($n = 9/44$) or a few times per week ($n = 9/44$). Males and females responded in a similar way, and there was no statistically significant difference between the genders on frequency of sharing pipes within the past month (Chi-Square = 5.91, $df = 5$, $p = 0.31$).

Respondents were asked how often they shared pipes one year ago. Figure 4.25 displays the results for male responses.

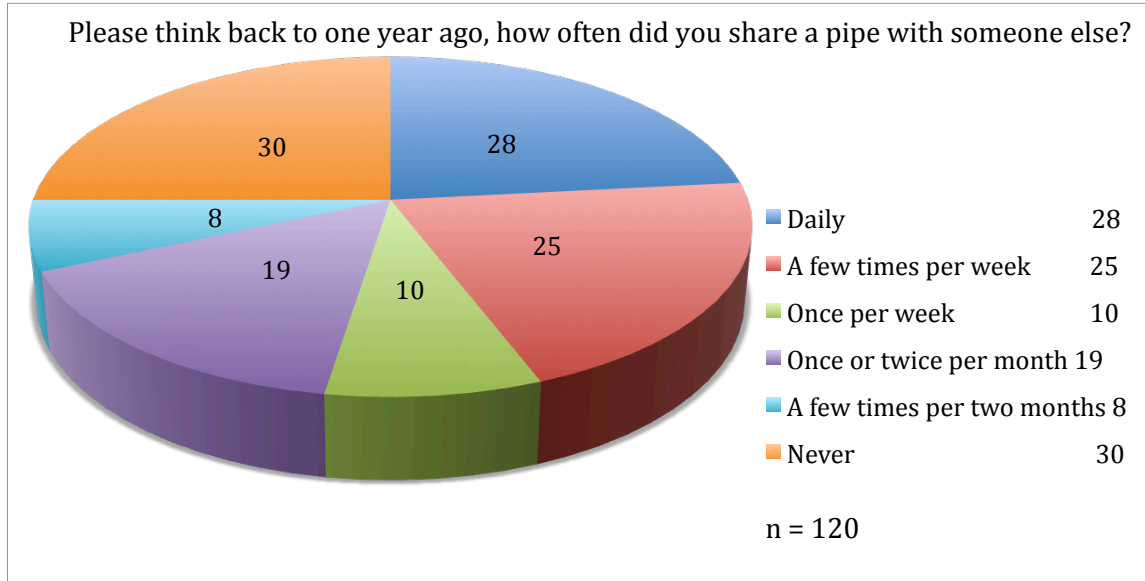


Figure 4.25 Pipe sharing frequency one year ago – Males

As may be seen in Figure 4.25, in regards to pipe sharing one year previous, 25% of the males reported they never shared ($n = 30/120$); whereas over 20% shared daily (23.3%) or a few times per week (20.8%). The intent of the question was to provide data prior to Safeworks crack pipe distribution to be able to compare with previous month data. Unfortunately, data collection was delayed, and pipe distribution had already started one year previous.

The responses by the females are presented in Figure 4.26.

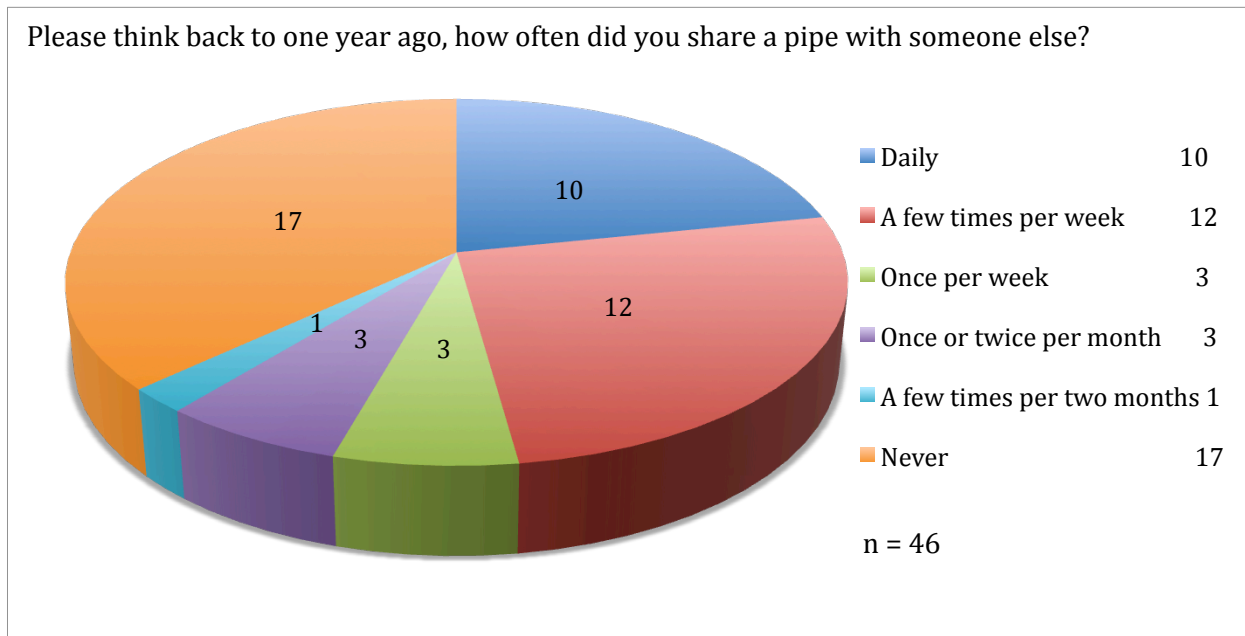


Figure 4.26 Pipe sharing frequency one year ago - Females

As seen in Figure 4.26, 37.0% of females reported that they never shared a pipe one year ago ($n = 17/46$); whereas over 20% shared daily (21.7%) or a few times per week (26.1%). There was no significant difference between genders on the frequency with which they shared their crack pipes one year ago (Chi-Square = 5.68, $df = 5$, $p = 0.34$).

Change in pipe sharing behaviors were compared between the past month and one year prior, and results are presented in Table 4.16.

Table 4.16 Change in pipe sharing behaviors one month and one year ago by gender

Change in Sharing Behavior	Male n (%)	Female n (%)	Total n (%)
Worse	18 (15.7%)	12 (27.9%)	30 (19.0%)
Same	59 (51.3%)	22 (51.2%)	81 (51.3%)
Better	38 (33.0%)	9 (20.9%)	47 (29.7%)
Total	115	43	158

Changes in pipe sharing behaviors were determined by comparing practices in the past month (when Safeworks distributed pipes) and one year previous. If respondents were sharing pipes less in the past month compared with one year ago, they were placed in the 'Sharing Change Better' category. If respondents were sharing pipes more in the past month than one year ago, they were placed in the 'Sharing Change Worse' category. If respondents were sharing pipes the same in the past month as they were one year ago, they were placed in the 'Sharing Change Same' category. As seen on Table 4.16, 51.3% reported they shared pipes in the past month the same as they did one year ago (n = 81/158). Twenty-nine percent of respondents shared less in the past month than one year ago (47/158) and 19% shared more in the past month compared with a year ago (n = 30/158). The difference between males and females in regards to change in pipe sharing behavior was not statistically significant (Chi-Square = 4.02, df = 2, p = 0.13).

In summary a total of 179 Calgary adults (18 and over) were surveyed for this study (n = 131 male, n = 48 female). The 179 adults met the inclusion criteria which were: 18

years of age or older, current crack smoker, received a crack pipe from Safeworks, and were homeless, near homeless, or often homeless. The average age of the sample was 38.5 years (with a range of 18 to 67), and 70% of the males were Caucasian whereas 56% of the females were Aboriginal. Sixty-eight percent were single and 31% were in a relationship. Sixty-three percent were living in homeless shelters. The average age of the sample when crack smoking started was 26.5 years with an average of 11 years of smoking crack.

With respect to HCV and HIV testing, 89% of the sample had been tested for HCV and 91.6% had been tested for HIV (according to self report). Forty-four percent tested positive for HCV by self report in contrast to 4% who self reported testing positive for HIV.

Of all drugs smoked, snorted, or eaten in the past year, crack cocaine was named as the drug most frequently taken by 70%. Seventy-nine percent smoked crack cocaine daily or every week, and 44% spent \$51-\$200 per day or per time on crack cocaine. Seventy percent received a crack pipe from Safeworks every week or once or twice per month, and 54% smoked more crack when they had their own pipe.

Among those who also injected drugs, opiates were injected by 79%. Seventy-two percent did not inject less when they had their own pipe.

Regarding frequency of Safeworks other services accessed since Safeworks started distributing pipes, 65.7% accessed somewhat more or a lot more. Services accessed (besides crack pipes) were 37.8% for needle exchange, 33.9% for vaccines, 33.3% for testing for sexually transmitted infections and blood borne pathogens, and 30.6% for condoms.

Crack pipe mouthpieces were being used some of the time, most of the time, or all of the time by 71%. Only 25.7% did not share crack pipes. Seventy-eight percent burned or cracked their lips only once or twice or never in the past year. A pyrex or a glass stem was used as a crack pipe by 95.5%. Crack pipes were typically used for a few days to two weeks by 60%. In the past month, 66.3% shared crack pipes compared to 71.7% who shared crack pipes one year ago, and 51.3% shared the same one month ago compared to one year ago.

It is important to note that although the sample size was $n = 179$, in several instances respondents replied that they could not remember or they did not know the response, therefore the number of respondents to certain items was not 179. A discussion of the results follows in chapter five.

Chapter Five: Discussion

It will be recalled that the four major research objectives were to:

1. Obtain a demographic profile of people who obtain crack pipes from Safeworks.
2. Estimate, from self-report, how many in the sample have HCV or HIV.
3. Determine whether the Safeworks crack pipe distribution program changed crack smoking frequency, drug injecting frequency, and service utilization.
4. Determine whether the Safeworks crack pipe distribution program changed crack pipe sharing behavior.

5.1 Demographic profile of people who obtain crack pipes from Safeworks

The average age of respondents was 38.5 years, with the minimum age being 18 and the maximum 67. One implication of the broad age range is simply that crack use is an issue in Calgary for homeless youth, adults, and seniors. The other implication is that Safeworks staff were reaching all age groups, from youth to seniors, through crack pipe distribution. This is not to say that the program was not already reaching youth, adults, and seniors, but rather that crack pipe distribution was relevant to all ages and drew them in to utilize other services.

Most females were in a relationship (62.5%) and most males were single (80.2%). Related to these data are the findings with respect to sharing pipes. Respondents were asked with whom they had shared their pipe in the past year (they could choose multiple responses), the results demonstrated that 64.7% were close friends, 54.7% were sexual partners, 40.0% were not well known, and 26.0% were not known at all to the respondent.

Sharing pipes with friends or partners provides a certain amount of risk of transmitting infections, however sharing with individuals not known to a respondent carries a much greater risk of infections as their HIV and HCV status could not be known. Boyd, Johnson, and Moffat (2008) conducted face to face interviews with 27 male and female respondents who used crack cocaine and received crack pipes from an outreach program in Vancouver's Downtown Eastside and they found that sharing of pipes can have different meaning to individuals in relationships. Two respondents at first replied that they did not share pipes, but added they only share with their spouse. Quantitative data alone does not capture these finer nuances.

The majority of respondents were Caucasian (61.5%), and 31.8% were Aboriginal (56.3% of females were Aboriginal). The percentage of Aboriginal people in the sample is high compared to the general population. It is difficult to accurately measure the percentage of Aboriginal people living in Calgary because census data measures people who were living in a location on a given day and does not take into account the common practice of transience on and off reserve. Statistics Canada reported that in 2006, two percent of the total population of Calgary was Aboriginal (Statistics Canada, 2006). Perhaps a more useful data source is from the Calgary housing program, Inn from the Cold, where 52% of 219 families who accessed shelter in 2010 and 2011 were Aboriginal (Calgary Homeless Foundation, 2012). It appears the percentage of Aboriginal people who took part in the survey reflects the face of homelessness in Calgary, with Aboriginal people being over-represented. Sixty-three per cent of Alberta's Aboriginal people now live in urban centres (Government of Alberta, 2010). An implication of this finding for the Safeworks program is that attention should be paid to incorporating culturally sensitive

care, paying special attention to the needs of the Aboriginal clients. Another implication is that crack cocaine smoking is common among homeless Aboriginal individuals and support needs to be provided to them from other services in Calgary such as addiction and mental health and medical services.

The majority of the sample (67%) was absolutely homeless; they were living in a shelter or on the street. Twenty-four percent were living in their own accommodation. As discussed by Boyd et al. (2008) when individuals are smoking crack in open and public spaces (which homeless individuals tend to do), they feel the need to be vigilant in order to avoid the police, which contributes to the need to smoke crack in a hurry and therefore places less of a priority on smoking safely. If individuals staying at a homeless shelter are caught with crack pipes on their person, they are barred from the premises. Individuals living in a shelter may not keep a pipe on them, and this has implications for sharing pipes. The sharing of pipes may be higher among people who live in shelters. This has relevance for the success of messages to homeless individuals from public health professionals about harm reduction and the importance of not sharing pipes. Individuals may not feel safer crack use is always realistic, given their living situation, and professionals need to work with individuals to create realistic prevention solutions. From the investigator's nursing experience, an effective way to create realistic prevention solutions is to consult with the clients themselves to determine what prevention strategies they are most likely to follow.

The average age that respondents started using crack cocaine was 26.5, the youngest was eight years and the oldest was 54 years. This has importance for both prevention messaging and for health assessments; for example health care professionals

should consider different age groups for prevention campaigns, and health assessments should include substance use for all their youth and adult clients as part of a regular health exam.

5.2 HCV and HIV

It will be recalled from the results that 43.5% of the sample were positive for HCV and only four per cent were HIV positive. The results for both HCV and HIV were based on self reports and were not verified with a health record or with serology testing. Self reported data has some limitations, and the literature revealed mixed levels of accuracy. McCusker, Stoddard, and McCarthy (1992) analyzed data from 326 HIV antibody tests among people who used injection drugs and found predictive values of 98% for a negative report and 90% for a positive report. Of 243 negative tests, six were false negatives, and three of the 30 positives were false positives (21 subjects had not been tested and 32 did not know the results of their last test).

The positive predictive value (PPV) is the proportion of positive test results that are truly positive (i.e. people with a positive result who have the disease). The negative predictive value (NPV) is the proportion of negative test results that are truly negative (i.e. people who have a negative test result who do not have the disease) (Rothman, Greenland, & Lash, 2008). Positive predictive value is calculated by dividing the number of true positives by the number of true positives *and* false positives (Rothman et al., 2008).

One reason individuals may mis-report is the fear of stigmatization if they reveal their positive status (McKusker et al, 1992). In the McKusker et al study (1992), the NPV of 98%

was calculated by dividing 237 by 243, and the PPV of 90% was calculated by dividing 27 by 30.

O'Keefe, Aitken, Higgs, and Dietze (2012) found that of 274 participants who tested positive for HCV, 220 (80%) accurately reflected their HCV status, or rather, the positive predictive value was 80%. These findings illustrate that self reports for HIV and HCV are not, obviously, one hundred percent accurate and should be taken as only an estimate of disease status.

In the current study, 43.5% (74/170) of the sample self reported to be HCV positive and four percent (7/159) reported to be HIV positive. Comparing this to national data, for HCV, in 2007 the estimate was that there were 242,251 Canadians living with HCV. That is the equivalent of eight out of every 1,000 Canadians or 0.8% (Public Health Agency of Canada, 2011). The study sample had a much higher rate of infection than the general Canadian public as the prevalence was 435 out of 1,000 or 43.5%.

Similarly, with respect to HIV, in 2011 an estimated 71,300 Canadians were living with HIV (Public Health Agency of Canada, 2011). Based on a population of 30 million people, the rate is two out of every 1,000 or 0.2%. The sample in this study had a higher prevalence of infection than the estimated 2011 Canadian data, with a prevalence of 44 out of 1,000 or 4.4%. The study rates are not surprising because of high risk activities of injection drug use and crack smoking amongst the sample; high risk sexual activity is also a likely factor, all of which increase the risk of HCV and HIV transmission.

It is encouraging, from a public health perspective, that almost all of the respondents reported that they had been tested for HCV and HIV and that most (98% HCV

and 89% HIV) knew their results. Given that 43.5% of the sample reported that they were HCV positive there is a substantial risk for HCV to be transmitted by sharing pipes. Conversely, the risk for spreading HIV by sharing pipes is lower within this sample since only four percent reported being HIV positive.

More females (97.9%) had been tested for HIV than males (89.2%) and the difference approached statistical significance ($p = 0.06$). One reason for more females being tested for HIV may be due to routine prenatal screening of HIV during pregnancy. Females were not asked if they had been pregnant, but it is safe to assume that many had been pregnant as this sample was within childbearing years and therefore had been tested. Another reason that females tested for HIV more often than males may also be due to gender differences in accessing health care (Statistics Canada, 2012). Statistics Canada reported consistently between 2007 and 2011 that among males and females 12 years and over, females were more likely to have a regular medical doctor (Statistics Canada, 2012). Given the above reasons it was not unexpected that females were tested more often than males.

5.3 Crack smoking frequency

Crack cocaine was the drug most often smoked, snorted, or eaten in the previous year (70%), and 78.7% smoked crack either daily or every week. In addition, when they smoked crack, they usually spent \$50 to \$200 per day or per time (43.5%). This daily or weekly use means more contact with a pipe and therefore more opportunity to contract infections. One group of researchers found that the risk of infections such as HIV increase with daily crack smoking (DeBeck et al., 2009). Other important considerations are that

they are at increased risk of other health concerns such as respiratory and cardiac conditions and mental health conditions such as mood disorders and psychosis (National Institute on Drug Abuse, 2010). The expense of using the drug also contributes to the likelihood that individuals may be involved in criminal activity to support their habits which could lead to incarceration.

Slightly more respondents (54.3%) smoked more crack when they had their own pipe compared to 45.7% who did not. This was an unexpected finding. It was expected that pipe distribution would not change crack smoking because many different items may be used to smoke crack besides a glass or pyrex stem. Since many different items may be used to smoke crack, it was expected that if people did not have a glass or pyrex stem, they would use one of those different items to smoke. Previous research has found that less than half of respondents reported an increase in crack use when they received crack pipes from a crack pipe distribution program.

Leonard et al. (2008), in a similar study, found that 45% (n = 167) of respondents in the 12 months after commencement of pipe distribution in Ottawa stated they were smoking crack cocaine more often. The implication of this finding is potentially negative for proponents of crack pipe distribution, but the reasons require a more in-depth examination. The investigator asked some respondents why they smoked more crack when they have their own pipe and they indicated they smoked more because they did not have to share their drug, and not because having a pipe made them want to smoke more crack. In other words, when they do *not* have their own pipe, there is a tendency to share a pipe with someone who has one, and this may mean that person would ask for some crack

in return for sharing their pipe. It could also mean that if they had a pipe and someone wanted to share, they would not get to smoke as much of the cocaine resin in their pipe because there was another person using the pipe. Another individual who was living in his own apartment stated that in the past when he wanted to smoke crack, he would go downtown because he did not have a pipe, but he had the drug. When he was downtown he would share some of his cocaine in return for sharing a pipe, therefore when he had the drug and his own pipe he was able to stay home alone and able to smoke all his drug. From the examples given, the increase in use would be a negligible amount. Another reason for the possible increase in use was that since people did not have to purchase their pipe, they had more money to buy more drug, but again this amount would be negligible.

5.4 Drug injecting frequency

Only 28.4% (of the $n = 76$ who also injected) stated they injected less drugs when they had their own crack pipe. Possessing a crack pipe decreased injecting for individuals who both smoke and inject, but this was true for only a small proportion of the sample. One reason why injecting did not decrease more may have been that opiates were the main drug injected by the sample ($n = 60/76$), and not cocaine. If the respondents had injected more cocaine, then when faced with the choice of injecting or smoking, they may have been more likely to choose smoking. Since the main drugs injected were opiates, the fact that they had a crack pipe did not change their injecting opiates. There were $n = 60/76$ subjects (78.9%) who reported that opiates were the drug they injected most often in the past year. Only $n = 13/76$ subjects (17%) reported crack or powder cocaine as the drug they injected most often in the past year. The author did not expect a decrease in the frequency of

injecting because people tend to prefer one method of use over another and do not deviate from that just because they have a choice. Other researchers found slightly different results. Leonard et al. (2008), 12 months post commencement of the crack pipe distribution program in Ottawa, found that $n = 59/149$ (39.6%) injected less.

5.5 Service utilization

Sixty six percent of the sample ($n = 118/179$) accessed other Safeworks services more since the initiation of pipe distribution (e.g. vaccinations, testing, health education). These results are encouraging from a public health perspective because people were accessing a wide range of comprehensive health services, and not only obtaining crack pipes. The increased interactions with health care professionals provide the opportunity for professionals to engage clients and develop a therapeutic relationship. The development of a professional relationship supports individuals in their daily lives with a variety of other issues such as food security, housing, mental health support, medical referrals and addiction counseling.

An unintended finding was that some respondents stated they did not know that Safeworks provided testing and vaccinations. In addition, although they accessed Safeworks offices in the Drop-In Centre and Centre of Hope, they did not know those offices and the “Crack Pipe Van” were both services provided by Safeworks. They tended to think of the van as the “crack pipe van” only and therefore did not know they could receive other services from the van. The important implication for practice is that there is ample opportunity for Safeworks’ staff to better promote the other services they provide.

5.6 Crack pipe use

Respondents had been smoking crack on average, for 11 years. The implication of this finding, although only speculation by the researcher, is that, after 11 years of crack cocaine use, individuals may have developed habits such as crack pipe sharing, that may be difficult to change.

Seventy percent received a crack pipe from Safeworks either every week or once or twice per month, indicating a frequent use of the service. Sixty-one percent reported that their pipes typically lasted a few days to two weeks, and 22% reported it lasted one to two months. Only 11% reported it lasted one day. The length of time a pipe lasts depends on many factors, such as an individuals' housing situation, how well a pipe is cleaned and stored, or whether the pipe is sold for profit. Some respondents whose pipe only lasted one time was due to the fact that they destroy it after smoking as they do not intend to use it a second time. Another reason is they do not want to risk having a used crack pipe on them, putting them at risk of the police finding it, or others such as staff at the homeless shelter.

Some harm reduction programs limit the number of pipes provided because of budget restrictions or because of restrictions placed on them by decision makers. A national working group on harm reduction produced a document called Best Practice Recommendations (Strike et al., 2013). The authors recommend that there should not be limits placed on the number of pipes provided. Limiting pipes may decrease the chance that individuals are always using clean intact pipes. The Safeworks service, if they resume

crack pipe distribution, should consider adopting the recommendation of no limits on pipes.

Of the 67.5% who shared pipes in the past month, 65.5% shared frequently (either once per week, a few times per week, or daily). Thirteen respondents could not remember if they had shared or they had not used crack in the past month. When a comparison was made between sharing at the time of the survey and one year prior, 30% decreased their sharing, but 51% shared the same as they did one year prior. One possible explanation is that the Safeworks crack pipe distribution program began November 2008, and this sample was interviewed between summer 2010 and summer 2011, which means the program had already been operational for at least 1.5 years. A change that may have been more meaningful would have been to compare sharing now with sharing before crack pipe program commencement. Other researchers have found that crack pipe distribution programs do not necessarily decrease crack pipe sharing. As mentioned previously, another factor that contributed to the high numbers of crack pipe sharing may have been that the majority of the sample were living in homeless shelters. Body and property searches are common in homeless shelters, and being caught in possession of a crack pipe carries with it a risk of being evicted, therefore individuals may dispose of their pipes frequently, necessitating crack pipe sharing. Other studies also found that crack pipe distribution did not change crack pipe sharing (Malchy et al., 2011; Boyd et al., 2008). Malchy et al. suggested that the reason for the continuation of crack pipe sharing behavior even though pipes were available was that the program distributing pipes limited the number of pipes given. Using pipes for the sole use of smoking crack was illegal in B.C. (in Alberta as well), which Malchy et al. suggested created a scarcity mentality whereby an

increased but inadequate supply of items may have contributed to an increase in sharing behaviors. Boyd et al. (2008) talked about the importance of considering the context of smoking. The subjects they interviewed were homeless and they often smoked in small groups which necessitated the sharing of equipment. Due to a lack of private space and safe housing the location for crack use for most participants was outdoors. Smoking in open and public spaces means people need to be vigilant in order to avoid the police which contributed to the need to smoke in a hurry which meant less of an emphasis on safer smoking practices such as not sharing pipes.

One question that was not asked in this study was whether respondents used their own mouthpiece when they shared. Some programs (including Safeworks before commencing pipe distribution) only provided mouthpieces and not pipes. The rationale is that even if individuals are sharing pipes, they can each be using their own mouthpiece. Anecdotally, from this researcher's experience in the field, many individuals stated it is difficult to get mouthpieces on and off pipes when pipes are hot, and therefore individuals tend not to use their own mouthpieces when they are sharing pipes, but this warrants further investigation.

Pipe sharing was common but respondents used a mouthpiece some to all of the time at a rate of 71%. Use of a mouthpiece "some of the time" indicates inconsistencies, but it was encouraging that they were being used and that only 32.6% of males and 19.2% of females stated they never used them. Using a crack pipe mouthpiece is an indication that respondents were taking one more precaution to protect themselves from infections such as HCV; mouthpieces reduce the risk of burns and cuts.

An encouraging finding from a public health perspective was that 95.5% of the sample usually used pyrex or glass stem pipes. When asked the question, "What do you usually use for a pipe?" many subjects responded "yours" (meaning the Safeworks pipes). This finding, that 95.5% used pyrex or glass stems may relate to the findings above indicating that 77.7% in the past year had either never or only once burned or cracked their lips. Many subjects thought the Safeworks pipe was pyrex which speaks to the quality of the glass stem Safeworks provided. Respondents stated the Safeworks glass stems did not break easily. Porter et al. (1997) interviewed 153 crack smokers in Philadelphia and found that glass was valued more highly than metal because it does not get as hot as metal, and therefore injuries are decreased. Porter et al. (1997) also noted that cocaine resin accumulates on glass and not on metal, and therefore the resin can be scraped off and smoked again, which is another reason it is popular.

Another encouraging finding from a public health perspective was that 77.7% of the sample in the past year had never or only once or twice burned or cracked their lips. The importance of this finding is that the risk of transmitting infections is greatly reduced because even with pipe sharing, if lips are intact, there is limited risk of transmission of infections. There is, of course, the possibility of injury to their lips for other reasons. Just over 22% of the sample injured their lips every week to every few months, therefore their risks of contracting and transmitting infections is much higher, if they are also sharing pipes.

5.7 Recommendations for health services

It is important to promote frequent testing for blood borne pathogens to individuals smoking crack cocaine because they are at risk of HCV and HIV. Ideally staff in the program providing pipes should also provide the tests, as it would be more convenient and efficient for the clients to be tested. Testing for sexually transmitted infections is important too because people who smoke crack cocaine tend to be at higher risk of unsafe sexual practices (Edlin et al., 1994).

Staff of harm reduction programs, when offering crack pipes to clients, need to take the opportunity, however brief, to continue to build and nurture relationships, offer informal health education, and promote all the services they have to offer, beyond pipe distribution. These services may include immunization, testing, wound care, health education, addiction counseling and referrals, and referrals to other health care professionals. This relationship building supports individuals in making changes to their lives such as their drug use and sexual health practices as well as other aspects of life such as housing and overall health.

Crack pipe distribution is an important part of harm reduction and should be made available (including being re-instated by Alberta Health Services) because the pipe, mouthpiece, and filters provided prevent cuts to lips and mouths which decreases infections. Crack pipe distribution also provides an entry point to the other healthcare services provided by the program. Health education provided ongoing and repeated often may serve to help people to decrease their crack pipe sharing.

5.8 Strengths and Limitations

One strength of this study was the large sample size of $n = 179$ which is the largest sample size to date documented in the literature of research conducted on crack pipe distribution programs.

The interviewer was able to cross reference with the Safeworks database, thereby verifying that individuals had received pipes from Safeworks. This meant that the people surveyed did actually receive crack pipes as it was a concern that individuals would try to complete the questionnaire to receive the gift certificate. The sample therefore was representative of individuals who had received pipes and other services from Safeworks.

The crack pipe distribution program still has not been reinstated, and it is uncertain whether it will be. This means the gathering of the data for this survey was unique and there may not be further opportunities to do so in the future with this program.

There is a uniqueness to this study that was both a strength and a limitation. Since the interviewer was a Safeworks staff person, subjects reported feeling comfortable being interviewed. However, since the interviewer was a Safeworks staff person, there may have been some subjects who were concerned with the program being discontinued if they reported negative issues about crack pipe distribution.

The sample was a convenience sample and not a random sampling and this was a limitation.

A limitation was that the question regarding sharing pipes would have been more useful if the timeline had been different. In other words, rather than asking how often they

shared pipes one year ago, the question should have been “Please think back to before Safeworks gave out pipes, how often did you share a pipe with someone else?”.

The only risk factor (besides pipe sharing) for contracting HCV and HIV documented in this study was current intravenous drug injection, in which $n = 76$ (42.5%) reported they currently engaged. Unfortunately data pertaining to past injection drug use was not obtained.

5.9 Conclusion

In conclusion, the survey of 179 individuals who received crack pipes from the Safeworks program highlighted several important factors associated with crack pipe distribution.

One key point is that crack pipe distribution is more than just crack pipe distribution, meaning that a whole range of health services were utilized by respondents. They accessed services such as addictions support, vaccinations, wound care, testing for HIV, hepatitis A, B, and C, and sexually transmitted infections, and day to day support.

If programs that offer crack pipe distribution also offer other health services and support, crack pipes may be the draw that brings people to the program, however the other services can further enhance their health. From the time that pipe distribution commenced most of the sample (65.7%) did, in fact, access other services from Safeworks more often (e.g. vaccines, testing for STI's, wound care, condoms and health education).

Crack pipe distribution contributes to safer crack use thereby decreasing the spread of infections. Just over 70% of respondents used a mouthpiece on their pipe. Most

respondents (77.7%) in the past year had either never burned or cracked their lips or had only done so once or twice. This sample was using pipes that are most recommended for the prevention of injury and infection, with 95.5% reporting they used glass or pyrex.

Crack pipe distribution does decrease crack pipe sharing for some (30% shared less than one year prior), but it has not decreased crack pipe sharing as much as healthcare staff in harm reduction programs have hoped for. Crack pipe sharing decreases the transmission of infections. Crack pipe sharing did not change for 51.3% of the sample compared to one year previous. The practice of limiting the number of crack pipes to one per day (the Safeworks practice at that time) may be a factor in the continuation of crack pipe sharing.

The question of whether crack pipe distribution increases crack smoking was met with mixed responses from the sample. A little more than half (54.3%) did smoke more crack when they had their own pipes. Reasons for this are unclear, although many subjects stated this was because they did not have to share pipes and thus did not have to share cocaine. For some who stated they smoked more crack cocaine, the reason they gave was that when they were given a pipe, they did not have to buy one, and therefore had more money to buy crack.

Crack pipe distribution does decrease injection drug use for some individuals; only for 28% of this sample. Seventy-two per cent of subjects who also injected reported they did not inject less because they had a pipe, which may be related to the propensity among this sample to injecting opiates more than cocaine. Smoking crack cocaine is preferable to injecting it because of the decreased risk of infections related to the latter .

Professional Registered Nurses (RNs) who work in the field of public health and addictions should support the distribution of crack pipes as part of a comprehensive harm reduction program. The results of the current study demonstrated that there are positive health outcomes for people who smoke crack and participate in crack pipe distribution programs. From a public health perspective, it is important for RNs to continue advocating for harm reduction as one of the four pillars of drug policy in this country. Nursing students should be taught about harm reduction in their undergraduate programs, as should other health science students such as physicians, pharmacists, and social workers.

5.10 Future Research

Fifty-four (54%) respondents smoked more crack when they had their own pipe. Further research could be done to clarify whether individuals did in fact smoke more as in grams of the substance or smoked more as in smoked more frequently but with the same amount of the substance.

Further research could also investigate whether having a pipe was a trigger for individuals thereby increasing their smoking. Other research should explore whether having a pipe means individuals do not have to share as much crack. Another question to investigate is whether not having to purchase a pipe means a person has more money to buy crack.

Pipe sharing was common with the respondents. It would be interesting to investigate whether following the Best Practice guidelines mentioned earlier (where it was recommended that there not be limits placed on the number of pipes given) would decrease pipe sharing.

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Appendix A: Questionnaire



Crack Pipe Use

<p>CONFIDENTIAL</p> <p>QUESTIONNAIRE</p>
--

<p>Recruitment site:</p>
<p>Mode of Recruitment:</p>
<p>Date:</p>

Instructions to respondents:

Thank you for agreeing to participate in the study.

I will be asking you questions about your health and drug behaviors.

Please be assured that the answers you give are totally confidential.

Please know that you will not be judged for the responses you give.

You may decline to answer any question; the answers you provide will not change the care you receive from Safeworks or any other health care agency.

We ask everyone the same questions.

It will take approximately 10 minutes of your time and I will give you your choice of a gift certificate for Tim Horton's or Safeway on completion of the questionnaire.

Crack Pipe Use Questionnaire

Safeworks code name and year: _____

Section 1: Socio-Demographic

The first few questions are about your age, your background, and where you live.

1. Sex

- ☐ Male ☐ Transgender Male to Female
☐ Female ☐ Transgender Female to Male

2. What is your age?

_____ years ☐ Don't know ☐ Refused

3. What is your current relationship status?

- ☐ Single ☐ In a relationship

4. What ethnic group or culture do you most identify with?

5. I don't need to know your address; What type of accommodation are you staying in now?

6. In the past year, what other types of places have you stayed?

Section 2: History of cigarette smoking and crack smoking.

The next questions are about your history of smoking cigarettes and crack.

7. Do you smoke cigarettes?

- ☐ Yes ☐ No If "No" go to Q10

8. If yes to Q.7, on average, how many cigarettes do you smoke a day?

9. If yes to Q.7, approximately how many years have you been smoking cigarettes?

10. What age did you start smoking crack?

11. Approximately how many years have you smoked it?

Section 3: Drug Use

The next few questions are about your drug use in the past year.

12. In the past year please name all the drugs you've injected:

☐ Respondent does not inject drugs

13. In the past year, which ones did you inject most often?

☐ Respondent does not inject drugs

14. Please name those drugs, from the past year, that you smoked, snorted or ate.

15. In the past year, which drugs did you smoke, snort or eat MOST OFTEN?

16. On average, how often do you smoke crack?

☐ once or twice/month ☐ once/week ☐ a few times/week ☐ daily

☐ other _____

17. On average, how much do you spend per day on crack?

18. How many grams is that?

19. Do you think the crack you get is a good quality?

☐ Yes ☐ No

If no, please explain.

20. On average, how often do you get a crack pipe from Safeworks?

- ☐ once or twice/month ☐ once/week ☐ a few times/week ☐ daily

21. When you have your own pipe from Safeworks, do you share that pipe with someone else?

- ☐ Yes ☐ No ☐ Sometimes

Comment:

22. In the past month, how often have you shared a Safeworks pipe with someone else?

- ☐ never ☐ once or twice/month ☐ once/week ☐ a few times/week ☐ daily

23. Please think back to one year ago, how often did you share a pipe with someone else?

- ☐ never ☐ once or twice/month ☐ once/week ☐ a few times/week ☐ daily ☐ don't remember If "don't remember" go to Q. 24 otherwise go to Q. 25

24. Think back to six months ago, how often did you share a pipe with someone else?

- ☐ never ☐ once or twice/month ☐ once/week ☐ a few times/week ☐ daily
☐ don't remember

25. How often do you use a mouthpiece?

- ☐ never ☐ some of the time ☐ most of the time ☐ all of the time

26. In the past year, who have you shared your pipe with? (Check all that apply)

- ☐ People I don't know at all ☐ People I don't know well ☐ Sexual partner
☐ Close friends ☐ Family ☐ Other _____

27. How often have you burned or cracked your lips with your pipe or brilo?

- ☐ never ☐ once or twice/month ☐ once/week ☐ a few times/week ☐ daily

28. Do you smoke more crack when you have your own pipe?

- ☐ Yes ☐ No ☐ Makes no difference

29. Do you inject less when you have your own pipe?

- ☐ Yes ☐ No ☐ Makes no difference ☐ n/a (does not inject)

30. What do you usually use for a pipe?

31. On average, how long does it last?

32. Do you use anything else for a pipe? ☐ Yes ☐ No

If “No” go to Q 34.

33. If “Yes”, What do you use?

34. Since Safeworks started to give out pipes how often do you use their (other) services?

☐ A lot less ☐ Somewhat less ☐ About the same ☐ Somewhat more ☐ A lot more

If “Somewhat more” or “A lot more” to Q34;

35. What other services do you use? (Check all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Crack pipes | <input type="checkbox"/> Condoms |
| <input type="checkbox"/> Talking to staff (health education, support, quitting drugs) | <input type="checkbox"/> Wound care |
| <input type="checkbox"/> Testing for STI's, HIV, and Hepatitis | <input type="checkbox"/> Health assessment |
| <input type="checkbox"/> Vaccinating | <input type="checkbox"/> Referrals |
| <input type="checkbox"/> Other (Specify : | |

Section 4: Hepatitis C and HIV

The last few questions are about Hepatitis C and HIV.

36. Have you ever been tested for hepatitis C?

☐ Yes ☐ No ☐ Don't know ☐ Refused to answer

If “NO” to Q. 36:

37. Can you help me understand some of your reasons for not being tested?

Then go to Q 40.

38. What was the approximate date of your most recent hepatitis C test?

(Prompt/probe for information, e.g. link with season, event)

Month/year _____ / _____

39. What was the result of your most recent hepatitis C test?

☐ HCV positive ☐ HCV negative ☐ Indeterminate ☐ Don't know ☐ Refused

40. Have you ever been tested for HIV?

☐ Yes ☐ No ☐ Don't know ☐ Refused

If "NO" to Q. 40

41. Can you help me to understand some of your reasons for not being tested?

Then go to Q 43.

If "Yes" to Q. 40

42. What was the result of your most recent HIV test?

☐ Positive ☐ Negative ☐ Don't know ☐ Refused

43. Any comments or questions?

Debriefing

If appropriate:

- Provide risk reduction counseling
- Give referrals for hepatitis C
- Tell respondents they can get testing and vaccinations through Safeworks
- Provide information on local health and social agencies

END OF SURVEY

Thank the participant and provide the gift certificate.

INTERVIEWER'S COMMENTS:

Appendix B: Respondents' Demographic Data

#	Code Name	Culture	Distinguishing Characteristics	Birth year	Gender	Date & Location
1						
2						
3						
4						
5						
6						
7						
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9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Appendix C: Poster and Flyer



**Are you interested in taking part in research
about crack cocaine?**

Please talk to the Safeworks Staff.

**It will take approximately 10 minutes to
answer the survey questions.**

If you have any questions, you may contact the researchers:

Dr. James Rankin, Professor, Faculty of Nursing,

University of Calgary (403) 220-4640

or

Leegay Jagoe RN MN Thesis Student, Faculty of Nursing, University of
Calgary (403) 955-6574

Ethics ID# 23094.

This study has been approved by the Conjoint Health Research Ethics Board.



Are you interested in taking part in research about crack cocaine?

Please talk to the Safeworks Staff.

It will take approximately 10 minutes to answer the survey questions.



Are you interested in taking part in research about crack cocaine?

Please talk to the Safeworks Staff.

It will take approximately 10 minutes to answer the survey questions.

Appendix D: Consent Form



CRACK PIPE USE QUESTIONNAIRE - CONSENT FORM

TITLE: The effects of crack cocaine pipe distribution on drug use behavior and service utilization.

INVESTIGATORS: Principal Investigator Dr. James Rankin RN ACNP PhD
Co-Investigator Leegay Jagoe RN MN Thesis Student

This consent form is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, please ask. We will now go over this consent together. You will receive a copy of this form for your own records.

BACKGROUND

The sharing of crack pipes to smoke crack cocaine can cause the spread of the hepatitis C virus. Crack cocaine smoking has increased in Calgary, and is the most common illicit drug used by people who are accessing services through the Safeworks program. Safeworks began distributing crack pipes for the first time in November 2008.

People who obtain crack pipes from Safeworks will be asked 43 items. The first six items are demographic information (gender, age, relationship status, ethnicity, and living arrangement). Five items ask about your cigarette and crack smoking. The next 24 items will ask about your drug use in the last year, and particularly about your crack use. There are eight items about your Hepatitis C and HIV status.

WHAT IS THE PURPOSE OF THE STUDY?

The main purpose of the study is to determine whether sharing of crack pipes changed after Safeworks started distributing crack pipes. Other purposes are to determine whether drug use changed when pipes became available through Safeworks and whether people used Safeworks services more after the introduction of crack pipe distribution.

WHAT WOULD I HAVE TO DO?

You will be asked 43 items. The researcher will read these items to you. Answering the items will take approximately ten minutes. If it appears that your substance use at the time of this survey is such that you are unable to comprehend consent and/or comprehend the survey questions (intoxicated, confused, unable to make sense when conversing, drowsy), the researcher will not continue and will ask you to return another day.

WHAT ARE THE RISKS?

There are no anticipated risks to you for taking part in the study.

Protocol title: The effects of crack cocaine pipe distribution on drug use behavior and service utilization.
Principal Investigator: Dr. James Rankin
Version #2, Ethics ID # 23094, created May 17, 2010, page 1 of 3



ARE THERE ANY REPRODUCTIVE RISKS?

There are no reproductive risks.

WILL I BENEFIT IF I TAKE PART?

There is no direct benefit to you for taking part in the study. Your participation adds to the body of knowledge around crack pipe use, and you will receive a ten-dollar Tim Horton's or Safeway gift certificate for answering the questions.

DO I HAVE TO PARTICIPATE?

Participation is entirely voluntary.

WHAT ELSE DOES MY PARTICIPATION INVOLVE?

Nothing else.

WILL I BE PAID FOR PARTICIPATING, OR DO I HAVE TO PAY FOR ANYTHING?

You do not have to pay for anything and you will not be paid, but you will receive a ten-dollar Tim Horton's or Safeway gift certificate.

WILL MY RECORDS BE KEPT PRIVATE?

Only the researchers will have access to information collected, and your full name will not be used, just your Safeworks code name.

IF I SUFFER A RESEARCH-RELATED INJURY, WILL I BE COMPENSATED?

In the event that you suffer injury as a result of participating in this research, no compensation will be provided to you by Safeworks, the University of Calgary, Alberta Health Services, or the Researchers. You still have all your legal rights. Nothing said in this consent form alters your right to seek damages.

SIGNATURES

Your signature on this form indicates that you have understood to your satisfaction the information regarding your participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the investigators, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time without jeopardizing your health care. If you have further questions concerning matters related to this research, please contact:

Dr. James Rankin telephone (403) 220-4640 or fax (403) 284-4803
or
Leegay Jagoe telephone (403) 955-6574 or fax (403) 955-6755

Protocol title: The effects of crack cocaine pipe distribution on drug use behavior and service utilization.
Principal Investigator: Dr. James Rankin
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If you have any questions concerning your rights as a possible participant in this research, please contact The Director of the Office of Medical Bioethics (403) 220-7990.

Participant's Name

Signature and Date

Investigator/Delegate's Name

Signature and Date

Witness' Name

Signature and Date

The University of Calgary Conjoint Health Research Ethics Board has approved this research study.

A signed copy of this consent form has been given to you to keep for your records and reference.

Protocol title: The effects of crack cocaine pipe distribution on drug use behavior and service utilization.
Principal Investigator: Dr. James Rankin
Version #2, Ethics ID # 23094, created May 17, 2010, page 3 of 3

Appendix E: Other Tables and Figures

Table E-1 Smoke cigarettes by gender

Smoke cigarettes	Male n (%)	Female n (%)	Total n (%)
Yes	122 (93.1%)	44 (91.7%)	166 (92.7%)
No	9 (6.9%)	4 (8.3%)	13 (16.5%)
Total	131	48	179

Table E-2 Number of cigarettes per day by gender

Cigarettes per day	Male n (%)	Female n (%)	Total n (%)
Half a pack	67 (54.5%)	28 (62.2%)	95 (56.5%)
One pack	49 (39.8%)	14 (31.1%)	63 (37.5%)
Over one pack	7 (5.7%)	3 (6.7%)	10 (6.0%)
Total	123	45	168

Table E-3 Drugs injected in the past year by gender

All drugs injected past year	Male n = 57	Female n = 21	Total n = 78
Opiates	49 (86.0%)	19 (90.5%)	68 (87.2%)
Powder Cocaine	31 (54.4%)	8 (38.1%)	39 (50.0%)
Crack	25 (43.9%)	8 (38.1%)	33 (42.3%)
Crystal Meth	6 (10.5%)	1 (4.8%)	7(9.0%)

Speed	1(1.8%)	1(4.8%)	2 (2.6%)
Methadone	3 (5.3%)	2 (9.5%)	5 (6.4%)
Ecstasy	4 (7.0%)	0 (0.0%)	4(5.1%)
Ritalin	3 (5.3%)	1 (4.8%)	4 (5.1%)
Ketamine	2 (3.5%)	0 (0.0%)	2 (2.6%)
MDA	1(1.8%)	1 (4.8%)	2 (2.6%)

Table E-4 Drugs smoked, snorted, and eaten in the past year by gender

All drugs smoked/ snorted/ate past year	Male n = 130	Female n = 48	Total n = 178
Opiates	58 (44.6%)	24 (50.0%)	82 (46.1%)
Powder Cocaine	51 (39.2%)	14 (29.2%)	65 (36.5%)
Crack	130 (100.0%)	48 (100.0%)	178 (100.0%)
Crystal Meth	20 (15.4%)	6 (12.5%)	26 (14.6%)
Speed	4 (3.1%)	1 (2.1%)	5 (2.8%)
Methadone	4 (3.1%)	2 (4.2%)	6 (3.4%)
Ecstasy	29 (22.3%)	6 (12.5%)	35 (19.7%)
Ritalin	0 (0.0%)	1 (2.1%)	1 (0.6%)
Ketamine	8 (6.2%)	1 (2.1%)	9 (5.1%)
MDA	3 (2.3%)	0 (0.0%)	3 (1.7%)
Cannabis	90 (69.2%)	25 (52.1%)	115 (64.6%)
Mushrooms	25 (19.2%)	5 (10.4%)	30 (16.9%)
Benzos	11 (8.5%)	3 (6.3%)	14 (7.9%)

Acid	9 (6.9%)	2 (4.2%)	11 (6.2%)
Hash/Oil	10 (7.7%)	0 (0.0%)	10 (5.6%)
Mescaline	4 (3.1%)	0 (0.0%)	4 (2.2%)
Sleeping pills	5 (3.8%)	0 (0.0%)	5 (2.8%)
Salvia	3 (2.3%)	0 (0.0%)	3 (1.7%)
PCP	1 (0.8%)	0 (0.0%)	1 (0.6%)
Opium	4 (3.1%)	0 (0.0%)	4 (2.2%)
GHB	2 (1.5%)	0 (0.0%)	2 (1.1%)

Table E-5 Quality of crack by gender

Crack good quality	Male n (%)	Female n (%)	Total n (%)
Yes	19 (14.6%)	6 (12.5%)	25 (14.0%)
Sometimes	31 (23.8%)	13 (27.1%)	44 (24.7%)
No	80 (61.5%)	29 (60.4%)	109 (61.2%)
Total	130	48	178

Table E-6 Other items used as pipes by gender

Other items used as pipes	Male	Female	Total
Pop or beer can	51/83 (61.4%)	13/27 (48.1%)	64/110 (58.2%)
Antenna	3/82 (3.7%)	0/26 (0.0%)	3/108 (2.8%)
Tire guage	6/82 (7.3%)	5/26 (19.2%)	11/108 (10.2%)

Apple	2/82 (2.4%)	0/26 (0.0%)	2/108 (1.9%)
Metal tube	30/82 (36.6%)	8/26 (30.8%)	38/108 (35.2%)
Pot pipe	18/82 (22.0%)	3/26 (15.4%)	22/108 (20.4%)
Copper wire for tv	1/82 (1.2%)	0/26 (0.0%)	1/108 (0.9%)
Car lighter	1/82 (1.2%)	0/26 (0.0%)	1/108 (0.9%)
Asthma inhaler	6/82 (7.3%)	2/26 (7.7%)	8/108 (7.4%)
Aluminum foil	2/82 (2.4%)	0/26 (0.0%)	2/108 (1.9%)
Aquarium hose	1/82 (1.2%)	0/26 (0.0%)	1/108 (0.9%)
Plastic pop bottle	3/82 (3.7%)	1/26 (3.8%)	4/108 (3.7%)
Tampon	0/82 (0.0%)	1/27 (3.7%)	1/109 (0.9%)
Pill bottle	5/82 (6.1%)	0/27 (0.0%)	5/109 (4.6%)

Table E-7 Reasons for not testing for Hepatitis C Virus by gender

Reason for not testing for HCV	Male n (%)	Female n (%)	Total n (%)
No need	8/17 (47.1%)	1/3 (33.3%)	9/20 (45.0%)
Scared	1/16 (6.3%)	0/3 (0.0%)	1/19 (5.3%)
No reason	4/16 (25.0%)	0/3 (0.0%)	4/19 (21.1%)
Didn't think I had risk, but I will now	1/16 (6.3%)	0/3 (0.0%)	1/19 (5.3%)
Not got around to it/too busy	2/16 (12.5%)	1/3 (33.3%)	3/19 (15.8%)
No family doctor	0/16 (0.0%)	1/3 (33.3%)	1/19 (5.3%)

Table E-8 Reasons for not testing for Human Immunodeficiency Virus by gender

Reason for not testing for HIV	Male n (%)	Female n (%)	Total n (%)
No need	7/13 (53.8%)	0/1 (0.0%)	7/14 (50.0%)
Don't talk to doctors	1/13 (7.7%)	0/1 (0.0%)	1/14 (7.1%)
No reason	3/14 (21.4%)	1/1 (100.0%)	4/15 (26.6%)
Not got around to it/too busy	2/14 (14.3%)	0/1 (0.0%)	2/15 (13.3%)

Table E-9 General comments respondents initiated

Comments	Male n (%)	Female n (%)	Total n (%)
Safeworks is a great service	9/23 (39.1%)	4/9 (44.4%)	13/32 (40.6%)
I learned about hep C risks and pipes	3/22 (13.6%)	1/9 (11.1%)	4/31 (12.9%)
Giving out pipes makes it easier for us to smoke	2/22 (9.1%)	0/9 (0.0%)	2/31 (6.5%)
Survey was easy	1/21 (4.8%)	2/9 (22.2%)	3/30 (10.0%)
Pipes have decreased violence	5/21 (23.8%)	0/9 (0.0%)	5/30 (16.7%)
People will find anyway to smoke crack	1/21 (4.8%)	0/9 (0.0%)	1/31 (3.3%)
It's good you are	7/21 (33.3%)	3/9 (33.3%)	10/30 (33.3%)

giving out pipes			
I would like more time to talk to Safeworks staff	0/21 (0.0%)	1/9 (11.1%)	1/30 (3.3%)
There should be more help for people with crack addictions	0/21 (0.0%)	1/9 (11.1%)	1/30 (3.3%)
Giving out pipes has made me think of possible risks	1/21 (4.8%)	0/9 (0.0%)	1/30 (3.3%)