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EXPLORING SERVICE PROVIDER PERSPECTIVES ON FACILITATORS AND  
BARRIERS TO NEEDLE EXCHANGE PROGRAM PARTICIPATION BY FEMALES  
WHO INJECT DRUGS

By

Tammi Alvey Thomas  
B.S., San Diego State University, 1991  
M.S.S.W., University of Louisville, 2013

A Dissertation  
Submitted to the Faculty of the  
Raymond A. Kent School of Social Work of the  
University of Louisville in Partial Fulfillment of the Requirements  
for the Degree of

Doctor of Philosophy in Social Work

Social Work  
University of Louisville  
Louisville, Kentucky

December 2021

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A Dissertation Approved on

September 9, 2021

by the following Dissertation Committee:

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Crystal Collins-Camargo, Ph.D., Chair

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Seana Golder, Ph.D.

---

Martin Hall, Ph.D.

---

Leslie Harris, Ph.D.

---

Monica Wendel, DrPH

## DEDICATION

To my mom who encouraged me throughout this journey and  
provided endless pep talks and support.

## ACKNOWLEDGMENTS

I would like to thank Dr. Crystal Collins-Camargo for her unwavering support and guidance through this challenging process. I would also like to thank my committee members for their feedback and encouragement. And to Dean Craig Blakely who continuously pushed me. A very special thank you to Kayla and Steven. Without your love, patience and support, this would have not been possible.

## ABSTRACT

### EXPLORING SERVICE PROVIDER PERSPECTIVES ON FACILITATORS AND BARRIERS TO NEEDLE EXCHANGE PROGRAM PARTICIPATION BY FEMALES WHO INJECT DRUGS

Tammi Alvey Thomas

September 9, 2021

As the opioid epidemic lingers on across the country, many areas have set up harm reduction strategies such as needle exchange programs (NEPs) to combat the long-term consequences of injection drug use (IDU). Males and females face a plethora of health issues associated with injection drug use such as human immunodeficiency virus (HIV) and hepatitis C. While males comprise the largest portion of the injection drug use population, most research is gender neutral, which makes it difficult to discern issues specifically related to females inhibiting our ability to design interventions and procedures targeted to address their needs. Females require varying reproductive health needs, prenatal healthcare services and childcare. The research explores service provider perspectives on facilitators and barriers to needle exchange program participation by females who inject drugs. The study is descriptive and exploratory in nature using survey methodology. Data was collected from mailed surveys to needle exchange program staff from Kentucky and the seven bordering states (Illinois, Indiana, Missouri, Ohio, Tennessee, Virginia and West Virginia). Exchange theory, the health belief model and



feminist theory and intersectionality were used as the theoretical frameworks to explain human behavior and what motivates people who inject drugs to utilize needle exchange programs. Determining the facilitators and barriers females face in accessing needle exchange programs will allow for revisions in service delivery and policy changes to promote increased utilization of services by females who inject drugs.

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CHAPTER I  
INTRODUCTION TO THE SOCIAL PROBLEM  
AND CONCEPTUAL FRAMEWORK

**Background on Drugs and Drug Use**

Drug use is not a new phenomenon and dates back to as early as 3000 B.C. with the use of opium by the Sumerians (Crocq, 2007). Throughout history, religious ceremonies and cultural activities often included psychoactive substances (Westermeyer, 1988). While many drugs were initially created for medical use, personal use often followed (Musto, 1998; Jonnes, 1995; Courtwright, 1983). By the mid-1800's, the hypodermic needle was invented which allowed people to receive medication quickly (Hickman, 2004; Musto, 1991; Courtwright, 1983). Opium use increased with the expansion of trade routes and the Opium Wars (Pletcher, 2018). The use of opiate-based medications grew and legal restrictions on drugs were not in place until the early 1900's (Jonnes, 1995). With shifts in cultural and political views, invention of the hypodermic needle, growth of industry and few legal restrictions on medication until the 20<sup>th</sup> century there became increasing drug use throughout America (Crocq, 2007; Hickman, 2004; Musto, 1998; Jonnes, 1995; Musto, 1991; Westermeyer, 1988). As drug use increased, so did addiction and there became a need to understand how it affects someone physiologically and psychologically.

Drug use changes a person's brain chemistry and inhibits self-control over the urge to use drugs (NIDA, 2018). Persons who use drugs may become addicted which is a complicated chronic disease (NIDA, 2018). In 2017, it was estimated that almost 20

million Americans over the age of 12 have an illicit drug use disorder (SAMHSA, 2018). While there is no cure for addiction, it is treatable through various interventions. Addiction treatment includes behavioral therapy and/or medication. Interventions play a key role in decreasing and managing the harmful effects of drug use on the individual and the community.

Most drug users begin taking illicit drugs by smoking, snorting or taking them orally. Injection drug use is not generally how initial use begins. Non-injection routes become more costly because the drug use frequency has to increase the longer a person is taking the drug (Young & Havens, 2011; Strang, et al., 1992). As the dependence increases, there is a need for a cheaper, quicker and stronger high, which can lead to injection drug use (Strike, 2014). Drugs typically used through injection include cocaine, heroin, methamphetamines and opioids (NIDA, 2016). Research has shown some prescription drugs such as OxyContin have been associated with transitioning to injection drug use (Young & Havens, 2011). Injection sites may be under the skin, in a vein or into a muscle (NIDA, 2014). Of particular interest in the research is injection drug use (IDU) which is defined as, “taking drugs directly into blood vessels using a hypodermic needle and syringe” (NIDA, 2014).

### **Significance of the Problem**

It is estimated 13 million people worldwide injected drugs in 2017 (WHO, 2017). While the global population is not the focus of the research, it is important to understand the severity of the issue being discussed within a worldwide context.

The exact magnitude of injection drugs use in the United States is difficult to determine, but several studies have attempted to develop estimates using meta-analysis (Cooper et al., 2008). A 2011 analysis of four surveys, which measured injection use within the last year and throughout their lifetime, estimated nationally 6.6 million people over the age of 13 injected drugs during their lifetime (Lansky et al., 2014). The National Survey on Drug Use and Health (NSDUH) data from 2011 through 2013 estimated 4.2 million people over the age of 12 have injected drugs in their lifetime (Kooreman & Greene, 2016). Based on the prevalence estimations, an accurate depiction of the data presented would be to state between 2011 and 2013 it is estimated that 4 – 6 million people (12 years and older) in the United States have injected drugs at least once in their lifetime (Kooreman & Greene, 2016; Lansky et al., 2014).

In reviewing the population estimates of persons who inject drugs, the underreporting of the data must be considered. The NSDUH survey did not collect information concerning route of drug use prior to 2015. In 2015, a question was added regarding the use of prescription stimulants with a needle (SAMHSA, 2014). Estimates of needle use cannot be assumed based on drug type reported in the survey. Other flaws in data estimation methods include the use of self-report data, which may be underreported due to the illegal nature of drug use (Sweeting, Angelis, Ades & Hickman, 2009; Aceijas, Stimson, Hickman & Rhodes, 2004; Normand, Vlahov & Moses, 1995). Additionally, the “hidden” population those that inject drugs such as persons who are homeless, persons in treatment or incarcerated are not included, therefore an adequate estimation of IDU is difficult to ascertain (Sweeting, Angelis, Ades & Hickman, 2009;

Aceijas, Stimson, Hickman & Rhodes, 2004; Normand, Vlahov & Moses, 1995). Given the stated limitations, data presented should be viewed with caution.

### **Gender Differences of Injection Drug Use**

Globally, nearly four million females inject drugs (Degenhardt, et al., 2017). Females who use drugs have been shown to progress quicker to drug dependence than males (Tuchman, 2015; Hecksher & Hesse, 2009; Piazza et al., 1989). Greenfield, et al., (2010) provided several explanations for faster dependence, which included varying hormone levels, which contributes to receptiveness, stress, and co-occurring disorders. Hecksher and Hesse (2009) also suggest females have a “biological vulnerability” which is similar to what Greenfield implied (p. 52). Much of the literature on the prevalence, needs, risks and outcomes of injection drug use does not differentiate between males and females and therefore reflects a potential underrepresentation of females (Tuchman, 2015). Females who inject drugs tend to have a variety of risk factors that begin at a young age. Indicators are often family members’ use of drugs, juvenile delinquency, early sexual experiences, sexual abuse and living in poverty (Tuchman, 2015; Roberts, Mathers & Degenhardt, 2010). As a female ages, there may be engagement in the selling of sex, incarceration, trauma, social networks that include persons who inject drugs and mental illness (Tuchman, 2015; Roberts, Mathers & Degenhardt, 2010).

The influence of social networks on drug using behavior has been consistently acknowledged throughout the literature for both males and females. Females who transition from non-injection drug use to injection drug use are heavily swayed by their social network and their initial injection is often done by another female (Tuchman, 2015; Bryant & Treload, 2007). Research concerning who is involved in the initial injection is



mixed. Some research has shown a sexual partner may also be involved (Sheard & Tompkins, 2008; Gollub, et al., 1998; Powis, et al., 1996). Once a female begins to inject, they are typically part of a social group of persons who inject drugs (Epele, 2002; Roy, et al., 2002; MacRae & Aalto, 2000; Doherty, et al., 2000). A female's principal partner will become part of her social group and often have influence over her injection practices (Sheard & Tompkins, 2008; Bryant & Treload, 2007; Frajzyngier, et al., 2007; Epele, 2002; Roy, et al., 2002; MacRae & Aalto, 2000; Doherty, et al., 2000). Sharing equipment with her partner becomes acceptable behavior because it is viewed as safe (De, et al., 2007; Sherman, Latkin & Gielen, 2001). Research has shown as females inject they are more likely to share injection equipment and reuse needles, which puts them at greater risk for blood-borne viruses (Evans, et al., 2003; Montgomery et al., 2002; Sherman, Latkin & Gielen, 2001).

Not only do females tend to share injection equipment but they are also more prone to other injection risk behaviors such as involvement with sex work (Kimber, et al., 2003; Evans, et al., 2003 & Montgomery et al., 2002). Sex may be in exchange for a place to live, drugs or a safer environment (Pinkham & Malinowsk-Sempruch, 2008). Females who inject drugs often have multiple sexual partners, which includes a principal partner, a casual companion and customers, which increases their risk of blood-borne viruses and sexually transmitted diseases (Breen, et al., 2005; Reihman, et al., 2003 & Roberts, et al., 2003). Females engaged in sex trading often experience violence from their sexual partners and are unable to practice safe sex, which contributes to their heightened risk for disease (Pinkham & Malinowsk-Sempruch, 2008). When a female is

involved in multiple social networks she becomes a link between networks (De, et al., 2007).

### **Disease Transmission Associated with Injection Drug Use**

The injection drug use method has the greatest number of negative health consequences associated with its use compared to other methods of drug use (Kooreman & Greene, 2016). The risk of disease transmission often begins during the initial injection of a person who has not injected drugs; many initiators will share their drug injection equipment and/or drugs (Rotondi, et al., 2014; Bryant & Treloar, 2008; Day, et al., 2005). For the novice person who injects drugs, this is believed to contribute to the normalization of the behavior and therefore promotes the cycle of sharing throughout their drug use career (Rotondi, et al., 2014; Day, et al., 2005).

De, et al., (2007) found the relationships between individuals who inject drugs and their social networks contribute to disease transmission. Research has shown social networks and equipment sharing behavior is impacted by structure, composition and behavior (De, et al., 2007; Vaux, 1988). The larger the social network, the more social pressure that exists which contributes to an increase in unplanned injections and shared equipment (De, et al., 2007). Smaller social networks reflect less equipment sharing possibly due to less peer pressure and the creation of a more protective environment (De, et al., 2007).

Individuals who inject drugs suffer from a change in brain chemistry and a plethora of health issues. Sharing drug use equipment has been found to contribute to skin abscesses and infections (Irish, et al., 2007; Gordon & Lowy, 2005; Bassetti & Battegay, 2004), transmission of infective endocarditis (Rosenthal, et al., 2016; Cooper,

et al., 2007; Frontera & Gordon, 2000), hepatitis (CDC, 2020; Young & Havens, 2011) and human immunodeficiency virus (HIV) (CDC, 2020, February; El-Bassel & Strathdee, 2015; Leukefeld, 2002; Sherman, Latkin & Gielen, 2001; Abdala, Reyes, Carney & Heimer, 2000).

Females typically have a harder time accessing their veins and therefore are at greater risk for skin infections (Conrad, 2000, as cited in Bassetti & Battegay, 2004). They are also at an increased risk of contracting Hepatitis C (HCV) compared to males who inject drugs (Esmaeili, et al., 2018). Over half (60%) of females that inject drugs have been exposed to HCV (Iversen, et al., 1999).

### **Other Health Related Consequences of Injection Drug Use**

Females of childbearing age who are “sexually active are referred to as bridges for disease into the general population” (Roberts & Mathers, 2009, p. 7). Conventional gender norms view females as caregivers and mothers, which contributes to shame and can influence healthcare seeking behavior and have long-term consequences for both mother and child (Roberts & Mathers, 2009). Injection drug use while pregnant puts the health of the child in danger. The child may experience Neonatal Abstinence Syndrome (NAS), which is contracted from maternal opioid use (McQueen & Murphy-Oikonen, 2016; Kocherlakota, 2014; Finnegan, Connaughton, Kron & Emich, 1975). Symptoms and severity vary following birth but may include maternal bonding, nervous system issues such as tremors and/or seizures, gastrointestinal problems which may contribute to weight loss and irritability (McQueen & Murphy-Oikonen, 2016; Kocherlakota, 2014).

Injection drug use puts users at an increased risk of a fatal or non-fatal overdose (O’Driscoll, et al., 2001). Following a non-fatal overdose an IDU may face serious health complications, which may include brain injury due to the loss of oxygen, kidney failure or pneumonia (Darke & Hall, 2003).

### **Intervention Approaches**

Intervention is defined as “the action of becoming intentionally involved in a difficult situation, in order to improve it or prevent it from getting worse (Cambridge Dictionary, 2020). There are numerous types of interventions used to combat drug use. While the intent is not to explain every intervention option, several are highlighted below. Interventions have been categorized based on the approach.

#### ***Preventive Approach***

Drug use can cause serious consequences and possible addiction. Drug use prevention intends to modify drug use behavior and has been noted as the best strategy for decreasing use (NIDA, 2018; Tobler & Stratton, 1997). Education efforts may take place within the community, schools and families and are often undertaken through a variety of electronic and print media as well as in-person. One of the most widely known in-person drug education programs is the Drug Abuse Resistance Education program (D.A.R.E.) which began in 1983.

**Educational programs for injection drug users.** Educational programs are designed to inform persons who inject drugs about the harms associated with injection drug use and include topics such as transmission of infectious diseases, injection risk behaviors and medical issues related to injection. Programs may be conducted using peer educators who are recovering drug users that provide mentorship to current users. Peer

educators are a resource and work with the users to motivate behavior change, decrease risk behaviors and prevent the further spread of disease (Garfein et al., 2007).

**Educational programs for health care providers.** Systematic efforts have been developed to train healthcare professionals about the complexities of care related to a person who injects drugs, treatment of co-occurring issues such as mental health and their role in providing education to the user. Professionals have the ability to educate person who inject drugs on a variety of topics such as wound care, overdosing, drug treatment programs and combatting the spread of infectious diseases. Education not only assists in decreasing the harmful effects of injection drug use but also can contribute to cost saving measures for the healthcare and criminal justice systems.

### ***Curative Approach***

The curative approach is used in healthcare to eradicate an illness (Fox, 1997). This model views addiction as a disease of the brain, which can contribute to compulsive and obstinate behavior as well as unfavorable changes in mental health (NIDA, 2014). The disease must be treated and abstinence must be sought.

**Drug treatment.** Drug treatment is designed to assist those addicted in halting drug use. Treatment is offered in a variety of formats, which range from residential to outpatient and can include medication-assisted therapy (opioid substitution therapies including methadone and buprenorphine maintenance therapy) and/or behavioral therapy (NIDA, 2018).

**Coordinated treatment and care programs.** Coordinated treatment programs are specialized programs between a system and a social service agency which, places

users into treatment. A common example is drug court and the goal to reduce recidivism of criminal activity and relapse of drug use (U.S. Department of Justice, 2020).

Coordinated care efforts are “a person-centered approach across health and social systems (i.e., cross-sectoral, collaborative and interdisciplinary)” (McMaster University, 2019, p. 7). Care efforts include setting up supports for persons when transitioning out of incarceration, treatment of life-threatening infections across medical disciplines in a synchronized and systematic manner, working with co-occurring mental health issues and addressing concomitant barriers (McMaster University, 2019).

### ***Punitive Approach***

The punitive/criminalized model views illicit drug use as against the law with legal consequences such as a fine or imprisonment. In the United States, illicit drug use has been criminalized since 1971 when the war on drugs was declared (Jakubiec, Kilcer & Sager, 2009). The goal of the war on drugs was to eradicate the supply and demand of the illegal drug market through the enforcement of anti-drug laws. The 1980’s focused on stricter drug sentencing laws especially for crack which flooded prisons with the African American population (Courtwright, 2004; Glasser, 1999; Langan, 1995). The criminal justice system was inundated. Those incarcerated for nonviolent drug offenses between 1980 and 1992 increased almost 170 percent from 50,000 to over 400,000 (Gilliard, 1993). The war on drugs encouraged society to view drug use as a criminal act that had to be punished through the use of mass incarceration.

### ***Alleviative Approach***

The alleviative approach is used to provide assistance to those dealing with a social problem and decrease the consequences of the issue. The 2000’s saw new efforts

to combat drug use through harm reduction programs which use a combination of public health and public safety measures (Executive office of the President, 2016). An example is NEPs which are designed to reduce the harms associated with injection drug use.

**Needle exchange programs.** Needle exchange programs cannot be discussed without providing some background on harm reduction. “Harm reduction refers to the policies, programs and practices that aim primarily to reduce the adverse health, social and economic consequences of the use of legal and illegal drugs without necessarily reducing drug consumption” (HRI, 2018). Harm reduction began in the Netherlands in the early 1970’s and is used as an alternative to the disease or criminalized model of prevention and it acknowledges people will continue to use drugs (Marlatt, 1996).

Harm reduction principles are not new and do not solely focus on drug use. Harm reduction is used throughout many facets of our lives, which includes use of seat belts, sunscreen, designated drivers and bicycle helmets. For the purposes of this study, harm reduction will be discussed in reference to reducing the harmful effects related to injection drug use such as hepatitis human immunodeficiency virus. The field of public health has increased the use of harm reduction programs (e.g. condoms, naloxone, clean syringes, etc.) substantially over the last two decades as the awareness of health problems of groups that have been marginalized have increased (Roe, 2005). These types of programs can empower disproportionately affect populations to seek assistance, which not only benefits the individual user but their families and the community (HRI, 2018; Marlatt, 1996).

Harm reduction is not without controversy especially in the area of drug use. Many view this philosophy as the promotion of an undesirable and illegal behavior

(Kleinig, 2008). Others see it as a contradiction to the U.S. war on drugs, which criminalizes drug use (Irwin & Fry, 2010; Tammi & Hurme, 2006; Levin, 2002). One of the core principles of harm reduction is the individual makes their own choice regarding their behavior, which places value on the user (HRI, 2020). From the harm reduction viewpoint, the drug problem is a multifaceted social issue, viewed through a public health lens rather than a criminal justice or medical model (Irwin & Fry, 2010; Tammi & Hurme, 2006; Levin, 2002).

While treatment seeks abstinence as the ultimate goal, harm reduction programs support safe options during drug use such as syringe exchange, supervised injection sites or medically assisted drug treatment, which, work collaboratively with social services and law enforcement to remove punitive concerns.

Persons who inject drugs are a hard to reach population which face severe health issues and social stigma. The study focused on needle exchange programs (NEPs) which play a vital role in decreasing stigma, the spread of infectious diseases and are often a referral source for persons who inject drugs to enter drug treatment. Research has shown NEPs are an effective public health approach to reducing the consequences associated with injection drug use (AMFAR, 2013). In some areas of the United States, NEPs are the only alleviative programs offered to injection drug users.

### **History of Needle Exchange Programs**

Needle Exchange Programs (NEPs) began in the 1980's in Australia and became widely accepted internationally (Kleinig, 2006). In the United States, during the 1980's illicit drug use exploded, HIV risk behaviors such as the exchange of sex for drugs



increased and HIV rates peaked (Des Jarlais, et al., 2014; Courtwright, 2004; CDC, 2001; Golub & Johnson, 1999).

The criminal justice system became inundated with drug related crimes and was severely overburdened. Those incarcerated for nonviolent drug offenses “increased 168 percent from 1980 to 1992 from 50,000 prisoners to over 400,000 by 1992” (Gilliard, 1993, para. 1). The war on drugs encouraged society to view drug use as a criminal act that had to be punished using mass incarceration. The U.S. faced a moral dilemma with proposed public health alternatives such as NEPs, which were viewed as contradictory to the government’s stance on the criminalization of drug use and the war on drugs.

In 1986, a Yale public health student named Jon Parker created the AIDS Brigade and began a grass roots campaign in Boston to distribute clean needles to drug users (Kirp, 2010). Parker was the initial voice of the cause in the U.S., an activist that challenged how people viewed IDU and HIV. In 1988, Dave Purchase set up a television tray on the streets of Tacoma, Washington and effectively launched the needle exchange movement within the United States (Kirp, 2010). Three years later in 1991, Tacoma became the first American city to adopt a NEP (Kirp, 2010).

Formed in 1992 in Tacoma, the North American Syringe Exchange Network (NASEN) is a national organization of NEPs, which supports and advocates for harm reduction programs (NASEN, 2020). Currently, NASEN reports over 400 syringe service programs in the U.S. the District of Colombia, the Commonwealth of Puerto Rico, and the Indian Nations (NASEN, 2020).

There is controversy-surrounding NEPs in the United States. NEPs are viewed as programs that work against U.S. drug laws. Providing those who inject drugs with clean

needles is viewed as perpetuating the drug use problem. U.S. federal and state policies have created systematic barriers in the development and funding of NEPs. Drug use prevention programs which use an abstinence-based model are favored in drug policy initiatives though research has shown that “attempting to eliminate drug use entirely rather than reduce its harmful effects has proven ineffective” (Renteria, n.d., p. 17).

### **Federal Needle Exchange Policy**

Due to the criminalization of drug use, funding has been a substantial barrier for NEPs in the United States. Since 1988, federal policy has shifted back and forth regarding whether federal funds can be used to support NEPs. Federal law does not prohibit NEPs but there are restrictions on what federal funding can be used for related to the operation of a NEP (Neeley, 2014).

Since 2016, federal funds can be used for NEP operations (e.g. staff, syringe disposal, HIV testing, etc.) if a location is at risk or experiencing an increase in blood-borne illnesses due to IDU and receives formal approval from the Centers for Disease Control (CDC) (Paz-Bailey, 2016). Even with the 2016 revision, needles still cannot be purchased with federal funds or other items which will be used for injection drug use (e.g. cookers) (Paz-Bailey, 2016).

### **State Law Considerations for Needle Exchange Programs**

While federal law dictates the parameters of federal funding for NEPs, state laws play a vital role in the execution of the syringe exchange programs based on their needle prescription and drug paraphernalia laws (Gosten, 1994). These laws criminalize the

possession and distribution of syringes, which limits the accessibility of clean needles for FWID and becomes a barrier in the prevention of blood-borne diseases (Burris, 2017).

Burris (2017) and the Centers for Disease Control (2017, September) proposed the following program components for NEP programs, which must be considered at the state level:

1. Is the sale and distribution of drug paraphernalia prohibited by state law?
2. Does paraphernalia include syringes?
3. Does paraphernalia exclude any drug related equipment?
4. If paraphernalia includes syringes, are there any exceptions for disease prevention?
5. If so, what are the exceptions (e.g., NEP use, medical purposes, etc.)?
6. Are the sale of syringes regulated by state law?
7. Is a prescription required for the purchase of syringes?
8. If so, is there a minimum number of syringes that can be obtained without a prescription?
9. Can syringes only be sold through a pharmacy?
10. What information is the buyer required to provide to purchase syringes?
11. Does state law prohibit NEPs?
12. Does a NEP require local approval?
13. Are NEPs required to operate a one-to-one exchange for syringes?
14. Are syringe starter sets permitted?

The complexity of offering a NEP involves examining the state laws related to syringe exchange, access and sale of needles and paraphernalia (CDC, 2017). In 2015,

the Council of State Governments reported NEPs are authorized in the District of Columbia and 16 states, and one state allows NEPs to be legal only during a state health emergency. Some states have modified their drug paraphernalia laws and have created ways to work around existing barriers to providing clean needles such as nonprofits running NEPs (CSG, 2015). Local governments may have additional laws/ordinances that must also be considered when trying to implement an NEP, adding yet another bureaucratic layer to an already multifaceted issue.

### **Needle Exchange Program Utilization by Gender**

Usage characteristics of needle exchange program participants is difficult to obtain given there is no required global reporting due to the confidential nature of the program. Because of this, we must rely on research data from NEP locations to understand the demographics of the client population. Historically, much of the information examining individuals who inject drugs is “gender neutral or male focused” (UNODC, 2014). Until approximately three decades ago, females were not typically included in basic and behavioral science research (NIH, 2020). If studies do recognize gender as part of the drug culture, “females’s experiences still lag behind males’s in research around drugs” (Ettorre, 2004).

A CDC report released in November of 2016 examined NEP utilization in 22 U.S. cities found 54% of injection drug users used an NEP at least once in the last year, compared to only one-third in 2005. The report provided injection drug use data by ethnicity but data was not located which was analyzed by gender. Researchers in Canada examined 15 years of NEP research to determine lessons learned and gender was not acknowledged as factor worth examining (Hyshka, et al., 2012). In a 2004 article

Ksobiech conducted a comprehensive review of the NEP literature between January 1988 and July 2001 and found that within the 500 articles examined research outcomes were not generally reported by gender.

Research conducted with Baltimore NEPs regularly reported gender as part of their data analysis. A 2001 article found that of the 2,574 participants only 27% were female (Valente, et al.). Riley, et al., 2002 found a similar result in which 28% were females. Research examining NEP usage and entry into drug treatment in Baltimore had a sample comprised of approximately 32% female (Latkin, Davey and Hua, 2006).

International research on NEPs included gender as part of their data reporting. Gender differences were examined at a NEP in Oslo, Norway at three points in time over a five year period and found females comprised 41% of NEP clients in 1992, 33% in 1994 and 34% in 1997 (Miller, et al., 2001). NEPs in Ireland found between 10% and 30% of their clients were female (Health Research Board, 2008). Based on the limited reporting of gender, it could be inferred that between 10 and 40 percent of NEP clients are female. El-Bassel & Strathdee (2015) noted that females who inject drugs are underrepresented in research and warrant further study. This research supports an understudied population and provides data to respond to the specific needs of females who inject drugs.

### **Success of Needle Exchange Programs**

Evidence supporting NEPs in the United States began as early as 1993 when a U.S. General Accounting Office report reflected findings supporting needle exchange programs (Bowen, 2012). Research conducted by Cross, Saunders, and Bartelli (1998)

and Ksobiech (2004) found that NEPs reduce needle sharing between people who inject drugs and have contributed to the decrease in HIV (Bowen, 2012; Kerr et al., 2010).

While there is considerable debate-surrounding NEPs – the majority of the research evidence clearly supports this type of program (CDC, 2019; World Health Organization, 2004). As evidence continues to grow in support of harm reduction approaches (e.g. NEPs), there is still reluctance to implement these strategies in areas of desperate need (Irwin & Fry, 2007). At some point, there may be a less controversial solution to decreasing HIV transmission related to injection drug use (Villarreal & Fogg, 2006). Until then, harm reduction approaches such as NEPs remain a programmatic to decreasing the health effects of injection drug use (Villarreal & Fogg, 2006).

### **Theoretical Frameworks**

Harm reduction programs do not prevent drug use but instead focus on eliminating the adverse consequences of the social problem to the individual and the community (Hilton, et al., 2000). Core tenets of harm reduction programs include being rooted in pragmatism, respecting the choice of the individual to use drugs, providing a non-judgmental environment and focusing on the effects of drug use (Hilton, et al., 2000; Marlatt, 1999; Conley et al., 1998; De Jarlais et al., 1993). The research problem will be analyzed through multiple theoretical frameworks, which will provide structure for the basis of the study. Exchange theory, the health belief model and feminist theory and intersectionality will be used to help us understand factors which may facilitate or inhibit females who inject drugs from utilizing NEPs.

## **Exchange Theory**

Given the nature of harm reduction programs such as needle exchange programs, exchange theory offers a useful lens for examining factors which may contribute to participation, exchange theory examines why we interact with others the way we do and is rooted in behaviorism (Singelmann, 1972). This theory is shaped by rational choice theory and views people making logical and appropriate choices based on what will give them greatest satisfaction based on rewards and costs. It can be defined as the social interaction between individuals based on the exchange of social or material resources, which in this case is sterile syringes (Singelmann, 1972). Exchange is a calculated, self-centered approach used to examine and maximize intrinsic and extrinsic benefits within the relationship rather than normative requirements.

Instrumental theorists in the study of exchange theory included Homans, Parsons, Durkheim, Blau, Emerson and Cook (Rosenstock, 1974). It is a multi-disciplinary theory and has its early roots in the areas of economics, anthropology, sociology and psychology. Homans (1958) applied psychological principles to rational human interaction comprised of propositions, which included stimulus, success, value, deprivation-satiation and justice (Heath, 1971). The foundation of exchange theory is rooted in the nature of human relationships and has several core assumptions: (1) persons prefer rewards rather than negative consequences, (2) an interaction is based on the greatest yield for the least expense, (3) the expense and yield are considered before interacting, and, (4) the rewards will vary by person and are influenced by a variety of factors in one's life as well as what they value regarding the exchange of resources (Rosenstock, 1974).

NEPs work on a premise of exchange theory which views interaction based on the trade of clean syringes for used ones. When considering using a NEP, stimuli guide a person's behavior based on how the potential reward is viewed. NEPs incentivize the behavior change of the person who injects drugs by providing clean needles in a safe environment, which does not criminalize their drug use. NEPs may provide other amenities that entice the person who injects drugs to utilize the program such as other social services and medical treatment.

Costs associated with NEP usage, may include concern about potential law enforcement harassment. A pregnant female who injects drugs may be worried about NEP staff notifying Child Protective Services and jeopardizing the custody of her child. Additionally, individuals who inject drugs may fear stigmatization from NEP staff and/or other community members.

While Homan's conducted his research, he developed propositions within exchange theory (Emerson, 1976). Homan's propositions regarding human behavior are useful in applying exchange theory to NEPs. The propositions include: (1) the success proposition in which a person may engage in an action based on the reward of the action, (2) the stimulus proposition in which a person is more likely to engage in an action if the current stimuli is similar to prior ones, (3) the deprivation-satiation proposition in which an action is less likely to occur if the same reward is used often and is viewed as having no real value, (4) the value proposition emphasizes the value placed on the outcome of the action, (5) the rationality proposition concludes all actions are evaluated to compare costs and rewards, and (6) the aggression-approval proposition which has two parts: (a) if an action does not receive the intended reward and may include punishment, the person



may become angry and the result of the anger may be viewed as being more valuable, (b) following an action if a person receives an unexpected reward which is more valuable than expected and does not receive punishment as expected they are more likely to engage in the approving behavior because it is viewed as being more valuable (Trevino, 2009; Emerson, 1976).

In further examining these propositions related to perceptions of individuals who inject drugs and NEPs, this theory illuminates a number of deeper questions that may be relevant to the proposed research. For example, the success proposition may provide insight into why persons who inject drugs utilize the NEP. Do they value their health and the well-being of others? Do they view needle sharing and the spread of disease as a potential cost they wish to avoid? The stimulus proposition involves consistency. From the perspective of the individual who injects drugs, are NEPs consistent in their service delivery and syringe distribution? Do they receive enough supplies at each visit? When examining deprivation-satiation to what extent is the same reward considered valuable to the person who injects drugs over time? Does the NEP educate the person who injects drugs about how their individual efforts in using an NEP are contributing to the decrease of the spread of disease through the use of clean needles? Does the person who injects drugs continue to see the value in caring for their health and the well-being of others? The value proposition is used when an individual who injects drugs is determining the importance of the action or inaction related to NEP usage. Is the concern regarding their health and others important to them? Is their current injection behavior more important than making a behavior change? With the rationality proposition the individual who injects drugs will compare the costs and rewards of all actions. What will it cost for them

to use the NEP such as transportation, time, time off from work, etc.? Are clean syringes worth the time and effort? What other benefits do they receive from the NEP? Is the person who uses drugs treated with dignity and respect? What will other persons who inject drugs think if they use the NEP, how important is this to them, and what are the benefits and costs within the community if persons who inject drugs are associated with participation in the program? The aggression-approval proposition has implications for how NEPs are designed and operate. Are the associated health outcomes being realized? Are NEP clients free from harassment from law enforcement and community members or other types of punitive consequences? When traveling to and from the NEP with syringes and drug paraphernalia is there a risk they may be arrested? If an individual who injects drugs uses the NEP and receives an unexpected reward (e.g. a free meal or healthcare), they may place a higher value on their participation. Their program participation may increase, and they may encourage others to partake based on their analysis of the costs and benefits of NEP usage.

Exchange theory may help us understand the dynamics of how harm reduction approaches such as NEPs promote the health and well-being of individuals who inject drugs and support the premise of decreasing harm to the individual and the community. In applying exchange theory to the way these programs function, it is suggested that the person who injects drugs may feel valued as a person because they are not being told to stop their behavior, and can receive supplies, which permits them to continue to inject drugs in a safe manner. The person who injects drugs may maintain drug use, which they may view as the greatest benefit of the exchange.

Exchange theory provides a distinct perspective when examining NEPs given the transactional nature of the relationship between the NEP and the individual injecting drugs. It can be beneficial in determining how the individual views costs and benefits, which can assist in modifying and creating new interventions, as well as changing policy.

### **Health Belief Model**

The Health Belief Model (HBM) in many ways draws from exchange theory, focusing, as midlevel theories do, on the substantive area of use in preventive health services. Therefore the HBM will be used to specifically inform which factors should be considered in the research of this harm reduction program. HBM was developed as a result of trying to understand why preventive services (e.g., tuberculosis screening, flu vaccinations, etc.) from public health departments were not being utilized during the 1950's and 1960's (Glanz, 2016; Rosenstock, 1974; Hochbaum, 1958). Social psychologists Godfrey Hochbaum, Stephen Kegels, Howard Leventhal and Irwin Rosenstock wanted to explain preventive health behavior and were influenced by cognitive theorist Kurt Lewin (Rosenstock, 1974; Lewin, Dembo, Festinger, Sears & Hunt, 1944). Lewin believed behavior is viewed through the significance that is placed on the result if the outcome is likely to be achieved (Lewin, Dembo, Festinger, Sears & Hunt, 1944). HBM is a value-expectancy theory and considers an individual's willingness to engage in prevention behaviors is based on their belief regarding their risk of the health issue (Glanz, 2016; Rosenstock, 1974). The core components of HBM include (LaMorte, 2019; Glanz, 2016; Rosenstock, 1974; Hochbaum, 1958):

- Perceived vulnerability – An individual must believe they are at risk of experiencing the health issue and believe the risk is worth engaging in the preventive measure.
- Perceived seriousness - The seriousness of the health issue depends on what the consequences are believed to be as a result of the issue and its impact on their quality of life.
- Potential rewards – The benefit a person will receive in return for making a behavioral change and it is generally based on their belief system.
- Potential obstacles – The difficulties (e.g., time, money, inconvenience, etc.) an individual may encounter if they decide to take action.
- Prompts to action – The stimulus (e.g., visit to the doctor, media campaign, etc.) which encourages an individual to take action to make a change. The stimulus may need to vary in frequency and size based on the perceived benefit.
- Self-efficacy – An individual’s ability to follow through with a change.

The HBM provides another contribution to the research as it lines up in many ways with the majority of the propositions outlined in exchange theory. The HBM has been used to explain injection practices and harm reduction program usage among those who inject illicit drugs (Bonar & Rosenberg, 2011; Gyarmathy, et al., 2009; Strecher & Rosenstock, 1997). Bonar and Rosenberg (2011) used the health belief model to examine if persons who inject drugs would utilize harm reduction strategies. Gyarmathy, et al., (2009) used the HBM to study the acceptance of a person’s social network regarding the utilization of harm reduction behaviors. The HBM has also been used to examine HIV prevention behaviors (Fisher & Fisher, 2000; Rosenstock, Strecher & Becker, 1994).

Many factors may explain why some females who inject drugs engage in harm reduction opportunities and others do not. Applying the Health Belief Model constructs to the examination of program communication methods will provide insight on how harm reduction strategies are viewed in relation to the susceptibility and vulnerability of the negative health consequences of injection drug use. Determining the barriers and facilitators of females's needle exchange program usage will assist with improving access and types of services provided at NEPs to create a more inclusive environment. By examining what is done to encourage NEP use, mechanisms to promote self-efficacy can be created or modified. Overall, the HBM constructs will assist in creating an understanding of how a female who injects drugs approaches the use of a NEP.

Exchange theory and the HBM assist in the identification of variables that may be contributors to action or inaction of NEP usage by the individual who injects drugs. Given the proposed study's focus on females in particular, whose participation in NEPs has been understudied, it is important for the study to examine those factors which may be unique to the experiences of females and may influence their engagement with NEPs. Feminist intersectionality theory will be used to illustrate "the relation between systems of oppression which construct our (females's) multiple identities and our (their) social locations in hierarchies of power and privilege" (Carastathis, 2014, p. 304). In order to fully understand intersectionality theory, a brief overview of different categories within feminist theory is provided.

### **Feminist Theory**

Inequality between the genders has existed for at least 4,000 years (Lerner, 1986). Feminist theory emerged from periods of social and political struggle which highlighted

the inequality of females. Feminist theory “is a wide-ranging system of ideas about social life and human experience developed from a female-centered perspective” (Lengermann & Niebrugge, 2010, p. 193).

There are a variety of feminist theories but the underlying goal is the advancement of females in society (Lengermann & Niebrugge, 2010). Categories of feminist theories include (Ritzer & Stepnisky, 2018):

- Gender difference - Males and females have different experiences in the same situation.
- Gender inequality – In the same situations females not only have different experiences than males but are not equal to males.
- Gender oppression – A power differential between males and females where females have less power.
- Structural oppression – Experiences of females are influenced or determined by embedded processes and structures within society in which are designed to subordinate them.

Feminist theories of gender difference include cultural feminism and existential or phenomenological feminism (Lengermann & Niebrugge, 2010). Existential or phenomenological feminism attributed to Simone de Beauvoir, views females as born into a disproportionately affected group, highly male created environment (Lengermann & Niebrugge, 2010). Sociological theories of difference view gender differences from other perspectives. Feminist institutional theory views females’s differences based on their role within institutional settings (e.g. home, work, family, etc.) (Lengermann &

Niebrugge, 2010). Based on a females' role within society their experience is different than that of a male.

Feminist interactionist theory views gender through continual interaction among individuals, or "doing gender" as described by West and Zimmerman (1987).

Accountability guides people's actions of performing in a certain way based on what is expected on the basis of gender to maintain gender identity (West & Zimmerman, 1987).

Postmodernist philosopher Judith Butler believed gender was a performance which is viewed as similar to "doing gender" but that our acts were learned performances that were to some extent set up for us within society (Felluga, 2011). Butler viewed gender as a process of performances based on personal biographies (Lengermann & Niebrugge, 2010). She believed people imitate others based on culturally accepted ideas of masculinity and femininity in order to create their gender (Felluga, 2011). For the purposes of this study, the term female was used.

Feminist theories observe that males and females have an unequal and different placement within society based on its configuration (Lengermann & Niebrugge, 2010). Gender inequality theorists differ from gender difference theorists because they believe this situation can be changed (Lengermann & Niebrugge, 2010). The core construct of gender inequality is liberal feminism in which gender is viewed as a way to stratify systems and promote a sexist ideology which is a cornerstone of societal organization (Lengermann & Niebrugge, 2010).

Rational choice feminist theory acknowledges an individual makes decisions based on internal and external limitations (e.g. institutional constraints, opportunity costs, etc.) (Lengermann & Niebrugge, 2010). Rational choice theory allows females to create

a preferred outcome weighing constraints and costs. The addition of feminist theory to the research acknowledges and prioritizes the gender-based roles and constraints that influence individual choice.

Gender oppression results from a power relationship between a male and females in which there is domination by the male and is heavily rooted within society (Lengermann & Niebrugge, 2010). Radical feminism suggests that oppression of females is achieved through patriarchy which often goes unnoticed but is the most pervasive force in promoting inequality (Lengermann & Niebrugge, 2010). Patriarchy to radical feminists is seen as control maintained by males based on their power and resources. Radical feminism acknowledges there are cross-cultural differences in the dynamics of oppression and how it is experienced.

Structural oppression theorists assert oppression involves controlling others through social structures of racism, patriarch, capitalism and heterosexism (Lengermann & Niebrugge, 2010). Actions of individuals are not ignored but examined through the lens of how their actions were influenced by social structures. Some theorist focus on how females have experienced oppression through capitalist patriarchy or domination (e.g. Dominelli, 2002). This is informed by Marxian theory, capitalism and class oppression as well as historical materialism (Lengermann & Niebrugge, 2010). Through this intertwining, domination can be examined based on material and social arrangements, and resources should be adequately distributed to limit disparities and material inequalities.

bell hooks' and Kimberle Crenshaw examined the intersection of feminism with social classification (e.g. class, gender, ethnicity, etc.) (Huff, 2016; Carastathis, 2014).



Intersectionality theory recognizes that females experience oppression and discrimination in a variety of ways with varying intensity (Carastathis, 2014; Lengermann & Niebrugge, 2010). Females experience oppression through not only gender but “class, race, global location, sexual preference and age” referred to as “vectors of oppression and privilege” (Lengermann & Niebrugge, 2010, p. 219). The vectors of oppression are connected to each other and cannot be separated (Biana, 2020; hooks, 1984). The experience of being a female is changed when these intersections collide and inequality must be viewed through “a hierarchical structure based on unjust power relations” (Lengermann & Niebrugge, 2010, p. 219). Within the third wave of feminism, feminist theory and intersectionality views gender as performative and not based on an individual’s anatomy (Felluga, 2011). Using the term female acknowledges inclusivity given a person will self-identify when using a NEP.

An example of the use of intersectionality theory is the examination of a pregnant female who injects drugs. She may not seek prenatal care out of fear the healthcare system will report her use of illicit drugs. The pregnant female may experience law enforcement and criminal justice involvement if she is caught injecting drugs while pregnant. Her drug use could result in Child Protective Services removing the child from her custody at birth as well as possible imprisonment. All of the systems mentioned have power over the female and therefore she is experiencing intertwined systemic oppression.

Females have complex lives with varying interdependence and interconnectedness (Dominelli, 2002). Within the area of illicit drug use, it is important to consider how the lives of males and females are very different. Females’s substance use is multifaceted in that multiple determinants of health impact their drug use, and the harm reduction and

treatment experiences. Female substance abuse research often does not address the full scope of problems females face because gender is not recognized (United Nations, 2004). Accordingly, less is known about the incidence of use, needs and systemic barriers females face. The literature also suggests females who use drugs are typically unrepresented within the creation and assessment of harm reduction services (Larney, et al., 2015; Springer, et al., 2015; Iversen, et al., 2015). Services are heavily influenced by masculine concerns because they are often designed by and for males and offer little to meet the needs of females (El-Bassel & Strathdee, 2015; Ettore, 2004). A female's autonomy in accessing harm reduction services is significantly impacted when gendered inequities exist within society which increases their risk of illness associated with injection drug use.

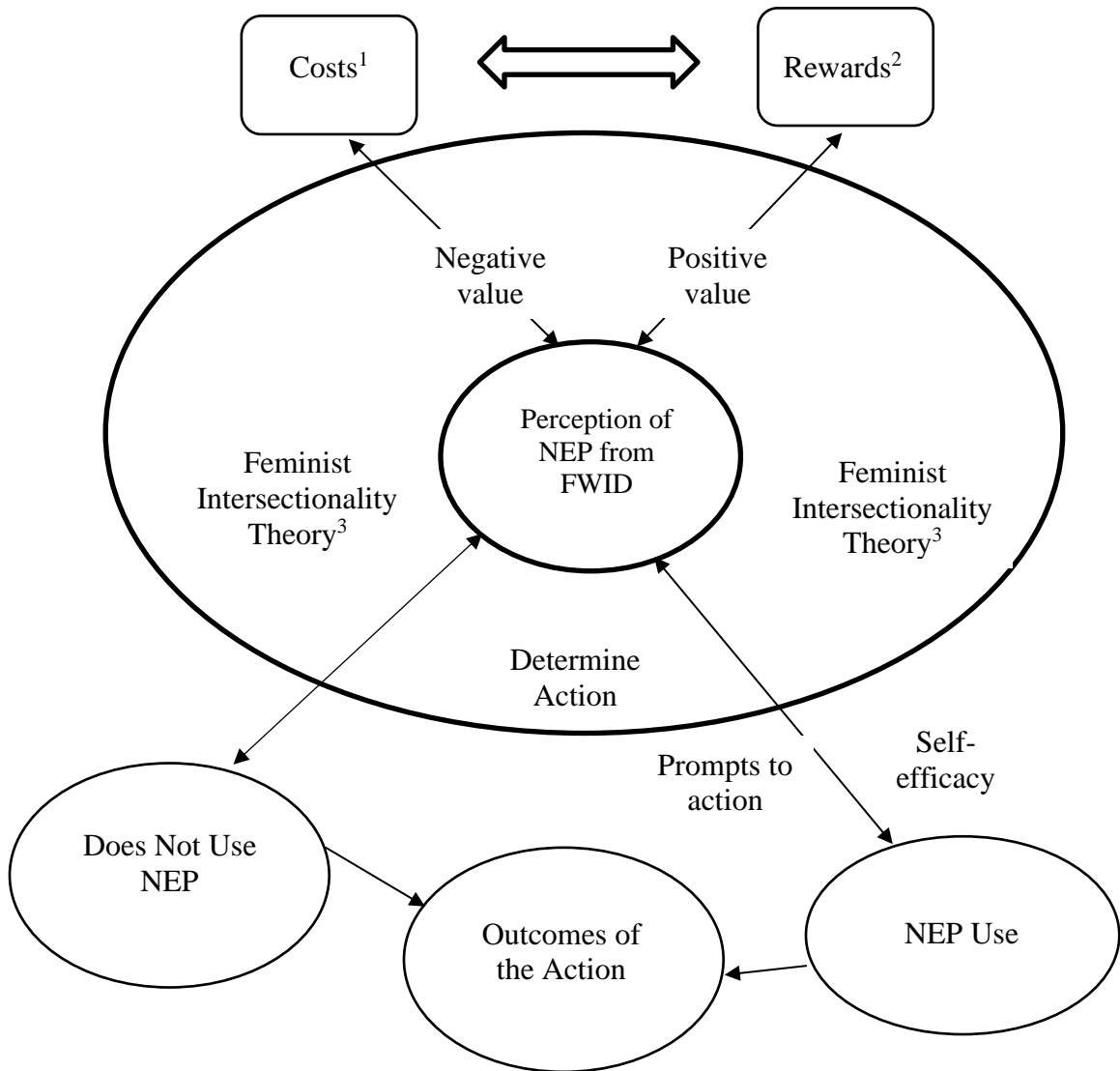
Because the concept of intersectionality within feminist theory has been viewed as the way “things work rather than who people are” it informs this study through identifying the structural and political inequalities females face (Chun, Lipsitz & Shin, 2013, p. 923). The goal is to “deconstruct and redefine concepts previously defined from a male perspective” (Parpart, Connelly & Barriteau, 2000). This will provide a rich framework for the creation of a responsive and inclusive harm reduction plan for females that have been marginalized who inject drugs. Cho, Crenshaw and McCall (2013) identified the utility of intersectionality across a multitude of disciplines and found it beneficial in the development of best practices, organizing communities, advocating for change and the creation of social movements.

Both exchange theory and the health belief model inform the design of the study in terms of the factors that serve as benefits and costs in the decision to participate in

NEPs. When studying females's use of NEPs, feminist intersectionality theory provides a lens through which we examine the individual and their experience within the macro systems that contribute to privilege and oppression. Informed by these theories, Figure 1 depicts a conceptual model which is relevant in understanding females who inject drugs participation or non-participation in a NEP.

Figure 1.

***Theoretical Model of Exchange Theory, the Health Belief Model and Feminist Intersectionality Theory***



<sup>1</sup> Perceived vulnerability and seriousness, loss of relationships, time, transportation, stigma, confidentiality, fear, health issues, etc.

<sup>2</sup> Free clean needles, healthier use, decrease health risk factors for self and others, receive other services, etc.

<sup>3</sup> Categories of identity vs. structures (e.g. economic, social, educational, health care, criminal justice, legal, social service, political, polices, and laws) of inequality.

## **Importance of the Proposed Study**

This research will examine service provider perspectives on facilitators and barriers to needle exchange program participation by females who inject drugs. There are few studies that aim to answer the provided research questions. Females who inject drugs are involved in multiple social networks and endure different consequences associated with injection drug use. This study provides data that will be useful in the modification of current harm reduction strategies to increase utilization by this underserved and disproportionately affected population.

The study has significant implications for social workers, healthcare workers, public health professionals, policy makers, researchers and practitioners within the criminal justice system and the legislature. Professionals across systems will have a better understanding of the challenges females face in accessing services. Harm reduction and prevention approaches will be viewed through the lens of gender, which in the research literature has typically been “one size fits all”. Stigmatization may be lessened due to a better understanding of the drug-using environment and what a female must contend with. Services designed to empower females who inject drugs may be created. Policies may begin to consider gender in order to acknowledge males and females face different ramifications related to injection drug use.

Given the opioid crisis, the study provides data to support the efforts of harm reduction programs, which continues to be debated. Despite the evidence, the value-laden argument has prevailed with U.S. NEPs rather than the evidence-based argument, which substantiates the use of syringe programs in combatting the harmful consequences of injection drug use. Until a more effective, less morally charged approach is

determined to combat the effects of injection drug use NEPs are considered by some a viable approach (Villarreal & Fogg, 2006).

The design of research to explore these issues must be informed by an analysis of the extant literature, and the gaps that remain in our understanding of NEPs. Chapter 2 provides a summary of the research literature to date related to needle exchange programs. The chapter concludes with an analysis of research gaps which the current study addresses.

## CHAPTER II

### LITERATURE REVIEW

As the public health issues related to injection drug use have increased, many communities have implemented needle exchange programs to assist in mitigating the consequences associated with the behavior. While research has shown NEPs are an effective tool in combatting the health effects of injection drug use, little is known about females and their utilization of this service (Mills, 2015; Bowen, 2012; Knox, 2012; Kerr et al., 2010; Villarreal & Fogg, 2006; Wodak & Cooney, 2004). An extensive review of the literature is presented in pertinent areas and includes research focused on harm reduction, harm reduction programs, supervised injection sites, medication assisted therapy, needle exchange programs, needle exchange programs operations and policy, needle exchange program location, rural area access to drug paraphernalia, law enforcement involvement with needle exchange programs, impact of needle exchange program location on crime, impact of needle exchange program location on discarded paraphernalia within the community, syringe distribution and return trends, needle exchange program client characteristics, healthcare utilization and injection drug use disclosure, client needs, client utilization and retention patterns, high risk client interventions, clients perceptions about the needle exchange program, gender specific needle exchange program research, needle exchange program outcomes research, prevalence of disease, disease risk factors, disease prevention, needle exchange program cost effectiveness, treatment referral, admission and retention, barriers to drug treatment, service providers perspective of usage barriers, summary of the extant literature and gaps

in the literature. Summarizing the existing research is necessary to understand what is currently known about needle exchange programs and to identify gaps in the research.

An exhaustive literature search was conducted to locate peer-reviewed journal articles, which focus on the primary research topic of needle exchange programs. Inclusion criteria for the search included articles be published in English and reflect findings of a research study. The time-period for inclusion is 2000 to present. Databases used included EBSCO, Google Scholar, PsycINFO, Ovid, JSTOR, Social Science Abstracts, PubMed, ScienceDirect, Wiley Online Library and WorldCat. Each database was searched using strategic search terms, which included “needle exchange program(s)” and “syringe exchange programs”. Additional articles were located by reviewing reference lists of identified articles. The search identified 334 publications but the majority were editorials, responses to the editorials or policy updates. Fifty-five NEP articles were deemed applicable for the purposes of this project. Each article was reviewed to determine the objective of the research and a list of topic areas was compiled. Literature was assigned to a corresponding topic area based on the primary research objective.

Research related to NEPs cover a wide variety of topics. To lay a foundation for the problem being studied a brief summary of harm reduction programs is provided followed by a review of the research literature.

### **Harm Reduction**

While needle exchanges programs are the focus of the research, it is important to have a basic understanding of other harm reduction programs available to injection drug users. Programs include supervised injection sites and medication assisted therapy.



## ***Harm Reduction Programs***

**Supervised injection sites.** Supervised injection sites (SISs) are facilities that allow persons who inject drugs to bring in their own drugs to inject and the facility provides sterile injection equipment in a safe space. The facility has medical staff on site to oversee injections and there are strict regulations that must be adhered to such as who is permitted into the facility and behaviors that are not allowed (e.g. selling drugs, violence). Sites were created with the intent of connecting groups that have been marginalized to medical care to improve health outcomes, social service support, providing education regarding the health risks associated with injection drug use, behavior modification, decreasing disease and the reduction of overdoses (Potier, et al., 2014). SISs are not available within the United States (Beletsky, et al., 2008).

**Medication assisted therapy.** Medication assisted therapy (MAT) uses a combination of pharmacological treatment (buprenorphine, naltrexone and methadone) to combat the physical and psychological symptoms of additions (e.g. cravings, and detoxing symptoms), and behavioral therapy and counseling to treat opioid abuse in addition to educational and vocational training and medical care (SAMSHA, 2020). Practitioners interested in providing MAT must apply to SAMSHA for approval. MAT duration varies, and can be indefinite as long as there are regular health assessments conducted (FDA, 2019).

In a systematic literature review of methadone maintenance treatment (MMT) from 1995 through 2012, Fullerton, et al., (2014) found MAT was effective in improving outcomes related to criminal behavior, mortality and decreasing HIV risk behaviors, and showed positive maternal and fetal outcomes in pregnant females. Tkacz, et al., (2011)

examined compliance of MAT over a period of three months and found relapse decreased with the use of buprenorphine and was determined to be effective, although there might not have been adequate time to allow for the assessment of compounding issues such as mental health concerns, stress or employment issues.

A review of cohort studies determined mortality rates were significantly lower in buprenorphine studies compared to methadone, particularly during the initial month of treatment (Bahji, et al., 2019). While MAT has been shown to decrease overdose deaths, it has also been shown to reduce HIV and hepatitis C (Tsui, et al., 2014; Schwartz, et al., 2013). A study examining patient outcomes related to the three MAT medications is currently being conducted in 65 sites across the United States (CDC, 2019).

Supervised injection sites and medication assisted therapy have been shown to be instrumental in harm reduction efforts. While these programs provide significant benefits, the remainder of the chapter will focus on another harm reduction program - needle exchange programs.

## **Needle Exchange Programs: Review of Existing Research**

### ***Needle Exchange Programs Operations and Policy***

While needle exchange programs have a common goal of providing sterile syringes to injection drug users, program operations and policy surrounding service delivery will often vary by location. This may be attributed to local laws, resource allocation and program support.

**Needle exchange program location.** The location of an NEP is a frequent concern of communities where they are housed. Residents often view them as promoting drug use and fear an increase in crime. Strike, Myers and Millson, (2004) examined the

challenges of finding a place to house NEPs in Ontario, Canada using “not in my backyard (NIMBY)” phenomenon. From the NIMBY perspective, home may be viewed as a desirable location, which becomes part of our identity. NEPs were viewed as undesirable and a threat to our identity. Based on qualitative interviews with NEP staff, researchers found that NEPs continue to face difficulties finding locations due to community opposition based on the stigma related to drug use and safety concerns (Strike, Myers & Millson, 2004).

**Rural area access to drug paraphernalia.** Fisher, et al., (2017) examined access to drug use equipment in rural communities in New South Wales, Australia. The sample was comprised of injection drug users who utilized an NEP within the last month. Over half of the sample reported picking up equipment for other persons who inject drugs, which suggests there is an issue related to those not accessing an NEP. The open-ended responses suggested longer hours of operation and the need for easy disposal options for equipment (Fisher, et al., 2017).

**Law enforcement involvement with needle exchange programs.** A cross-sectional national survey of U.S. NEP managers examined police interference based on program characteristics, physical environment and the laws associated with NEP operation (Beletsky, et al., 2010). Over 40% of participants reported monthly harassment of clients, 30% had NEP items seized, 10% reported arrest of clients going to or from the NEP. NEPs serving persons of color who inject drugs were almost four times more likely to report seizure of items and arrest (Beletsky, et al., 2010). The study highlights the need for law enforcement and NEPs to work collaboratively to maximize the benefits of the intervention.

**Impact of needle exchange program location on crime.** Marx et al., (2000) examined the crime rates in Baltimore surrounding two NEPs following their opening. Arrest data within a half-mile radius was collected for six months pre-NEP and 14 following the opening of the NEP. Drug related arrests showed a slight monthly increase following the opening of the NEP in both program and non-program areas, both economically motivated offense arrests and resisting arrest saw an increase in non-program areas after the NEP opened. While drug related arrests did increase, this was consistent with other areas of Baltimore and was not statistically significant. The study found the opening of the NEPs was not linked with the increase in crime rates (Marx, et al., 2000).

**Impact of needle exchange program location on discarded paraphernalia within the community.** A study in Baltimore examined the amount of discarded paraphernalia pre-NEP and over a two-year period while in operation (Doherty, et al., 2000). Randomly selected city blocks were sampled and it was determined that the NEP did not contribute to an increase in discarded paraphernalia in public areas (Doherty, et al., 2000).

**Syringe distribution and return trends.** A study in Hungary examined the closure of two NEPs on the impact of the needle supply (Gyarmathy, et al., 2016). NEP registry data from 2008 – 2014 included almost 23,000 and distribution of over three million syringes. The number of new clients, contacts, syringes dispensed and syringes collected increased annually. Between 2012 and 2014 the number of syringes a person who injects drugs received decreased and NEPs collected approximately 50% of the syringes distributed. It was noted that HCV in individuals who inject drugs in Hungary

doubled between 2011 and 2014 (Gyarmathy, et al., 2016). A similar Australian study reported a significantly higher return rate than Gyarmathy, et al., (2016), using other disposal methods, including secure disposal containers placed in public locations (Miller, 2001). A third Australian study examined needle distribution trends from NEPs, healthcare agencies, pharmacies and vending machines between 1990 to 2009 noting a nearly 30% NEP usage increased (Lilley, Mak & Fredericks, 2012).

In Brazil, Bastos, et al., (2006) employed focus groups and observational data to determine the reasons for the delays in returning marked versus unmarked syringes. In over 500 boxes of injection paraphernalia during the study period, the majority of returned boxes did not contain marked syringes. Participants reported they generally receive more syringes than needed and often resell them outside the area of the NEP or smuggle them into correctional facilities (Bastos, et al., 2006).

In a study of NEPs in California, Blumenthal and colleagues (2007) found that NEP operational policy on the number of syringes a client can obtain ranges from a one for one exchange with a maximum cap or unlimited based on need. The researchers determined the majority of clients have acceptable syringe coverage and are less likely to reuse and share syringes (Blumenthal, et al., 2007).

A Chicago study of NEP users classified them as high, medium and low users based on the quantity of syringes received, number of visits, and time spent at the NEP (Valente, et al., 2001). Syringe circulation times were shorter for those participants that used the NEP frequently and they returned syringes they obtained at the NEP (Valente, et al., 2001). In a subsample of participants gender and syringe relay (returning someone else's syringes) interacted significantly. Females who returned syringes for others had a

higher rate of HIV compared to males who returned their own syringes (Valente, et al., 2001).

**Needle exchange program client characteristics.** A study in Rhode Island conducted interviews with persons who inject drugs to examine depression of those in methadone treatment versus those utilizing an NEP (Brienza, et al., 2000). Researchers found that over 40% of participants in methadone treatment and almost 55% of the NEP users were found to have major depression. Participants that did not have a partner, had an alcohol use disorder and were female were more prone to being depressed (Brienza, et al., 2000).

Studies in Philadelphia and Chicago also examined client characteristics (Mauer, et al., 2016; Brahmhatt, Bigg & Strathdee, 2000). A majority of clients were male and younger clients increased over time. Researchers also found a variability of geographic location of residence based on the proximity of NEP (Maurer, et al., 2016; Brahmhatt, Bigg & Strathdee, 2000).

Client characteristics were analyzed based on hours of operation (Brahmhatt, Bigg & Strathdee, 2000). A majority of clients using the NEP during the day were African American and older. While the majority of evening NEP clients were white, nearly a third were Puerto Rican. Researchers determined NEPs should offer convenient daytime and evening hours of operation in order to diversify the population they serve (Brahmhatt, Bigg & Strathdee, 2000).

**Healthcare utilization and injection drug use disclosure.** In order to impact the health of persons who inject drugs they must be comfortable with disclosing their drug use status to healthcare professionals. Researchers in Australia surveyed NEP clients to

determine healthcare utilization and the disclosure of injection drug use to general healthcare providers and emergency room personnel (Islam, et al., 2013). Females sought healthcare in the prior 12 months compared to of males. Nearly 70% of participants reported some form of disclosure to their healthcare provider regarding injection drug use. Further analysis revealed participants that identified as homosexual were less likely to disclose injection drug use and females were more likely to disclose their injection drug use compared to males (Islam, et al., 2013).

**Client needs.** Many NEPs provide other support services such as referrals to mental health services, housing information, condoms, immunizations, anti-viral treatment and wound care. A comparative study of persons who inject drugs in Rhode Island utilizing an NEP and methadone treatment examined client needs (Stein & Freidmann, 2002). Participants reported the highest need for housing assistance and treatment of mental health issues. NEP clients reported the highest number of unmet needs while both groups reported a need for mental health services. When the data was examined by gender, it was found that females reported a higher need for mental health services (Stein & Freidmann, 2002).

**Client utilization and retention patterns.** A study in Scotland examined the attendance patterns of over 1,500 clients during a four-year period using retrospective attendance records and semi-structured interviews with NEP staff (Hay & McKeaney, 2001). There was a slight increase in the number of clients utilizing the NEP annually and females who injected drugs used the NEP more often than males. Over 30% of clients utilized the NEP once or twice following their initial visit, which is much lower

than reported by Gindi and colleagues (2009). It was assumed the client return rate was low due to confidentiality concerns (Hay & McKeaney, 2001).

Client retention is an important factor when examining the effectiveness of the intervention. Gindi, et al., (2009) examined retention of clients at a Baltimore NEP over a 12-year period. White, single clients with over two decades or more of injection drug use that lived in the NEP zip code were more likely to return. While the sample was comprised of a majority African Americans, they were less likely than whites to return to the NEP (Gindi, et al, 2009).

**High risk client interventions.** A randomized clinical trial conducted in Providence, Rhode Island targeted NEP clients that were also heavy drinkers, to determine if a motivational intervention influenced injection risk behaviors (Stein, et al., 2002). Participants that received the motivational intervention had fewer injection risk behaviors at 180 days compared to the control group. The one month and six month follow-ups showed an overall decrease in injection risk behaviors for both the treatment and control groups (Stein, et al., 2002).

**Clients perceptions about the needle exchange program.** A qualitative client perception study was conducted at four Canadian NEPs (MacNeil & Pauly, 2011). The participants described the NEP as a safe place where they did not feel stigmatized or judged for their drug use and have developed a connection with NEP staff. They also described the NEP as a referral source to other services which was viewed as beneficial by all and reduced stigma (MacNeil & Pauly, 2011). This study found similar results to the McLean (2012) study.



Ethnographic and interview data were collected from a South Bronx NEP to describe the needs of NEP clients in a poor area of New York City (McLean, 2012). The results indicated the clients used the NEP for basic survival given its location. The majority of participants utilized the NEP to obtain necessities such as food and clothing and acknowledged it as a safe area. Others used the NEP to generate income such as trading necessities with other clients for goods, transportation vouchers or money. Participants also saw the NEP as a place to socialize with others as well as be treated as a human being and not judged. Staff viewed the NEP as the heart of the South Bronx for the population it serves (McLean, 2012).

### **Gender Specific Needle Exchange Program Research**

Only five of the above studies reported data related to gender (Islam, et al., 2013; Riley, et al., 2002; Hay & McKeaney, 2001; Brienza, et al., 2000; Brahmhatt, Bigg & Strathdee, 2000). Data provided was generally related to a single variable. Studies focused on different aspects of the proposed study and included healthcare utilization and injection drug use disclosure, referrals to treatment, NEP attendance patterns and depression in methadone clients.

Three studies specifically were designed to focus on females. Miller, et al., (2001) examined gender differences in NEP use by administering a cross sectional surveys of clients. Surveys explored high risk behaviors, drug use, sex work and HIV status. Moore, et al., (2012) examined reproductive health services for exotic dancers as part of a mobile NEP in Baltimore, Maryland. The majority of participants reported they were not receiving reproductive healthcare and the mobile NEP was able to provide pregenancy testing and contraception.

A study in Oslo, Norway examined NEP use by gender in one-week periods over three years (Miller, et al., 2001). The majority of females reported involvement in sex work. Females were three times more likely to utilize other NEP services, used more syringes on a daily basis compared to males, and reported a higher rate of needle sharing (Miller, et al., 2001).

### ***Needle Exchange Program Outcomes Research***

The mitigation of risk is critical in decreasing the spread of blood borne disease within the population of persons that inject drugs. Research has examined disease prevalence, behavioral risk factors and prevention efforts.

**Prevalence of disease.** A study of a Swedish NEP examined the prevalence of HIV and hepatitis B and C and associated risk factors of a longitudinal and baseline cohort (Blome, et al., 2011). The baseline cohort had significantly more hepatitis B and C markers but had a longer injection history. HIV across both groups remained low and hepatitis B declined due to vaccination but hepatitis C transmission was high (Blome, et al., 2011).

An ecological study examined the prevalence of HIV among persons who inject drugs in areas with and without NEPs worldwide (MacDonald, et al., 2003). Areas that had an NEP had a decrease in HIV prevalence and those cities without NEPs saw an increase in HIV (MacDonald, et al., 2003).

A Monte Carlo simulation study was conducted on the impact an NEP had on the spread of HIV (Rabound, et al., 2003). Modeling found by increasing the population that injects drugs that utilized the NEP and decreasing needle sharing, the spread of HIV was

reduced. The model also showed that given the worst-case scenario of NEP utilization, there was a reduction in the spread of HIV (Rabound, et al., 2003).

**Disease risk factors.** Unprotected sex is a notable contributor to increased risk of HIV. A Canadian study examined psychosocial elements affecting intention to use condoms, which was determined to be based on self-efficacy and normative beliefs (Belanger, et al., 2002). Self-efficacy was more difficult with regular partners and with casual partners; a cognitive aspect was identified as a relevant factor in consideration of condom use. HIV status was not linked to intention (Belanger, et al., 2002).

In another study of risk behaviors, Knittle and colleagues (2010) found that at follow-up participants were less likely to share a used syringe and were more likely to clean their skin before or after an injection, and syringes reuse decreased over time. A Canadian prospective observational cohort study of persons who injected drugs found increased HIV rates associated with NEP usage (Wood, et al., 2007). The baseline HIV rate was higher for daily NEP users compared to non-daily users. When cocaine use was taken into account, HIV rates were not statistically significant for daily NEP attendees (Wood, et al., 2007). A prospective cohort study in Vancouver examined syringe sharing and HIV rates following a policy shift to end the cap on the number of syringes distributed to an individual client (Kerr, et al., 2010). After the policy change, syringe borrowing and lending decreased (Kerr, et al., 2010).

It has been hypothesized that NEP use decreases injection frequency which is a high risk behavior. The reduction of injection frequency is a key to limiting potential exposure to blood-borne diseases. A study of a Victoria, British Columbia NEP examined injection practices of FWID (Gibson, et al., 2011). Survey data provided information to

calculate a risk behavior score of low or high. It was found that persons who inject drugs living in a shelter or that were homeless were almost six times more likely to have a high risk score (Gibson, et al., 2011).

In Bangladesh, NEP participants completed a survey on injection risk behavior, were tested for hepatitis B and C, HIV and syphilis (Azim, et al., 2008). Over one-third of participants reported injecting with used syringes in the last 30 days. Associations with HIV positive status and syphilis included being single, homeless and living alone (Azim, et al., 2008).

A study in Puerto Rico examined rural and urban access to NEPs and if NEP utilization was associated with decreased injection risk behaviors (Welch-Lazoritz, et al., 2017). Overall, persons who inject drugs living in urban areas were more likely to access NEP services compared to rural participants and report a decrease in risk behaviors (Welch-Lazoritz, et al., 2017).

A study in Baltimore, examined social networks related to the HIV risk behavior of persons who inject drugs participating in an NEP (Valente & Vlahov, 2001). Demographic information, drug use frequency and social network information was collected. Social network questions examined behaviors in the past two weeks with up to five individuals and consisted of injecting together, using alcohol, having sex and sharing syringes. Researchers concluded injection drug risk taking behavior occurred with close friends and could be considered selective risk taking (Valente & Vlahov, 2001).

A case study by MacNeil and Pauly, (2010) examined the impact of the closure of a fixed site NEP on service access, risk behaviors and injection supplies. A mobile outreach program began with limited outreach due to client displacement and an

increased police presence. Researchers found injection drug use risk behaviors were impacted because clients often commented that it was difficult to determine where the mobile site would be located. Clients felt like they had to choose between using the mobile service and standing in line for other social services, which took priority because they could share or reuse needles (MacNeil & Pauly, 2010).

A ten-year study of four U.S. cities hypothesized NEP participation would affect injection risk behaviors and therefore have an impact the rate of hepatitis C (HCV) (Holtzman, et al., 2009). Participants reporting recent NEP use reported fewer injection risk behaviors. Those attending the NEP and not participating in injection risk behaviors were less likely to have HCV (Holtzman, et al., 2009). A similar study in Seattle examined NEP use, risk behaviors, and hepatitis B and C virus transmission (Hagan & Thiede, 2000). NEP usage decreased the utilization of used syringes but not for other drug paraphernalia such as cookers and cotton. Researchers found NEP clients might still be at risk for hepatitis based on their limited reduction in risk behaviors (Hagan & Thiede, 2000).

A cohort study in Chicago examined the sexual risk behaviors of NEP clients (Hue & Ouellet, 2009). NEP and non-NEP users were HIV tested and interviewed to explore condom use, number of sexual partners and unprotected vaginal intercourse (Huo & Ouellet, 2009). NEP users had higher odds of using a condom with their primary sexual partner and both groups had a comparable number of partners over time. Unprotected vaginal intercourse was reduced more for NEP users annually compared to non-NEP users (Huo & Ouellet, 2009).

NEP, detox program and methadone maintenance participants were recruited for a cross-sectional, correlational design to describe and compare HIV risk behaviors and demographic characteristics across programs in Philadelphia using secondary data (Mark et al., 2006). NEP participants were the most likely to have shared injection equipment and methadone participants were the least likely. A difference in sharing behavior across programs was not found. Participants in the NEP and detox programs reported the highest drug-risk scores (Mark et al., 2006).

A study of three U.S. cities examined sterile syringe access related to police contact, syringe sharing and syringe re-use among persons who inject drugs (Bluthenthal, et al., 2004). Researchers found participants residing in areas without access to legal sterile syringes was associated with police contact. Participants using an NEP with exchange limits were found to re-use syringes less but this did not decrease sharing of syringes. There were no changes identified in non-NEP users related to injection risk behaviors (Bluthenthal, et al., 2004).

A prospective cohort study of Chicago NEP users and non-users examined injection frequency and cessation (Huo, et al., 2006). Overall, study participants reduced their annual injection frequency. It was determined utilizing an NEP did not affect cessation. This result is contradictory to prior studies conducted by researchers Van Ameijden, et al., (2001) and Hagan & Thiede (2000) and variances are assumed based on differences in methodology and sample (Huo, et al., 2006).

**Disease prevention.** A large majority of NEP literature focuses on the efforts of disease prevention specifically related to HIV and hepatitis due to the risk behaviors associated with IDU and the similar transmission routes. Harm reduction strategies such

as NEPs and methadone treatment have attempted to decrease other diseases among persons who inject drugs. Researchers examined two NED sites in Baltimore that offered tuberculosis (TB) education, testing and medication (Riley, et al., 2002). Over an 11-month period, nearly 700 NED clients received TB information and approximately 40% received testing. Over 80% of those tested returned for the reading of their skin test, 15% tested positive for TB and made over 15 NED visits during the study period (Riley, et al., 2002).

A comparative study of Denmark, Sweden and Norway examined NEPs versus HIV testing and counseling to determine the effectiveness of HIV prevention (Amundsen, et al., 2003). Denmark relies primarily on NEPs while Sweden and Norway focus on HIV testing and counseling. Researchers found HIV testing and counseling to be more effective than the use of NEPs to prevent HIV transmission (Amundsen, et al., 2003).

**Needle exchange program cost effectiveness.** One of the many ways to justify the use of harm reduction approaches is the examination of the cost benefit ratio. Programs such as NEPs are generally inexpensive to operate in comparison to treating someone for health issues related to injection drug use and several studies have attempted to explore this topic. A cost effectiveness analysis was undertaken with seven New York State NEPs (Laufer, 2001). NED operational costs were examined for a calendar year, data on HIV infections were calculated, and treatment costs were estimated based on the research literature. It was estimated the NEPs prohibited an estimated 87 HIV infections with high-end HIV treatment costs estimated at nearly \$17 million dollars, and low end costs at over \$7 million dollars. Based on the annual snapshot of operational costs, this study demonstrates the cost-effectiveness of NEPs (Laufer, 2001).

A modeling study in Philadelphia was developed to determine the optimal resource allocation to reduce of HIV at a minimal cost (Harris, 2006). A circulation model was used to estimate the number of needles exchanged to calculate NEP costs and an estimated decrease in HIV. Models showed the current NEP needed to increase the number of satellite locations by a minimum of two and increase the client base for optimal cost (Harris, 2006).

Nguyen and colleagues (2014) conducted an economic evaluation of a theoretical increase in U.S. NEP funding. The model included an estimation of new HIV infections over a one-year period, the number of syringes supplied based on the current research literature, treatment costs, averted HIV infections and varying levels of investment in NEPs. It was determined that for a minimal investment of \$10 million dollars in NEPs, an estimated 194 HIV infections could be prevented and save almost \$66 million dollars in treatment expenses (Nguyen, et al., 2014). As the investment in NEPs escalates, the number of HIV infections prevented grows and the savings in treatment expenses increases.

**Treatment referral, admission and retention.** One of the goals of NEPs is to not only to provide clean needles but also to make treatment referrals for interested clients. Hagan, et al., (2000) examined injection frequency and methadone treatment admission and retention of ex-NEP users, current users, new users and non-NEP users in Seattle over a 12-month period. Researchers determined former exchange users were more likely to reduce their injection frequency, end their drug injecting behavior and be retained in drug treatment compared to those that never used an NEP. FWID that never used an NEP were less likely than new users to enter treatment and ex-NEP users were



more likely to enter methadone treatment. Overall, NEP usage was associated with reduced injection frequency and retention in methadone treatment (Hagan, et al., 2000).

Another study in Baltimore by Latkin, Davey and Hua (2006) focused on how NEPs assist clients in entering treatment. NEP clients were more apt to enter a drug treatment program, which is similar to the findings of Hagan, et al., (2000). Those entering treatment were also more likely to have some form of employment, have a history of mental health issues and be HIV positive (Latkin, Davey & Hua, 2006).

A randomized trial examined Baltimore NEP clients that were referred to opiate agonist therapy and received either strengths-based case management or passive case management (Havens, et al., 2009). Treatment retention was examined through an ecological lens. Participants that were employed lived further away from the program and had unstable living arrangements negatively affected the length of time in treatment. Participants that had previously received treatment were shown to have stayed in treatment longer (Havens, et al., 2009).

Kuo, et al., (2003) also conducted a treatment retention study, which examined NEP users in Baltimore that were referred to a mobile opioid agonist treatment van for levomethadyl acetate hydrochloride (LAAM). Researchers observed a reduction in drug and alcohol use from baseline to monthly follow-up visits and positive drug tests for cocaine and heroin also decreased. The majority of participants had a mean time in treatment of slightly over 8 months, which is consistent with the research of Haven and colleagues (2009).

## **Barriers to Drug Treatment**

Based on the research associated with process, treatment and client outcomes, attention to barriers associated with NEP participation is appropriate. Literature addressing barriers to NEP usage is limited and therefore, access issues with substance abuse treatment programs has been included, due to their similarities. A systematic literature review by Roberts, et al., (2010) was undertaken for the Independent Reference Group to the United Nations on HIV and Injecting Drug Use to emphasize the problems females who inject drugs face as part of the drug using population. The report categorized barriers as “systemic, structural, social, cultural and personal” (Roberts, et al., 2010, p. 73). Systemic barriers related to the lack of gender specific treatment options and understanding the role gender has on health outcomes. A consistent barrier for females was stigma and feeling judged. Structural barriers included insufficient childcare, long waiting lists, limited services for pregnant females, lack of available treatment services and the location of the service. Social, cultural and personal barriers include a lack of social support, family and partner relationships and finances (Roberts, et al., 2010).

A cross-sectional study of persons who inject drugs in Australia, examined non-NEP users and infrequent users (Treloar & Cao, 2005). The majority non-users did not feel comfortable going to an NEP and were concerned about being identified as a person who injects drugs. Infrequent users reported the NEPs were inconvenient in relation to travel and hours of operation. Both groups expressed concerns regarding confidentiality and stigma. Static NEP locations were favored by participants and non-users expressed

they would be more comfortable accessing equipment without staff being present (e.g. vending machines, delivery) (Treloar & Cao, 2005).

In a report prepared by Klein (2007) for the Canadian HIV/AIDS Legal Network, NEP access barriers were examined through an extensive literature review and discussions with key informants. Major access barriers identified were the operating hours and location of the NEP, which is consistent with Treloar and Cao's findings. Other issues were identified such as the enforcement of a one for one exchange of needles, the need for a non-clinical environment and a setting, which does not stigmatize participants. Klein (2007) echoed the findings of Treloar and Cao (2005) regarding the method of distribution and suggested a variety of options be available to allow clients access on their terms. Stigma and confidentiality when accessing an NEP were also issues identified by Klein (2007), Treloar and Cao (2005).

Riley, et al., (2002) explored treatment barriers in a Baltimore study of NEP clients. The study compared characteristics of NEP clients that did and did not request referrals to methadone treatment. Females were more likely to request a treatment referral but less likely to enter treatment. Females who had children living at home were less likely than males with children to attend treatment. The researchers determined that obstacles to entering treatment excessively affect females (Latkin, Davey & Hua, 2006).

Browne, et al., (2016) conducted qualitative interviews with rural U.S. clients to determine barriers to substance abuse treatment. Clients in rural areas often have to travel long distances for treatment and they often do not have transportation, which makes it difficult to attend the program. The cost is also a barrier and includes the expense of gas, paying someone for a ride, childcare, taking time off from work or paying

to take the bus. Service hours were also mentioned, as an issue and that access should be available on the weekends and in the evenings. Hours of operation were also identified as problematic by Klein (2007) and Treloar and Cao (2005). Rural areas are known for a lack a privacy and stigma was identified as a major concern that influenced usage (Brown, et al., 2016).

The studies mentioned above provide no data by gender. The next several studies are aimed at discussing the differences in accessing and receiving substance abuse treatment services based on gender. While these studies do not focus on NEPs, it is thought the barriers might be similar. In a qualitative study of 36 pregnant females enrolled in residential treatment programs in Northern California, the major barrier to receiving care was the fear of legal action such as losing custody of their child and/or incarceration (Jessup, et al., 2003). Thirty-nine percent of participants had partners that presented an obstacle to seeking treatment. Females were generally financially dependent on their partner and experiencing domestic violence, which made it difficult to pursue treatment (Jessup, et al., 2003).

When females decided to pursue treatment, the pre-admission requirements often were a hindrance because many treatment programs do not allow children. Females who were in an MAT program and wanted to transition to residential treatment found the requirements difficult and often conflicting. Pregnant participants felt stigmatized and excluded from some treatment programs and programs were often unable to meet prenatal care needs. The research found pregnancy can be a motivator to seeking treatment but females will have face obstacles with their partner and the treatment program (Jessup, et al., 2003).

Verisimo and Grella (2016) used the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) to determine why assistance was not sought for drug or alcohol problems based on race/ethnicity and gender. The researchers examined structural and attitudinal, readiness for change and how these influenced help seeking behavior. There were no differences between males and females related to structural barriers and readiness for change. Females expressed more attitudinal barriers with alcohol, but there were no differences for males or females related to drug use. A sub-analysis showed females had negative feelings toward treatment and were often fearful of the possible legal consequences such as loss of parental rights. This finding is consistent with the qualitative study conducted by Jessup, et al., (2003).

A qualitative study of 85 rural pregnant females in Kentucky examined treatment barriers which were classified into “the categories of availability, accessibility, affordability and acceptability” (Jackson & Shannon, 2002, p. 1762). Over 80% of the sample reported having a barrier to accessing treatment. Fifty-one percent (51%) experienced an acceptability barrier in which stigma and their denial of the need for treatment were the consistent concerns. Once again, stigma is consistent with Jessup, et al., (2003), Verisimo, and Grella (2016). Forty-nine percent (49%) cited accessibility issues, which included the need to take care of a family and/or lack of childcare, which is similar to what Jessup, et al., (2003) indicated. Over 35% of participants reported concerns with availability, which included extensive waiting lists and long waiting periods (Jackson & Shannon, 2002). Affordability was the least significant barrier at 13% and on average participants reported at least two barriers (Jackson & Shannon, 2002).

## **Service Providers Perspective of Usage Barriers**

Research on service providers' perspectives regarding barriers individuals who inject drugs face accessing NEPs is limited. The majority of research located from a provider perspective focused on NEP implementation barriers, which is not the focus of the proposed study. Implementation barriers often exist due to local laws, community perception and a lack of resources. While all are important issues, a goal of the current study is determine what gender specific services exist and how access for females can be increased. The studies discussed below provide a glimpse into the barriers clients face accessing NEPs.

Philbin and FuJie (2014) conducted 35 qualitative interviews, which included 20 persons who inject drugs, and 15 community partners comprised of NEP staff, government and non-government officials in Yunnan Province, China, to explore barriers to NEP access. Interviewees commented that convenience and accessibility are major factors that limit NEP usage. The location must be away from governmental offices and operational times should vary. Over two-thirds of community partners identified a lack of confidentiality as a barrier to utilization, which could cause “discrimination, stigmatization, or arrest” (Philbin & FuJie, 2014, p. 4). The most reported barrier was the fear of potential law enforcement harassment or arrest. Community partners felt persons who inject drugs believe the potential legal risk of using an NEP often outweighs the health benefits. To protect client confidentiality, it was suggested NEP services be brought to the user through a mobile program. Other suggestions included educating law enforcement personnel on the benefits of NEPs and the modification of paraphernalia laws (Philbin & FuJie, 2014).

A survey of pharmacy-based needle exchange programs in South East England examined the operational policies, and daily work issues encountered (Sheridan, et al., 2000). Over 40% of programs had a limit on equipment that could be dispensed at each visit and nearly 50% had received requests for other equipment needs such as sterile water, sharps containers and tourniquets). NEPs located in urban areas were associated with more monthly transactions. Almost 45% of providers encouraged participants to bring back their used syringes and most did not require a one for one transaction in order to obtain new syringes. All NEPs provided printed materials on safe sex but did not provide any other health care related services. The majority of pharmacy-based NEPs were housed in a retail environment and therefore the biggest issue they encounter is shoplifting. It was determined that staff needed additional training in the operational protocols and interpersonal support in order to work with the injection drug use population (Sheridan, et al., 2000).

Davis and colleagues (2018) conducted interviews with NEP directors, law enforcement and individuals who inject drugs who were affiliated with two of the longest standing exchange programs in West Virginia. A significant barrier surrounded paraphernalia laws. Similar to Philbin and FuJie (2014), many community partners were concerned that law enforcement interaction could result in legal repercussions for NEP clients. There was also confusion noted by law enforcement interviewees regarding imposing sanctions for possessing clean syringes due to conflicting laws and local directives. Interviewees also felt that location, including proximity to law enforcement facilities, is a substantial barrier that has to be considered. Community partners believed irregular attendance of persons who inject drugs was often due to the availability of

transportation and the length of time it took to travel to a location if the NEP is housed in an urban region and users live in a rural area. Current statute does not allow NEPs to use federal funds to purchase syringes for distribution, resulting in the need to find funding from their local government, private donors and/or grants to purchase needles.

Community partners identified this as a problem given the demand for clean syringes often exceeds what they can supply to users. Not having enough syringes available for individuals who inject drugs contributes to secondary usage of existing needles and the increase in health risks (Davis, et al., 2018).

### **Summary of the Extant Literature**

In the area of disease prevention, results reflected a decrease in the utilization of used syringes and injection frequency based on NEP participation (Knittel, Wren & Gore, 2010; Hue, et al., 2006; Hagan & Thiede, 2000; Hagan, et al., 2000). NEPs have been shown to assist with decreasing the rates of HIV and significantly reducing HIV related treatment costs (Nguyen, et al., 2014; Laufer, et al., 2001). Injection risk behaviors were significantly reduced and communities that had an NEP saw a decline in HIV prevalence by nearly 20% (Holtzman, et al., 2009; MacDonald, et al., 2003). Condom distribution is a large service generally provided by an NEP and unprotected vaginal intercourse was reduced by over 25% annually (Huo & Ouellet, 2009; Nigro, et al., 2000). While literature has examined the outcomes associated with NEPs, examination of operational factors important to NEP success is important, but the number of studies is limited. We know little about NEPs in particular.

In reviewing extant literature regarding NEP operational issues and other substance use treatment programs, several themes emerged. The location of an NEP is a



pivotal factor and has been shown to have a far-reaching impact on utilization (Davis, et al., 2018; Philbin & FuJie, 2014; McLean, 2012; Roberts, et al., 2010; Klein, 2007; Treloar & Cao, 2005; Strike, Myers & Millson, 2004). Clients living in the area who have easy accessibility to the NEP are more likely to use the service (Gindi, et al., 2009; Klein, 2007; Philbin & FuJie, 2004). This was reiterated when usage barriers were examined. Transportation issues such as relying on someone else for a ride and the cost of gas can affect client participation (Brown, et al., 2016; Jackson & Shannon, 2002).

NEP operations can influence usage and risk behaviors specifically related to hours of operation and the syringe dispensation policy. Researchers found the need to diversify the hours of operation between daytime and evening, have weekend hours as well as have longer hours for the convenience of the client (Fisher, et al., 2017; Brown, et al., 2016; Klein, 2007; Treloar & Cao, 2005; Brahmhatt, Bigg & Strathdee, 2000). NEP syringe dispensation policies that did not limit the number of syringes a client could receive were shown to decrease sharing and reuse (Davis, et al., 2018; Kerr, et al., 2010; Bluthenthal, et al., 2007; Bluthenthal, et al., 2004; Sheridan, et al., 2000).

Stigma surrounding injection drug use has been found to be a significant impediment to prevention efforts and FWID often report a higher incidence of stigma (Semple, et al., 2012; Luoma, et al., 2007). Stigma and confidentiality were identified as usage barriers to NEPs and drug treatment (Verisimo & Grella, 2016; Philbin & FuJie, 2014; McLean, 2012; MacNeil & Pauly, 2011; Klein, 2007; Strike, Myers & Millson, 2004; Jessup, et al., 2003; Treloar & Cao, 2005; Jackson & Shannon, 2002). FWID who have experienced stigma will often not disclose use and participate in injection risk behaviors (Latkin, et al., 2010).

Another impediment to service usage identified was the involvement of law enforcement. It is encouraged that law enforcement and NEPs work together but these relationships often vary by jurisdiction (Beletsky, et al., 2010). These relationships are often tricky to navigate due to conflicts between state and local drug policies. Researchers found there were concerns about harassment from law enforcement as well as potential arrest (Davis, et al., 2018; Philbin & FuJie, 2014).

While the international and rural locations of the discussed studies differ from the proposed study, they provide a glimpse of the barriers community partners believe contribute to the lack of NEP usage. The studies discussed above also included persons who inject drugs as part of their community partners, which will not be included in the research. It is important to note that no study discussed NEP access barriers associated with gender, contributing to the “one size fits all” approach and emphasizing the need for the study.

### **Gaps in the Literature**

The research reflects a breadth of topics related to NEPs but is not without limitations. A large portion of the research has been conducted globally where drug policy and context vary from the United States. Rural areas within the U.S. and internationally face distinct challenges and are understudied.

The majority of studies presented do not differentiate their topic by gender and therefore, neglect a population that has unique needs and challenges. While the number of females who inject drugs is estimated to be nearly four million globally, we know this is an under representation given the lack of research and stigma surrounding IDU

(Tuchman, 2015; Roberts & Mathers, 2010; Degenhardt, et al., 2010). With this significant gap in the research regarding the focus on female injection drug users participation in NEPs, access to such subjects is difficult. Therefore, the proposal to fill this gap is to examine the perception of service providers because of their daily interaction with this obscure and often overlooked group. According to Lang, et al. (2013), “there are a limited number of studies that examine barriers from the perspective of the service provider” (p. 8).

A female who injects drugs typically has multiple social networks, often engages in sex trading and serves as link for disease between those networks (De, et al., 2007). Due to involvement in multiple networks, the probability of high risk behaviors and disease increases for her as well as other network members. Larger social groups of FWID put females at an increased risk for HIV due to sharing of equipment and unprotected sex (Sherman, Latkin & Gielen, 2001).

Females have distinctive biological reactions to injection drug use and their health outcomes vary compared to males. Female hormones contribute to a vulnerability to stimulants (Greenfield, et al., 2010; Evans & Foltin, 2006; Sofuoglu, et al., 1999). Females’s risk for endocarditis is heightened, HIV can be transmitted between mother and child and six in ten females who inject drugs have been exposed to HCV (CDC, 2019, July; Graves & Soto, 1992 as cited in Frontera & Gordon, 2000; Iverson, et al., 1999).

If a female who injects drugs decides to pursue drug treatment, they have to work through numerous barriers, which are compounded if they have children or are pregnant (Roberts, et al., 2010). It was determined that obstacles for entering treatment

excessively affect females (Latkin, Davey & Hua, 2006). Treatment options have to be located that allow children or offer childcare and pregnant females are often fearful their child may be taken away if they enter a treatment program.

Given the estimated number of females who inject drugs, their numerous social networks and females comprise more than half of all persons diagnosed with HIV; there is a critical need to examine NEPs and the needs of FWID (El-Bassel & Strathdee, 2015). This study contributes to an identified gap in the literature. If the global research focus does not shift to include females who inject drugs, there will be long lasting implications for generations.

Based on this review of the literature and identified gaps (see Figure 1 in Chapter 1), the study is exploratory in nature, and will attempt to determine which of the proposed factors and program components offered in the conceptual model are perceived as most relevant to females who inject drugs participation in NEPs through the lens of staff working in such programs. The research contributes to increased knowledge from a service provider perspective and adds to a limited body of knowledge regarding NEPs and gender.

The following chapter outlines the methodology of the research. The chapter discusses in detail the research questions and variables, data collection strategy, instrumentation and human subjects protection.

## CHAPTER III

### METHODS

#### **Research Context**

Needle exchange programs seek to reduce the transmission of bloodborne diseases by providing sterile syringes to persons who inject drugs. This service allows the individual who injects drugs to obtain new clean needles and other paraphernalia for injecting drugs at little or no cost. Injection drug use is the second leading cause of HIV in females (CDC, 2018). Females often face challenges accessing social services due to familial care priorities and structural barriers such as stigma and mistrust (CDC, 2018). The study examines service provider perspectives on facilitators and barriers to needle exchange program participation by females who inject drugs.

Prior research conducted by Philbin in Mexico (2008) and China (2014) examined facilitators and barriers to NEP use from a collaborator perception. The research found that barriers to use include fears regarding confidentiality, unsupportive environments and lack of awareness. Identified facilitators included providing more social services, increasing awareness of the NEP within the community and within persons who inject drugs and modifying the laws to decrease law enforcement involvement (Philbin & FuJuie, 2014).

Philbin's research (2008; 2014) on NEP collaborator perceptions assisted in the instrument development and variables in the current study. No similar U.S. NEP research was located and therefore, this will contribute to a limited body of knowledge. The goal of the study is not to simply document facilitators and barriers to NEP use for females but to also examine the state service delivery approaches, policies that hinder participation

and services that are not currently offered that may benefit female clients in order to gain a holistic perspective. The study is particularly relevant given the current opioid crisis and the increase in harm reduction programs across the country.

### **Research Questions**

Several research studies examined barriers to accessing NEPs in rural and international locations but no research study focused solely on usage facilitators and barriers of females who inject drugs. As previously mentioned, females face a different set of challenges in accessing NEP services.

In order to determine the facilitators and access barriers, the existing research literature was reviewed and a list of currently identified facilitators barriers was created. Facilitators and barriers were categorized into organizational, practice or policy related. The research questions that were explored are as follows:

#### *Organizational Questions*

1. What are the perceived NEP organizational facilitators and barriers that impact use by females who inject drugs?
2. What NEP service delivery approaches may hinder and/or facilitate use by females who inject drugs?

#### *Practice Questions*

3. What services are currently available for females at NEPs?
4. What additional service needs do females have that could be offered at NEPs?

#### *Policy Questions*

5. How do NEP service delivery approaches vary by state?

6. What are the policies related to NEPs by state?
7. What state NEP policies may hinder the use by females who inject drugs?

### **Study Design**

The study is descriptive and exploratory in nature using survey methodology. Exploratory research methods allow for an in-depth look at the facilitators and barriers to NEP access for female injection drug users from a service provider perspective. This initial research will assist in developing a better understanding of the problem and lay the foundation for the development of future research studies.

As part of the research, it was necessary to understand the state policies that NEPs must adhere to. A policy analysis provided background on the problem, outlined the syringe distribution laws by state and provided recommended solutions. Some data was garnered from the NEP staff survey regarding local policies, but in order to fully understand the scope of the issue the policy analysis was necessary. The policies may directly contribute to the identified facilitators and barriers of NEP usage by females who inject drugs based on the results of the survey.

Using community-engaged research, surveys were distributed to key community partners who are NEP staff which have direct client contact. Several partners were asked to review the data collection instrument prior to survey initiation. Also, as part of the community-engaged research process reports will be developed and presented to the NEPs based on statewide research findings (Kelley, Clark, Brown & Sitzia, 2003). Study results may contribute to improving the service availability to the population of persons who inject drugs and therefore enhance the well-being of the community the NEPs are serving.

## Sample

A non-probability purposive sampling technique was employed. The sample consisted of needle exchange program (NEP) staff from Kentucky and the seven bordering states (Illinois, Indiana, Missouri, Ohio, Tennessee, Virginia, West Virginia) in order to add to the strength of the exploratory research. States were purposively selected because they border Kentucky and are faced with heightened drug issues. Kentucky and several of the bordering states continue to suffer from the brunt of the opioid crisis. Opioid prescription practices in southern states are “three times higher than the highest prescribing state” (Gale, 2016, p. 2). In Appalachian Kentucky, prescription opioids are injected more than injected cocaine and more than heroin (Havens, Oser, Crosby & Leukefeld, 2010). Ohio and Kentucky had the “highest rates of death due to drug overdoses in 2016” in the United States (CDC, 2017, para. 2). From 2014 to 2015 the drug overdose death rate in Kentucky, Tennessee, Ohio and Illinois reflected a statistically significant increase (CDC, 2017). Additionally, in 2016 southern states were impacted dramatically and accounted for over half of all new HIV diagnoses (CDC, 2018). The south also had the highest death rate attributed to HIV (CDC, 2018). The selected states are at the heart of the U.S. drug epidemic which enforced the need for this exploratory research.

A list of needle exchange programs (NEPs) by state was created from the North American Syringe Exchange Network (NASEN) directory (2020). The list included name, address with zip code and phone number. Based on the directory, additional internet searches were done to determine NEPs on the list that may no longer be in existence and new NEPs that may not be listed in the NASEN directory since at the time



the data was originally collected the last update was done as of May 2015. The NASEN directory was updated again in 2019 and the list of NEPs by state was revised for research purposes. Additionally, the NASEN list for Kentucky was compared to Kentucky Cabinet for Health and Family Services NEP list in an attempt to capture as many NEPs as possible. The final list of Kentucky needle exchange programs was reviewed for accuracy by the Centers for Disease Control Epidemiology Field Officer for the Kentucky Department of Public Health. The researcher has a professional relationship with the Kentucky field officer. A similar process was not available for other states.

The list of 145 NEPs was then categorized into urban or rural based on their zip code and the Office of Rural Health Policy classification of urban and rural communities (HRSA, 2020.). Classification of the sample into rural and urban categories was done in hopes of examining the data from those perspectives and filling yet another gap in the literature. The estimated number of NEPs by state reflect 60 (41.3%) in rural areas and 85 (58.6%) in urban areas (Table 1).

**Table 1**

*Estimated Number of Needle Exchange Programs by State*

State	Number of Rural NEPs	Number of Urban NEPs
Illinois	0	7
Indiana	4	7
Kentucky	45	25
Missouri	0	2
Ohio	8	25
Tennessee	0	7
Virginia	1	3
West Virginia	2	9
Total	60	85

Needle exchange programs (NEPs) were contacted via phone to determine the number of staff that work directly with clients in the exchange program in order to develop an estimated sample of survey respondents (Table 2). Staff are defined as persons (in paid or volunteer positions) that directly assist clients with NEP services and referrals. Staff do not have to be employed by the NEP and can work for other agencies that provide assistance and support to NEP clients. Program staff does not include clerks who typically check clients in for their appointment. As of February, 2021 there was an estimated sampling frame of 271 respondents. Because of the ever changing landscape of harm reduction programs, if additional exchanges are located, those were included in the sampling frame. This type of purposive sampling was considered expert sampling and it is believed to be the most advantageous of purposive sampling techniques in exploring the proposed research questions (Etikan & Bala, 2017). This sampling method allowed the research to be grounded in the views and opinions of professionals which work in the field and are knowledgeable of the study area. These professionals interact directly with the population being studied and may also have contact with macro and micro community partners. “Expert sampling is a positive tool to use when investigating new areas of research, to garner whether or not further study would be worth the effort” (Etikan, Musa & Alkassim, 2016, p. 3). This type of new knowledge discovery can be beneficial in shaping future research.

**Table 2**

*Estimated Survey Sample by State*

State	Rural NEP Personnel	Urban NEP Personnel
Illinois	5	41
Indiana	3	16

State	Rural NEP Personnel	Urban NEP Personnel
Kentucky	70	52
Missouri	0	3
Ohio	4	21
Tennessee	2	4
Virginia	3	6
West Virginia	19	22
Total	106	165

A total of 145 needle exchange program (NEP) addresses were compiled for the survey mail-out. Using the recommended technique from Dillman, Smyth and Christian (2014) survey mail-outs and reminders were mailed over a five-week period. Mail-outs were returned from 13 (9%) locations and no alternative address was located. The final number of NEP locations included in the survey mail-out were 67 in Kentucky, seven in Illinois, 11 in Indiana, two in Missouri, 27 in Ohio, five in Tennessee, three in Virginia and 11 in West Virginia.

### **Instrumentation**

An exhaustive search was conducted, and a data collection instrument was not identified that was applicable for the study. The literature addressing barriers to other types of care (medical care and different types of substance abuse treatment) for females was reviewed and a table (Table 3) of potential impediments was created (Verissimo, 2017; Ponce, 2014; Jackson, 2012; Hecksher & Hesse, 2009; Neale, 2008; Treloar, 2006; Jessup, 2003; Booth, 2000; Swift, 1998; Allen, 1994). For the purposes of the research, a barrier is defined as something that prohibits someone from seeking a service. If a barrier was identified in multiple research articles it was only listed once on the table. It is assumed that barriers to NEP usage for females who inject drugs would be similar to barriers related to other types of care. The facilitators and barriers was mapped back to

the corresponding research question and health service access category (Wu, et al., 2012).

Health service access categories were taken from McCaughrin and Howard's, (1996) multidimensional model used to explore organization factors related to outpatient drug treatment. The research question categories and definitions are as follows:

1. Organizational (O) – This is defined as how an organization is structured.
2. Practice (PR) – This is defined as how the organization operates through actual application.
3. Policy (PO)– This is defined as the guiding principles which may impact practice and organizational set-up.

Health service access categories (McCaughrin & Howard, 1996) are:

1. Accommodation (AN) – An organization's willingness to implement operating practices (e.g. appointment systems, hours of operation, walk in capability) based on client needs.
2. Availability (AY) – The resource capacity and adequacy of supplies an organization has to deliver services.
3. Service diversity (SD) – The quantity and array of services offered by organization.

The table below contains each barrier identified in the research literature. The barrier is then mapped pertinent research question and health service access category.

**Table 3***Facilitators and Barriers to Needle Exchange Program Usage*

Facilitators and Barriers	Research Question Category(ies)	Health Service Access Category
Staff have community affiliation	O	AY
Staff do not have community affiliation	O	AY
Staff are judgmental and stigmatize clients	O	AY
Staff demographics	O	AY
Pregnancy status of client	O, PR, PO	AY
NEP staff turnover	O	AY
Fear of punitive action	O, PR, PO	AY
Community does not support harm reduction	O, PR, PO	AY
Client does not have a support system	O	AY
Client has an intimate partner who uses drugs	O, PR	AY
Client's personal beliefs about NEPs	O	AY
Child rearing responsibilities	O, PR, PO	AY
Client has feelings of shame	O, PR	AY
Client must register at NEP	O, PR, PO	AY
Days and times NEP open are not convenient	O, PR	AN
NEP is located in rural area	O	AN
NEP is located in an impoverished area	O	AN
NEP entrance is not hidden for to provide confidentiality	O, PR	AN
NEP location is not on a public transportation route	O, PR	AN
NEP not open on weekends	O, PR	AN
NEP not open on holidays	O, PR	AN
Mobile unit services limited	O, PR	AN
NEP does not provide a mobile services unit	O, PR	AN
Client lacks transportation	O, PR	AN
Long wait times to be seen	O, PR	AV
Limited number of staff	O, PR	AV
Policy limit on weekly amount of supplies clients can receive	O, PR, PO	AV
Inconsistency or lack of available NEP supplies	O, PR	AV
Medical tests/treatment may require multiple visits	O, PR	AV

Facilitators and Barriers	Research Question Category(ies)	Health Service Access Category
Female clients lack knowledge about services offered at NEP	O, PR	SD
Lack of childcare available at NEP	O, PR	SD
No days and times offered solely for females	O, PR	SD
Do not offer designated areas for female clients to maintain privacy	O, PR	SD
Availability of male condoms	O, PR	SD
No availability of female condoms	O, PR	SD
Limited medical services provided	O, PR, PO	SD
Prenatal services are not available	O, PR, PO	SD
NEP staff are not knowledgeable about female clients who trade sex for drugs	O, PR	SD
NEP staff do not have the skills needed to work with female clients who trade sex for drugs	O, PR	SD
NEP staff are judgmental of female clients who trade sex for drugs	O	SD
NEP staff are not knowledgeable of sexual abuse/trauma/domestic violence female clients may have experienced	O, PR	SD
NEP staff do not have the skills needed to work with female clients who have experienced sexual abuse/trauma/domestic violence	O, PR	SD
NEP staff are judgmental of female clients who have experienced sexual abuse/trauma/domestic violence	O	SD
NEP health communication campaigns do not reflect cultural/gender norms	O, PR	SD

The semi-structured questionnaire (Appendix E) included a variety of questions with pre-determined response options representing all of the variables in the above table. Questions required the respondent to rate the importance of items as barriers to care or service availability. Close ended questions such as these allowed for the participant to complete the survey in an expeditious manner (Kelley, Clark, Brown & Sitzia, 2003). Questions were grouped by subject matter for ease of the participant (Kelley, Clark,

Brown & Sitzia, 2003). The subject matter refers to the health service access categories of acceptability, accommodation, availability and service diversity (McCaughrin & Howard, 1996). Several open-ended questions were included to determine the number of females utilizing the NEP monthly, and gather the participants opinion on improving outreach to FWID, offering services to meet the particular needs of females and their view on NEP policy changes.

### **Community Engaged Research**

Community-engaged research is “the process of working collaboratively with groups of people affiliated by geographic proximity, special interests, or similar situations with respect to issues affecting their well-being” (CDC, 2011). The researcher began working collaboratively with the Scott County Indiana Needle Exchange Program in the fall of 2015 which sparked her interest in this research topic. She conducted qualitative interviews with NEP staff and had regular interaction with clients. As a result of her volunteering, the researcher developed professional relationships with NEP staff and she assumed daily operations when staff were limited. This opportunity allowed her to gain valuable hands on experience and understand the role of the NEP within the community and its impact on the well-being of persons who inject drugs, service utilization and program operations. Prolonged engagement in the field is a critical element of rigor, trustworthiness and credibility which adds to the strength of the research. Consistent with community engaged research, the researcher sought feedback from local Health Department-based NEP staff on the study design and on the draft survey before data collection was launched. Study results will be provided to participating sites for their use in program assessment and development.

## **Survey Expert Review**

Using a community engaged research model, the survey instrument was reviewed to confirm validity by an expert panel composed of NEP staff from the Louisville Metro Health and Wellness (LMHW), Oldham County Health Department and a faculty member at the School of Public Health & Information Sciences that is currently conducting research on the LMHW NEP. The researcher has established relationships with the expert panel. Piloting the survey allowed the researcher to determine if there were adequate response categories and if any questions were consistently missed (Kelley, Clark, Brown & Sitzia, 2003). The process provided added rigor to the exploratory research study. Based on feedback from these community partners, the survey was revised. NEP staff from LMHW were asked to complete the final survey and were included in the sample size estimations. While it is not ideal that some survey respondents had prior exposure to the survey instrument, the small estimated sample size seemed to warrant their inclusion in the proposed study.

## **Data Collection**

Both a hard copy and electronic survey were used for data collection purposes. The researcher believed providing an option for survey completion may yield a better response rate because it could be completed during any down time when out in the field with or without an internet connection.

Using a recommended technique from Dillman, Smyth and Christian (2014) for mailed surveys, a prenotice (Appendix B) was sent to all NEP directors two weeks prior to the initial survey mailing. The prenotice letter notified the agency personnel that a



survey is forthcoming. The letter was on Kent School of Social Work letterhead and provided a brief explanation regarding the purpose of the research, a request for their assistance and expertise, relevant contact information and signed in black ink by the researcher. The goal of the prenotice was to begin to establish trust with the participant and alert them that a survey is forthcoming (Dillman, Smyth & Christian, 2014).

A large white 9 x 12” envelope was mailed to all NEPs in the previously mentioned states. Each 9 x 12” envelope contained 10 packets of materials. Each packet included a cover letter (Appendix C), preamble consent (Appendix D) the survey (Appendix E) and postage paid addressed envelope. The cover letter was be attached to each survey and included an overview of the survey, an explanation as to why their assistance is needed, confidentiality and instructions on how to return the questionnaire (Dillman, Smyth & Christian, 2014). Providing 10 of each item was derived based on the largest number of estimated potential respondents as nine and providing additional materials in case staffing had increased. Individuals completed the questionnaires confidentially and returned them via mail to the researcher or electronically.

In order to increase the response rate, a follow-up 5 ¾ inch x 11 inch reminder postcard (Appendix F) was mailed seven days following the survey packets to all sites. This new format was used to introduce a contrasting (letter vs. postcard) stimulus which has been shown to increase response rates (Dillman, Smyth & Christian, 2014). The reminder was received by potential study participants immediately following the initial mail-out before the survey is possibly lost or thrown away (Dillman, Smyth & Christian, 2014). The overall impact of the follow-up reminder has been shown to vary but is generally worthwhile to increasing the response rate (Dillman, Smyth & Christian, 2014).

In prior research studies, the prenotice combined with the reminder postcard warranted a significant escalation in response rates (Dillman, Smyth & Christian, 2014).

Approximately two weeks from the date, the thank you reminder was mailed (Appendix G) to encourage non-responders to complete the questionnaire. Due to financial constraints it was not possible to send another packet of surveys and postage paid return addressed envelopes to all NEP locations. Additionally, replacement hard copy surveys may have been mistakenly completed again by a study participant were a new set mailed (Dillman, Smyth & Christian, 2014). While this risk is minimal, it was best to try to alleviate this concern (Dillman, Smyth & Christian, 2014).

An opinion on the timing of the contacts was discussed with the persons involved in the pilot NEP provider survey. This was a crucial element given it was recommended to keep the characteristics of the study population in mind when determining mail-out dates (Dillman, Smyth & Christian, 2014). The mail-out dates recommended to avoid were major holidays which did not impact the study (Dillman, Smyth & Christian, 2014).

### **Survey Incentives**

Due to the lack of research funding, survey completion incentives were not provided in each questionnaire as recommended by Dillman, Smyth & Christian (2014). Instead, at the bottom of each survey and upon electronic survey completion, respondents were able to complete a form to enter into a \$25 Walmart gift card drawing. Walmart was chosen because it is typically located in most areas. The form was a separate sheet of paper at the conclusion of the survey and included their name, address and email. The form indicated their responses were not be linked to the drawing and the contact

information provided. Upon receipt of the surveys by the researcher any drawing entries were immediately separated from the survey.

If the participant completed the survey electronically and they were interested in being placed in the drawing, they were directed to another weblink to complete the drawing information so their information was not associated with their survey responses.

### **Human Subjects Protection**

The study was submitted to the University of Louisville Institutional Review Board for approval. The researcher did not have a list of NEP staff by site and therefore was not be able to determine who completed the survey. This allowed for the anonymity of survey completion. A waiver of documentation of informed consent was approved by the IRB therefore, a preamble unsigned consent form (Appendix D) was attached to each survey. Informed consent of participants was assumed based on the return of the survey. The cover letter (Appendix C) (included in the mailed packets) stated NEP staff were under no obligation to complete the survey. If they chose to participate, the cover letter stated if they did not wish to answer a question it may be skipped and that their responses were confidential and would only be shared in aggregate form.

Completed surveys and drawing entries were stored in a locked filing cabinet at the School of Public Health and Information Sciences. Surveys and drawing entries were stored separately in order to maintain confidentiality. Electronic data was password protected on a University computer. Access to these materials was only be available to research study personnel.

## **Analytic Strategy**

### ***Quantitative Data***

Quantitative data was entered into the Statistical Package for Social Scientists (SPSS) software for Windows, version 25.0 (IBM, 2017). Initially, frequency and percent distributions were run to assist in determining the accuracy of the entered data. The frequency and percent distributions also illustrated the range of the responses. This process assisted in correcting data entry errors as well as gave the researcher an initial depiction of the data.

Once data were cleaned, data analysis involved univariate analysis, including frequencies, percentages and measures of central tendency (e.g., mean, median, mode, deviance from the mean, etc.). Summaries of the data were provided in written, tabular and graphic form.

### ***Post Hoc Analysis***

Several post hoc group analysis was conducted on the grounds it was an exploratory study. Between group differences were examined and included Kentucky versus non-Kentucky, employee type (health department versus non-health department), NEP type (fixed location versus other location types) and NEP location (urban versus rural) were assessed using chi-squared tests. Statistical significance was set at  $p=0.05$ .

### **Service Composite Scores**

Four composite scores were created in order to determine the comprehensiveness of NEP service offerings in various categories beyond basic NEP services. Score

calculations were based on services that are offered and those that should be offered. Composite scores were calculated based on the “offered” and “should be offered” categories. It was determined the survey directions were not followed correctly by some respondents related to the “not offered” category. Results should be viewed with caution. The list of possible NEP services were divided into four categories and scores were calculated to determine a Health Services Score (HSS), Educational Services Score (ESS), Specialized NEP Service (SNS) Score and Basic Needs Score (BNS).

### ***Qualitative Data***

Qualitative descriptions were generated to compliment the quantitative data analysis. Data from the open ended questions were initially summarized using content analysis and descriptive first cycle coding (Miles, Huberman & Saldana, 2014). Following this process, second cycle coding was completed and pattern codes with corresponding categories were created (Miles, Huberman & Saldana, 2014). First cycle codes were then tabulated within each category to recognize patterns within these data (Sandelowski, 2001).

A data matrix was created to visually examine the first cycle coding and associations between research questions. Using a check-list matrix the first cycle codes were mapped to research questions in order to determine relationships between the codes and questions (Miles, Huberman & Saldana, 2014). The quantitative data was integrated with the qualitative data to provide a more robust description of the facilitators and barriers females who inject drugs face utilizing NEPs.

The rigor of the qualitative data was addressed using Guba and Lincoln’s criteria which includes credibility, confirmability, dependability and transferability (Nowell,

Norris, White & Moules, 2017). Credibility and confirmability were established through line by line coding, creation of a data matrix and comparison of the findings with the quantitative results. The interpretations are heavily grounded in the data. While a formal audit of the research process has not been conducted due to the independent nature of a dissertation, the research process has been clearly documented which demonstrates dependability. Confirmability has been fulfilled the achievement of credibility, dependability and transferability (Nowell, Norris, White & Moules, 2017). Transferability is constrained due to the limited generalizability of the findings and it is unknown which sites may be interested in applying the findings to their site.

### **Policy Analysis**

To understand the policies and laws impacting NEPs and females who inject drugs a policy analysis was undertaken. The Burris (2017) and the Centers for Disease Control (2017, September) NEP program components were used as a standard by which to review each state's laws which relate to NEPs to determine the extent to which state policy was compliant with these guidelines. A list of policies which impact females who use drugs was created based on an extensive internet search. Each policy was reviewed for every state in the study to contrast the regulatory context in which each state's NEPs were operating.

CHAPTER IV  
ANALYSIS AND RESULTS

**Summary Demographics**

**Respondent Demographics**

As outlined in the methods chapter, NEPs were contacted via phone to obtain an estimated number of staff. The population of NEP staff across states included in the research was estimated to be 271. A total of 156 surveys were completed but six surveys were not included in the final sample. Four surveys were received from staff in states not included in the study and two surveys were received after significant data analysis had been conducted. One hundred and fifty surveys were included in the study for a response rate of 55.3%.

**Gender, age and ethnicity.** Females comprised 75% (n=113) of the respondents and males comprised nearly 22% (n=33). The mean age of the respondents was 43.94 (SD = 14.83) years. The mean age of males was 39.94 (SD = 9.66) and females was 44.43 (SD = 15.20) years. The mean age of respondents varied by state with Ohio being the oldest at 46.13 (SD = 16.72) years and Missouri being the youngest at 30.50 (SD = 12.12) years. Eighty-six percent (86%, n=129) of the respondents were White and almost 9% (n=13) were Black or African/American. Ninety-five percent (95%, n=143) reported not being Hispanic or Latino, 3.3% (n=5) was unknown and 1% (n=2) reported being Hispanic or Latino.

**Needle exchange program organizations and staff.** The majority (82%, n=123) of NEP respondents were part of city/county social services which included local health departments. Fourteen percent (14%, n=21) were part of other organizations such as a

university healthcare system or community-based organization. Over 50% (n=79) of respondents were health department staff, 7% (n=11) were peer mentors, almost 7% (n=10) included volunteers, social workers and physicians and nearly 30% (n=45) were other staff such as administrators, health educators or risk reduction/prevention navigator/specialists.

**Needle exchange program locations.** Surveys were received from all states included in the study except Virginia. Responses from Kentucky NEPs accounted for nearly 60% (n=87) of the sample followed by Indiana with 11.3% (n=17), Ohio with 10.7% (n=16), 6% were from Illinois (n=9) and Tennessee (n=9) and 2.7% were from Missouri (n=4), West Virginia (n=4) and the state was unknown (n=4). Forty-seven percent (47%, n=71) of NEP locations were fixed, 44% (n=66) offered both a fixed location and a mobile unit and 5.3% (n=8) offered a mobile unit. The number of respondents by state and NEP type is outlined in Table 4.

**Table 4**

*Respondent's Location and Type of Needle Exchange Program*

State	Fixed Location	Mobile	Fixed and Mobile	Other/Unk	Total
Kentucky	42	6	37	2	87 (58%)
Ohio	15	0	1	0	16 (10.6%)
Missouri	4	0	0	0	4 (2.6%)
Indiana	3	0	14	0	17 (11.3%)
Tennessee	2	1	6	0	9 (6%)
West Virginia	2	0	2	0	4 (2.6%)
Illinois	1	0	6	2	9 (6%)
Unknown	2	1	0	1	4 (2.6%)
Total	71	8	66	5	150

**Program clients.** The majority (71.3%, n=107) of respondents stated males comprised the bulk of their client population. Respondents estimated the percentage of



female clients that utilized the NEP in an average month ranged from 10% - 75% with a mean of 37.77 (SD = 17.05). Nearly 23% of respondents estimated females comprised a monthly average of 40% (n=23) of their clients followed by 11% (n=16) that stated females comprise 45% of their monthly clients.

### **Barriers to Needle Exchange Program Usage**

Respondents were asked to indicate the extent to which they believed the items listed in Table 5 were barriers for females who inject drugs (FWID) in using the NEP in their community. Barriers were classified into three categories: organizational, practice and policy. Table 5 provides descriptive statistics for the results of these items listed on the survey.

**Table 5**

*Barriers to Needle Exchange Program Usage*

Item	Major Barrier	Minor Barrier	Not a Barrier	Not Applicable
<b>Organizational Factors</b>				
Staff are community members	7 (4.7%)	50 (34.7%)	80 (55.3%)	7 (4.8%)
Staff are persons who previously injected drugs	2 (1.3 %)	12 (8%)	81 (54%)	52 (34.7%)
Staff interaction with clients	10 (6.7%)	25 (16.7%)	109 (72.7%)	4 (2.7%)
Number of NEP staff	9 (6%)	52 (34.7%)	85 (56.7%)	2 (1.3%)
Gender of staff	1 (.7%)	13 (8.7%)	133 (88.7%)	2 (1.3%)
Age of staff	1 (.7%)	13 (8.7%)	131 (87.3%)	2 (1.3%)
Race/ethnicity of staff	5 (3.3%)	25 (16.7%)	114 (76%)	3 (2%)
Staff turnover	6 (4%)	29 (19.3%)	106 (70.7%)	8 (5.3%)
Staff knowledge about FWID and exchange sex for drugs	10 (6.7%)	53 (35.3%)	79 (52.7%)	7 (4.7%)
Staff knowledge of sexual abuse/trauma/domestic violence females may have experienced	12 (8%)	51 (34%)	81 (54%)	5 (3.3%)
Days and times NEP are open	34 (22.7%)	68 (45.3%)	45 (30%)	0
Location of NEP	19 (12.7%)	71 (47.3%)	57 (38%)	1 (.7%)
Availability of a parking space	9 (6%)	27 (18%)	110 (73.3%)	3 (2%)
Client confidentiality	8 (5.3%)	25 (16.7%)	113 (75.3%)	3 (2%)

Item	Major Barrier	Minor Barrier	Not a Barrier	Not Applicable
Accessibility of public transportation	62 (41.3%)	52 (34.7%)	35 (23.3%)	0
NEP mobile unit services	21 (14%)	36 (24%)	49 (32.7%)	41 (27.3%)
Wait times to be seen	2 (1.3%)	30 (20%)	114 (76%)	2 (1.3%)
Level of community support for a harm reduction program	54 (36%)	68 (45.3%)	27 (18%)	0
Availability of supplies	13 (8.7%)	42 (28%)	93 (62%)	1 (.7%)
Quality of supplies	6 (4%)	26 (17.3%)	116 (77.3%)	1 (.7%)
NEP staff knowledge regarding services provided	1 (.7%)	25 (16.7%)	122 (81.3%)	0
Medical services provided	13 (8.7%)	56 (37.3%)	66 (44%)	12 (8%)
Number of visits for medical tests/treatment	14 (9.3%)	48 (32%)	65 (43.3%)	20 (13.3%)
Health communication campaigns reflect community/cultural norms	15 (10%)	68 (45.3%)	47 (31.3%)	19 (12.7%)
Health communication campaigns reflect susceptibility/vulnerability of health complications related to injection drug use	15 (10%)	61 (40.7%)	56 (37.3%)	17 (11.3%)
Practice Factors				
Availability of childcare	40 (26.7%)	49 (32.7%)	21 (14%)	36 (24%)
Specified days and times for females	14 (9.3%)	24 (16%)	46 (30.7%)	64 (42.7%)
Private areas for females	13 (8.7%)	25 (16.7%)	67 (44.7%)	44 (29.3%)
Availability of male condoms	2 (1.3%)	4 (2.7%)	139 (92.7%)	4 (2.7%)
Availability of female/internal condoms	7 (4.7%)	27 (18%)	102 (68%)	13 (8.7%)
Prenatal services provided	20 (13.3%)	26 (17.3%)	46 (30.7%)	57 (38%)
Clients concern of punitive action (reporting to CPS, CJ system, etc.) for NEP use	42 (28.7%)	53 (35.3%)	47 (31.3%)	6 (4%)
Policy Factors				
NEP registration of clients	4 (2.7%)	34 (22.7%)	109 (72.7%)	2 (1.3%)
Number of supplies females can receive weekly	11 (7.3%)	31 (20.7%)	103 (68.7%)	4 (2.7%)
Law enforcement involvement	27 (18%)	40 (26.7%)	62 (41.3%)	20 (13.3%)

**Barriers.** Organizational factors most frequently identified as major barriers were accessibility to public transportation (41.3%, n=62), level of community support for a

harm reduction program (36%, n=54) and days and times of NEP operation (22.7%, n=34). Most frequently rated minor organizational barriers include the location of the NEP (47.3%, n=71), level of community support for a harm reduction program (45.3%, n=68) and health communication campaigns do not reflect community/cultural norms (45.3%, n=68).

Respondents indicated major barriers associated with practice factors included the clients concern of punitive action (reporting to CPS, CJ system, etc.) for NEP use (28.7%, n=42) and the availability of childcare (26.7%, n=40). These items were also selected as minor barriers at 35.3% (n=53) for concern regarding punitive action and 32.7% (n=49) the availability of childcare. Nearly 20% (n=27) of respondents indicated law enforcement involvement was a major policy barrier. Minor policy barriers included NEP registration of clients (22.7%, n=34), the quantity of supplies females can receive weekly (20.7%, n=31) and law enforcement involvement as both a major (18%, n=27) and minor (26.7%, n=40) barrier.

**Non-barriers.** Nearly 90% (n=133) of respondents did not believe the gender of the NEP staff was an organizational barrier. Other items not considered barriers included the age of staff (87.3%, n=131), staff's knowledge of services provided (81.3%, n=122), quality of supplies (77.3%, n=116), race/ethnicity of staff (76%, n=114) and wait times to be seen (76%, n=114). Almost 93% (n=139) of respondents did not believe the availability of male condoms was a practice barrier followed by 68% (n=102) who did not believe the availability of female/internal condoms was an issue. Items that were not considered policy barriers included NEP registration of clients (72.7%, n=109) and the number of supplies females could receive weekly (68.7%, n=103).

## **Chi-square Test of Independence**

A chi-square test of independence was performed to determine if there was a statistically significant association between the perception of NEP utilization barriers and the respondent characteristics which included Kentucky versus non-Kentucky, employee type (health department versus non-health department), NEP type (fixed location versus other location types) and NEP location (urban versus rural). Kentucky versus non-Kentucky was selected based on the small sample size of the other states compared to Kentucky. Additionally, major and minor barriers were combined into one category of barriers. Based on the characteristics of the sample, the frequencies to the responses and the research questions it was determined the categories outlined above would provide the most fruitful information. Details are provided below for each usage barrier identified as statistically significant.

### **Barriers to NEP Usage by Kentucky versus Non-Kentucky**

**Staff are community members.** The results indicated that the state the NEP was located in and staff being community members are related in the population. The results showed a significant association between the two variables  $X^2(1, N=138) = 4.00; p < .05$ . The results of the contingency table showed 49.4% of respondents from Kentucky viewed staff being community members as a barrier to usage. Over 32% of respondents not from Kentucky viewed staff being community members as a barrier to usage. The phi coefficient indicated that staff being community members explained 2.89% of the variance in the state of the NEP, which reflected the two variables have a weak positive relationship.

**Staff turnover.** The results indicated that the state the NEP is located in and staff turnover are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=139) = 6.97; p < .05$ . The results of the contingency table reflected 17.1% of respondents from Kentucky viewed staff turnover as a barrier to usage. Nearly, 37% of respondents not from Kentucky viewed staff turnover as a usage barrier. The phi coefficient indicated that staff turnover explained 5.02% of the variance in the state of the NEP, which reflected the two variables have a weak negative relationship.

**Availability of a parking space.** The results indicated that the state the NEP is located in and the availability of a parking space are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=142) = 7.05; p < .05$ . The results of the contingency table showed 16.7% of respondents from Kentucky viewed the availability of a parking space as a usage barrier. Over 36% of respondents not from Kentucky viewed the availability of a parking space as a usage barrier. The phi coefficient indicated that the availability of a parking space explained only 4.97% of the variance in the state of the NEP, which reflected the two variables have a weak relationship.

**Accessibility of public transportation.** The results indicated that the state the NEP is located in and the accessibility of public transportation are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=145) = 14.15; p < .05$ . The results of the contingency table showed 87.4% of respondents from Kentucky viewed the accessibility of public transportation as a usage barrier. Over 60% of respondents not from Kentucky viewed the accessibility of public

transportation as a usage barrier. The phi coefficient indicated that the accessibility of public transportation explained 9.73% of the variance in the state of the NEP, which reflected the two variables have a moderate positive relationship.

**Availability of supplies.** The results indicated that the state the NEP is located in and the availability of supplies are related in the population. The results showed a significant association between the two variables  $X^2(1, N=144) = 12.54; p < .05$ . The results of the contingency table reflected 25.3% of respondents from Kentucky view the availability of supplies as a usage barrier. Over 54% of respondents not from Kentucky viewed the availability of supplies as a usage barrier. The phi coefficient indicated that the availability of supplies explained 8.7% of the variance in the state of the NEP, which reflected the two variables have a moderate negative relationship.

Table 6 provides a summary of statistically significant chi-square results of utilization barriers by state.

**Table 6**

*Barriers to NEP Usage by Kentucky versus Non-Kentucky*

	Kentucky	Non-Kentucky	Total	Sig
Staff are community members				
Barrier	49.4% (42)	32.1% (17)	42.8%	.045
Staff turnover				
Barrier	17.1% (14)	36.8% (21)	25.2%	.008
Availability of a parking space				
Barrier	16.7% (14)	36.2% (21)	24.6%	.008
Accessibility of public transportation				
Barrier	87.4% (76)	60.3% (35)	76.6%	.000
Availability of supplies				
Barrier	25.3% (22)	54.4% (31)	36.8%	.000

### **Barriers to Needle Exchange Program Usage by Employee Type**

**Registration of clients.** The results indicated that the employee type and the NEP registration of clients are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=143) = 3.68; p < .05$ . The results of the contingency table showed 30.8% of health department respondents view the NEP registration of clients as a usage barrier. Nearly 17% of non-health department respondents view the NEP registration of clients as a barrier to usage. The phi coefficient indicated that the NEP registration of clients explained 2.56% of the variance in the type of employee, which reflected the two variables have a weak positive relationship.

### **Barriers to NEP Usage by Needle Exchange Program Type**

**Gender of staff.** The results indicated that the NEP type and the gender of staff are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=144) = 6.06; p < .05$ . The results of the contingency table showed 2.9% of respondents from a fixed NEP view the gender of staff as a usage barriers. Almost 15% of respondents from other NEP types view the gender of staff as a usage barrier. The phi coefficient indicated that the gender of staff explained 4.2% of the variance in the NEP type, which reflected the two variables have a weak negative relationship.

**Race/ethnicity of staff.** The results indicated that the NEP type and the race/ethnicity of staff are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=141) = 5.41; p < .05$ . The results of the contingency table showed 11.8% of respondents from a fixed NEP view the race/ethnicity of staff as a usage barrier. Almost 28% of respondents from other NEP

types viewed the race/ethnicity of staff as a usage barrier. The phi coefficient indicated that the race/ethnicity of staff explained <1% of the variance in the NEP type, which reflected the two variables have a weak positive relationship.

**Mobile unit services.** These results indicated that the NEP type and the lack of mobile unit NEP services are related in the population. The results showed a significant association between the two variables  $X^2(1, N=103) = 12.58; p < .05$ . The results of the contingency table indicated 78.8% of respondents from a fixed NEP view the lack of NEP mobile unit services as a usage barrier. Over 41% of respondents from other NEP types viewed the lack of NEP mobile unit services as a usage barrier. The phi coefficient indicated that the lack of mobile unit NEP explained 12.18% of the variance in the NEP type, which reflected the two variables have a moderate positive relationship.

**Client concerns regarding punitive action.** The results indicated that the NEP type and the client concern regarding punitive action are related in the population. The results showed a significant association between the two variables  $X^2(1, N=140) = 4.36; p < .05$ . The results of the contingency table showed 75.4% of respondents from a fixed NEP view the clients concern regarding punitive action as a usage barrier. Nearly 59% of respondents from other NEP types view the clients concern regarding punitive action a usage barrier. The phi coefficient indicated that the client concern regarding punitive action explained 3.13% of the variance in the NEP type, which reflected the two variables have a weak positive relationship.

Table 7 provides a summary of statistically significant chi-square results of utilization barriers by NEP type.



**Table 7***Barriers to NEP Usage by Needle Exchange Program Type*

	Fixed NEP	Other NEP Type	Total	Sig
Gender of staff				
Barrier	2.9% (2)	14.7% (11)	9%	.014
Race/ethnicity of staff				
Barrier	11.8% (8)	27.4% (20)	19.9%	.020
Mobile unit services				
Barrier	78.8% (26)	41.4% (29)	53.4%	.000
Client concern regarding punitive action				
Barrier	75.4% (49)	58.7% (44)	66.4%	.037

**Barriers to Needle Exchange Program Usage by Program Location**

**Staff are community members.** The results indicated that the NEP location and staff being community members are related in the population. The results showed a significant association between the two variables  $X^2(1, N=137) = 13.34; p < .05$ . The results of the contingency table reflected 26.6% of respondents from an urban NEP viewed staff being community members as a usage barrier. Over 57% of respondents from a rural NEP viewed staff being community members a barrier to usage. The phi coefficient indicated that staff being community members explained 9.73% of the variance in the NEP location, which reflected the two variables have a moderate negative relationship.

**Race/ethnicity of staff.** These results indicated that the NEP location and the race/ethnicity of staff are related in the population. The results showed a significant association between the two variables  $X^2(1, N=139) = 8.06; p < .05$ . The results of the contingency table showed 30.3% of respondents from an urban NEP view the race/ethnicity of staff as a usage barrier. Eleven percent (11%) of respondents from a rural NEP view the race/ethnicity of staff as a usage barrier. The phi coefficient indicated

that the race/ethnicity of staff explained 5.8% of the variance in the NEP location, which reflected the two variables have a weak positive relationship.

**Staff turnover.** These results indicated that the NEP location and staff turnover are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=138) = 11.94; p < .05$ . The results of the contingency table reflected 37.9% of respondents from an urban NEP view staff turnover as a usage barrier. Almost 13% of respondents from a rural NEP view staff turnover as a barrier to usage. The phi coefficient indicated that staff turnover explained 8.64% of the variance in the NEP location, which reflected the two variables have a weak positive relationship.

**Availability of a parking space.** The results indicated the NEP location and the availability of a parking space are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=141) = 8.28; p < .05$ . The results of the contingency table showed 35.8% of respondents from an urban NEP view the availability of a parking space as a usage barrier. Almost 15% of respondents from a rural NEP viewed the availability of a parking space as a usage barrier. The phi coefficient indicated that the availability of a parking space explained 5.85% of the variance in the NEP location, which reflected the two variables have a weak positive relationship.

**Accessibility to public transportation.** The results indicated that the NEP location and the accessibility to public transportation are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=144) = 12.36; p < .05$ . The results of the contingency table reflected 63.2% of respondents from an urban NEP viewed the accessibility to public transportation as a usage barrier. Over

88% of respondents from a rural NEP viewed the accessibility to public transportation as a usage barrier. The phi coefficient indicated that the accessibility to public transportation explained 8.58% of the variance in the NEP location, which reflected the two variables have a weak negative relationship.

**Availability of supplies.** The results indicated the NEP location and the availability of supplies are related in the population. The results showed a significant association between the two variables  $X^2(1, N=143) = 4.04; p < .05$ . The results of the contingency table showed 45.6% of respondents from an urban NEP view the availability of supplies as a usage barrier. Nearly 30% of respondents from a rural NEP viewed the availability of supplies as a usage barrier. The phi coefficient indicated the availability of supplies explained 2.82% of the variance in the NEP location, which reflected the two variables have a weak positive relationship.

**Availability of childcare.** The results indicated the NEP location and the availability of childcare are related in the population. The results showed a significant association between the two variables  $X^2(1, N=109) = 4.10; p < .05$ . The results of the contingency table reflected 74.1% of respondents from an urban NEP view the availability of childcare as a usage barrier. Over 89% of respondents from a rural NEP viewed the availability of childcare as a barrier to usage. The phi coefficient indicated that the availability of childcare explained 3.76% of the variance in the NEP location, which reflected the two variables have a weak negative relationship.

Table 8 provides a summary of statistically significant chi-square results of utilization barriers by NEP location type.

**Table 8***Barriers to NEP Usage by Needle Exchange Program Location*

	Urban	Rural	Total	Sig
Staff are community members				
Barrier	26.6% (17)	57.5% (42)	43.1%	.000
Race/ethnicity of staff				
Barrier	30.3% (20)	11% (8)	20.1%	.005
Staff turnover				
Barrier	37.9% (25)	12.5% (9)	24.6%	.001
Availability of a parking space				
Barrier	35.8% (24)	14.9% (11)	24.8%	.004
Accessibility to public transportation				
Barrier	63.2% (43)	88.2% (67)	76.4%	.000
Availability of supplies				
Barrier	45.6% (31)	29.3% (22)	37.1%	.044
Availability of childcare				
Barrier	74.1% (40)	89.1% (49)	81.7%	.043

**Facilitators to Needle Exchange Program Usage**

Respondents were asked to indicate the extent to which they believed the item listed in Table 9 was a facilitator for females who inject drugs (FWID) in using the NEP in their community. Facilitators were classified into three categories which included organizational, practice and policy.

**Table 9***Facilitators to Needle Exchange Program Usage*

Item	Major facilitator	Minor facilitator	Not a facilitator	Not applicable
Organizational Factors				
Staff are community members	38 (25.3%)	50 (33.3%)	52 (34.7%)	7 (4.7%)
Staff are persons who previously injected drugs	29 (19.3%)	29 (19.3%)	42 (28%)	45 (30%)
Staff interaction with clients	91 (60.7%)	22 (14.7%)	29 (19.3%)	3 (2%)
Number of NEP staff	32 (21.3%)	54 (36%)	54 (36%)	7 (4.7%)
Gender of staff	43 (28.7%)	47 (31.3%)	52 (34.7%)	5 (3.3%)
Age of staff	25 (16.7%)	39 (26%)	73 (48.7%)	10 (6.7%)

Item	Major facilitator	Minor facilitator	Not a facilitator	Not applicable
Race/ethnicity of staff	14 (9.3%)	44 (29.3%)	79 (52.7%)	10 (6.7%)
Staff turnover	16 (10.7%)	20 (13.3%)	81 (54%)	30 (20%)
Staff knowledge about FWID and exchange sex for drugs	41 (27.3%)	55 (36.7%)	44 (29.3%)	6 (4%)
Staff knowledge of sexual abuse/trauma/domestic violence female may have experienced	50 (33.3%)	51 (34%)	39 (26%)	6 (4%)
Days and times NEP are open	49 (32.7%)	41 (27.3%)	52 (34.7%)	3 (2%)
Location of NEP	46 (30.7%)	50 (33.3%)	47 (31.3%)	2 (1.3%)
Availability of a parking space	39 (26%)	41 (27.3%)	62 (41.3%)	5 (3.3%)
Client confidentiality	80 (53.3%)	30 (20%)	32 (21.3%)	3 (2%)
Accessibility of public transportation	37 (24.7%)	42 (28%)	63 (42%)	5 (3.3%)
NEP mobile unit services	30 (20%)	30 (20%)	34 (22.7%)	49 (32.7%)
Wait times to be seen	44 (29.3%)	42 (28%)	52 (34.7%)	9 (6%)
Level of community support for a harm reduction program	30 (20%)	46 (30.7%)	66 (44%)	5 (3.3%)
Availability of supplies	66 (44%)	39 (26%)	39 (26%)	3 (2%)
Quality of supplies	64 (42.7%)	42 (28%)	38 (25.3%)	3 (2%)
NEP staff knowledge regarding services provided	75 (50%)	35 (23.3%)	36 (24%)	2 (1.3%)
Medical services provided	25 (16.7%)	56 (37.3%)	51 (34%)	16 (10.7%)
Number of visits for medical tests/treatment	18 (12%)	45 (30%)	55 (36.7%)	28 (18.7%)
Health communication campaigns reflect community/cultural norms	18 (12%)	54 (36%)	57 (38%)	19 (12.7%)
Health communication campaigns reflect susceptibility/vulnerability of health complications related to injection drug use	24 (16%)	53 (35.3%)	52 (34.7%)	17 (11.3%)
<b>Practice Factors</b>				
Availability of childcare	14 (9.3%)	23 (15.3%)	54 (36%)	57 (38%)
Specified days and times for females	9 (6%)	19 (12.7%)	57 (38%)	62 (41.3%)
Private areas for females	16 (10.7%)	21 (1%)	55 (36.7%)	54 (36%)
Availability of male condoms	44 (29.3%)	48 (32%)	54 (36%)	2 (1.3%)
Availability of female condoms/internal condoms	32 (21.3%)	38 (25.3%)	59 (39.3%)	19 (12.7%)
Prenatal services provided	14 (9.3%)	25 (16.7%)	55 (36.7%)	53 (35.3%)
Clients concern of punitive action (reporting to CPS, CJ system, etc.) for NEP use	24 (16%)	38 (25.3%)	75 (50%)	8 (5.3%)

Item	Major facilitator	Minor facilitator	Not a facilitator	Not applicable
Policy Factors				
NEP registration of clients	36 (24%)	44 (29.3%)	64 (42.7%)	4 (2.7%)
Number of supplies females can receive weekly	56 (37.3%)	37 (24.7%)	50 (33.3%)	4 (2.7%)
Law enforcement involvement	20 (13.3%)	24 (16%)	73 (48.7%)	30 (20%)

**Facilitators.** Organizational factors identified as major facilitators were the staff interaction with clients (60.7%), client confidentiality (53.3%) and NEP staff knowledge regarding services provided (50%). Minor organizational facilitators identified were the staff's knowledge about FWID and the exchange of sex for drugs (36.7%), number of staff (36%), health communication campaigns reflect community/cultural norms (36%) and health communication campaigns reflect susceptibility/vulnerability of health complications related to injection drug use (35.3%).

Major practice facilitators were the availability of male condoms (29.3%), availability of female/internal condoms (21.3%) and the clients lack of concern regarding punitive action (reporting to CPS, CJ system, etc.) for NEP use (16%). These were also noted as minor practice facilitators at 32% for the availability of male condoms, 25.3% for the availability of female/internal condoms and 25.3% for concern regarding punitive action. Major policy facilitators include the number of supplies females can receive weekly (37.3%) and the NEP registration of clients (24%). Both items are also considered minor facilitators, NEP registration (29.3%) and the number of supplies (24.7%).

**Non-facilitators.** Organizational factors that were reported as not being facilitators to NEP usage include staff turnover (54%), race/ethnicity of staff (52.7%), age of staff (48.7%), the level of community support for a harm reduction program (44%)

and accessibility of public transportation (42%). Practice factors that are not a facilitator include the clients concern regarding punitive action (50%) and availability of female condoms/internal condoms (39.3%). Law enforcement involvement (48.7%) is not considered a policy facilitator and neither is the NEP registration of clients (42.7%).

### **Chi-square Test of Independence**

A chi-square test of independence was performed to determine if there was a statistically significant association between the perception of facilitators to utilization and the respondent characteristics which included Kentucky versus non-Kentucky, employee type (health department versus non-health department), NEP type (fixed location versus other location types) and NEP location (urban versus rural). Kentucky versus non-Kentucky was selected based on the small sample size of the other states compared to Kentucky. Additionally, major and minor facilitators were combined into one category of facilitators. Details are provided for each usage facilitator identified as statistically significant.

#### **Facilitators of NEP Usage by Kentucky versus Non-Kentucky**

**Availability of supplies.** The results indicated the state the NEP is located in and the availability of supplies are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=140) = 8.35; p < .05$ . The results of the contingency table reflected 63.9% of respondents from Kentucky view the availability of supplies as a usage facilitator. Eighty-six percent (86%) of non-Kentucky respondents viewed the availability of supplies as a facilitator to usage. The phi coefficient indicated the availability of supplies explained 5.95% of the variance in the state of the NEP, which reflected the two variables have a weak negative relationship.

### **Facilitators of Needle Exchange Program Usage by Employee Type**

**Availability of supplies.** The results indicated the employee type and the availability of supplies are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=140) = 3.80; p<.05$ . The results of the contingency table showed 66.2% of health department respondents viewed the availability of supplies as a usage facilitator. Eighty-one percent (81%) of non-health department respondents view the availability of supplies as a facilitator to usage. The phi coefficient indicated the availability of supplies explained 2.72% of the variance in the type of employee, which reflected the two variables have a weak negative relationship.

**Law enforcement involvement.** The results indicated the employee type and law enforcement involvement are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=113) = 9.60; p<.05$ . The results of the contingency table reflected 23.8% of health department respondents view law enforcement involvement as a facilitator to usage. Fifty-two percent (52%) of non-health department respondents viewed law enforcement involvement as a usage facilitator. The phi coefficient indicated law enforcement involvement explained 8.46% of the variance in the type of employee, which reflected the two variables have a weak negative relationship.

### **Facilitators of Needle Exchange Program Usage by Program Type**

**Availability of a parking space.** The results indicated the NEP type and mobile NEP services are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=139) = 5.47; p<.05$ . The results of the contingency table reflected 66.2% of respondents from fixed NEPs view mobile unit services as a



facilitator to usage. Over 46% of respondents from other NEP types viewed NEP mobile unit services as a usage facilitator. The phi coefficient indicated mobile NEP services explained 3.92% of the variance in the NEP type, which reflected the two variables have a weak positive relationship.

**Quality of supplies.** The results indicated the NEP type and the quality of supplies are related in the population. The results showed a significant association between the two variables  $X^2(1, N=141) = 4.09; p < .05$ . The results of the contingency table showed 80.9% of respondents from a fixed NEP viewed the quality of supplies as a facilitator to usage. Almost 66% of respondents from other NEP types viewed the quality of supplies as a usage facilitator. The phi coefficient indicated the quality of supplies explained 2.89% of the variance in the NEP type, which reflected the two variables have a weak positive relationship.

**Staff knowledge regarding services provided.** The results indicated the NEP type and the NEP staff knowledge regarding services provided are related in the population. The results showed a significant association between the two variables  $X^2(1, N=144) = 4.28; p < .05$ . The results of the contingency table reflected 82.6% of respondents from a fixed NEP view NEP staff knowledge regarding services provided as a facilitator to usage. Almost 68% of respondents from other NEP types viewed NEP staff knowledge regarding services provided as a usage service facilitator. The phi coefficient indicated that staff knowledge explains 2.99% of the variance in the NEP type, which reflected the two variables have a weak positive relationship.

**Availability of male condoms.** The results indicated the NEP type and the availability of male condoms are related in the population. The results showed a

significant association between the two variables  $X^2 (1, N=143) = 5.18; p<.05$ . The results of the contingency table showed 72.5% of respondents from a fixed NEP viewed the availability of male condoms as a usage facilitator. Over 54% of respondents from other NEP types viewed the availability of male condoms as a facilitator to usage. The phi coefficient indicated that staff knowledge explains 3.61% of the variance in the NEP type, which reflected the two variables have a weak positive relationship.

**Number of supplies females can receive weekly.** The results indicated the NEP type and the number of supplies females can receive weekly are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=140) = 4.38; p<.05$ . The results of the contingency table showed 73.1% of respondents from a fixed NEP viewed the number of supplies females can receive weekly as a usage facilitator. Over 56% of respondents from other NEP types viewed the number of supplies females can receive weekly as a facilitator to usage. The phi coefficient indicated the number of supplies a female can receive weekly explained 3.13% of the variance in the NEP type, which reflected the two variables have a weak positive relationship.

Table 10 provides a summary of statistically significant chi-square results of facilitators to utilization by NEP type.

**Table 10**

*Facilitators of Needle Exchange Program Usage by Program Type*

	Fixed NEP	Other NEP Type	Total	Sig
Availability of a parking space				
Facilitator	66.2% (45)	46.5% (33)	56.1%	.019
Quality of supplies				

	Fixed NEP	Other NEP Type	Total	Sig
Facilitator	80.9% (55)	65.8% (48)	73%	.043
Staff knowledge regarding services provided				
Facilitator	82.6% (57)	67.6% (50)	74.8%	.038
Availability of male condoms				
Facilitator	72.5% (50)	54.1% (40)	62.9%	.023
Number of supplies females can receive weekly				
Facilitator	73.1% (49)	56.2% (41)	64.3%	.036

### **Facilitators of Needle Exchange Program Usage by Program Location**

**Staff are community members.** The results indicated the type of NEP location and staff being community members are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=135) = 4.69; p < .05$ . The results of the contingency table showed 72.3% of respondents from an urban NEP viewed staff being community members as a usage facilitator. Over 54% of respondents from a rural NEP viewed staff being community members a facilitator to usage. The phi coefficient indicated staff being community members explained 3.45% of the variance in the type of NEP location, which reflected the two variables have a weak positive relationship.

**Gender of staff.** The results indicated the type of NEP location and the gender of staff are related in the population. The results showed a significant association between the two variables  $X^2 (1, N=137) = 4.81; p < .05$ . The results of the contingency table showed 72.3% of respondents from an urban NEP viewed the gender of staff as a usage facilitator. Over 54% of respondents from a rural NEP viewed the gender of staff as a usage facilitator. The phi coefficient indicated the gender of staff explained 3.49% of the

variance in the NEP location, which reflected the two variables have a weak positive relationship.

**Race/ethnicity of staff.** The results indicated the type of NEP location and the race/ethnicity of staff are related in the population. The results showed a significant association between the two variables  $X^2(1, N=132) = 5.82; p < .05$ . The results of the contingency table reflected 53.1% of respondents from an urban NEP viewed the race/ethnicity of staff as a usage facilitator. Over 32% of respondents from a rural NEP viewed the race/ethnicity of staff a facilitator to usage. The phi coefficient indicated the race/ethnicity of staff explained 4.41% of the variance in the NEP location, which reflected the two variables have a weak positive relationship.

**Accessibility of public transportation.** The results indicated the type of NEP location and the accessibility of public transportation are related in the population. The results showed a significant association between the two variables  $X^2(1, N=137) = 10.47; p < .05$ . The results of the contingency table reflected 69.2% of respondents from an urban NEP viewed the accessibility of public transportation as a facilitator to usage. Nearly 42% of respondents from a rural NEP viewed the accessibility of public transportation as a usage facilitator. The phi coefficient indicated the accessibility of public transportation explained 7.67% of the variance in the NEP location, which reflected the two variables have a weak positive relationship.

**Level of community support for a harm reduction program.** The results indicated the type of NEP location and the level of community support are related in the population. The results showed a significant association between the two variables  $X^2(1, N=137) = 12.47; p < .05$ . The results of the contingency table reflected 68.2% of

respondents from an urban NEP viewed the level of community support for a harm reduction program as a usage facilitator. Thirty-eight percent (38%) of respondents from a rural NEP viewed the level of community support for a harm reduction program as a facilitator to usage. The phi coefficient indicated the level of community support for a harm reduction program explained 9.12% of the variance in the NEP location, which reflected the two variables have a moderate positive relationship.

**Availability of supplies.** These results indicated the type of NEP location and the availability of supplies are related in the population. The results showed a significant association between the two variables  $X^2(1, N=139) = 8.46; p < .05$ . The results of the contingency table indicated 84.8% of respondents from an urban NEP viewed the availability of supplies as a usage facilitator. Sixty-three percent (63%) of respondents from a rural NEP viewed the availability of supplies as a facilitator to usage. The phi coefficient indicated the availability of supplies explained 6.1% of the variance in the NEP location, which reflected the two variables have a weak positive relationship.

Table 11 provides a summary of statistically significant chi-square results of facilitators to utilization by NEP location type.

**Table 11**

*Facilitators to Needle Exchange Program Usage by Program Location*

	Urban	Rural	Total	Sig
<hr/>				
Staff are community members				
Facilitator	72.3% (47)	54.3% (38)	63%	.030
Gender of staff				
Facilitator	72.3% (47)	54.2% (39)	62.8%	.028
Race/ethnicity of staff				
Facilitator	53.1% (34)	32.4% (22)	42.4%	.016
Accessibility of public transportation				
Facilitator	69.2% (45)	41.7% (30)	54.7%	.001

	Urban	Rural	Total	Sig
<hr/>				
Level of community support for a harm reduction program				
Facilitator	68.2% (45)	38% (27)	52.6%	.000
Availability of supplies				
Facilitator	84.8% (56)	63% (46)	73.4%	.004

### Needle Exchange Program Services

Respondents were asked to indicate if the services outlined in Table 12 were offered or not offered at their NEP. If a service was not offered, they were asked to indicate if they believed it should be offered at their NEP. Over 97% of respondents stated their NEP offers drug treatment referrals, 96.7% offer NARCAN, 94% offer HIV testing, 92% offer hepatitis testing and 90.7% offer male condoms.

In regards to unavailable services, 83.3% do not offer specified days and times for females only, 82.7% do not offer vision services and 77.3% do not offer dental services. Services that are not offered but respondents felt should be offered included human trafficking literature (25.3%), other birth control options (22%), sexual abuse literature (21.3%), female/internal condoms (20.7%) and the ability to apply for state health insurance (20.7%).

**Table 12**

#### *Needle Exchange Program Services*

Service	Offered	Not Offered	Should be Offered
HIV testing	141 (94%)	3 (2%)	3 (2%)
Hepatitis testing	138 (92%)	3 (2%)	7 (4.7%)
Specified days and times for females only	5 (3.3%)	125 (83.3%)	18 (12%)
Flu shot	75 (50%)	55 (36.7%)	18 (12%)
Pre-exposure prophylaxis (PrEP) for HIV	72 (48%)	37 (24.7%)	38 (25.3%)
STI/STD testing	104 (69.3%)	20 (13.3%)	24 (16%)
Tetanus shot	61 (40.7%)	67 (44.7%)	19 (12.7%)

Service	Offered	Not Offered	Should be Offered
Other vaccinations/immunizations	81 (54%)	46 (30.7%)	19 (12.7%)
NARCAN	145 (96.7%)	2 (1.3%)	1 (.7%)
Drug treatment referrals	146 (97.3%)	1 (.7%)	0
Mental health counseling referrals	135 (90%)	6 (4%)	6 (4%)
Medication assisted treatment referrals	119 (79.3%)	10 (6.7%)	8 (5.3%)
Mobile NEP services	90 (60%)	26 (17.3%)	22 (14.7%)
Female/internal condoms	70 (46.7%)	36 (24%)	31 (20.7%)
Male condoms	136 (90.7%)	1 (.7%)	1 (.7%)
Other birth control options	46 (30.7%)	58 (38.7%)	33 (22%)
Feminine hygiene products	67 (44.7%)	44 (29.3%)	27 (18%)
OBGYN services	26 (17.3%)	83 (55.3%)	28 (18.7%)
Dental services	6 (4%)	116 (77.3%)	17 (11.3%)
Vision services	2 (1.3%)	124 (82.7%)	13 (8.7%)
Self-help classes	22 (14.7%)	87 (58%)	30 (20%)
Pediatric health services	19 (12.7%)	106 (70.7%)	14 (9.3%)
Wound care supplies	108 (72%)	22 (14.7%)	10 (6.7%)
Childcare for NEP visit only	8 (5.3%)	112 (74.7%)	19 (12.7%)
Parenting classes	16 (10.7%)	101 (67.3%)	23 (15.3%)
Housing assistance	53 (35.3%)	62 (41.3%)	24 (16%)
Employment services	36 (24%)	77 (51.3%)	27 (18%)
Clothing services	50 (33.3%)	71 (47.3%)	19 (12.7%)
Food bank	65 (43.3%)	57 (38%)	18 (12%)
Human trafficking literature	57 (38%)	44 (29.3%)	38 (25.3%)
Domestic violence literature	82 (54.7%)	29 (19.3%)	29 (19.3%)
Sexual abuse literature	82 (54.7%)	25 (16.7%)	32 (21.3%)
HIV literature	127 (84.7%)	6 (4%)	7 (4.7%)
STI/STD literature	125 (83.3%)	7 (4.7%)	8 (5.3%)
Ability to apply for state health insurance	54 (36%)	55 (36.7%)	31 (20.7%)
Ability to apply for a birth certificate	56 (37.3%)	59 (39.3%)	24 (16%)
Ability to apply for a state ID card/driver's license	20 (13.3%)	91 (60.7%)	27 (18%)

### Services Composite Scores

**Healthcare services composite score.** The Healthcare Services Score (HSS) was computed for each respondent by taking the sum of 19 items in the NEP services list.

Healthcare service score variables included HIV testing, Hepatitis testing, flu shot, PreP for HIV, STI/STD testing, tetanus shot, other vaccinations/immunizations, NARCAN, drug treatment referrals, mental health counseling referrals, MAT referrals,

female/internal condoms, male condoms, other birth control options, OBGYN services, dental services, vision services, pediatric health services and wound care supplies.

HSS scores ranged from 3.0 to 54.0, with a mean of 34.77 and a standard deviation of 8.39. Fifty-two percent (52%) of respondents scored a 35 or higher on the HSS score. High scores on the HSS indicated the NEP the respondent works for offers or should offer a large number of healthcare services to clients.

### **Independent t-Test**

An independent t-test was performed to examine the HSS and statistically significant differences between the means of Kentucky versus non-Kentucky, employee type (health department versus non-health department), NEP type (fixed location versus other location types) and NEP location (urban versus rural).

The independent t-test examined the HSS based on Kentucky versus non-Kentucky respondents. The results showed a significant difference between Kentucky versus non-Kentucky  $t(143)=2.44$ ,  $p=.016$ . Kentucky reported higher levels of health services ( $M=36.33$ ,  $SD=7.50$ ) than non-Kentucky ( $M=32.93$ ,  $SD=9.17$ ). The mean difference was 3.4. The results are supported by the Mann-Whitney U, which also showed a significant difference between Kentucky versus non-Kentucky in regard to the Health Services Score ( $z=-2.06$ ;  $p=.020$ ).

The independent t-test examined the HSS based on employee type (health department employee and non-health department employee). The results showed a significant difference between health department employees and non-health department employees  $t(143)=2.27$ ,  $p=.024$ . Health department employees reported a higher HSS ( $M=36.04$ ,  $SD=6.28$ ) than non-health department employees ( $M=32.92$ ,  $SD=10.01$ ). The



mean difference was 3.12. The results are supported by the Mann-Whitney U, which also showed a significant difference between employee type in regard to the Health Services Score ( $z=-2.04$ ;  $p=.023$ ).

The independent t-test examined the HSS based on NEP type (fixed and other NEP types). The results showed a non-significant difference between fixed NEPs and other NEP types.

The independent t-test examined the HSS score based on NEP location (urban and rural). The results showed a significant difference between urban and rural NEPs  $t(142)=-2.37$ ,  $p=.019$ . Respondents from rural areas reported higher levels of health services ( $M=36.49$ ,  $SD=7.90$ ) than urban areas ( $M=33.22$ ,  $SD=8.61$ ). The mean difference was 3.27. The results are supported by the Mann-Whitney U, which also showed a significant difference between urban and rural NEP locations in regard to the Health Services Score ( $z=.094$ ;  $p=.46$ ).

**Educational services composite score.** The Educational Services Score (ESS) was computed for each respondent by taking the sum of the variable which included self-help classes, parenting classes, literature on human trafficking, domestic violence, sexual abuse, HIV and STI/STDs. ESS scores ranged from 3.0 to 21.0, with a mean of 12.5 and a standard deviation of 4.30. Over 51% of respondents scored a 13.0 or higher on the ESS. High scores on the ESS indicated the NEP the respondent works for offers or should offer a large number of educational services to clients.

### **Independent t-Test**

An independent t-test was performed to examine the ESS and statistically significant differences between the means of Kentucky versus non-Kentucky, employee type (health department and non-health department), NEP type (fixed location and other location types) and NEP location (rural and urban). The results showed they are statistically non-significant.

**Specialized needle exchange program score.** The Specialized NEP Score (SNS) was computed for each respondent by taking the sum of three items in the NEP services list which included specified days and times for females, mobile NEP services and childcare for the NEP visit. SNS scores ranged from 1.0 to 7.0, with a mean of 3.09 and a standard deviation of 1.23. Over 24% of respondents scored a 4.0 or higher on the SNS. High scores on the SNS indicate the NEP the respondent works for offers or should offer a large number of specialized NEP services to clients.

### **Independent t-Test**

An independent t-test was performed to examine the SNS and statistically significant differences between the means of Kentucky versus non-Kentucky, employee type (health department and non-health department), NEP type (fixed location and other location types) and NEP location (rural and urban). The results showed all but employee type are statistically non-significant.

The independent t-test examined the SNS based on employee type (health department employee and non-health department employee). The results showed a significant difference between health department employees and non-health department employees  $t(113)=-2.12, p=.039$ . Non-health department employees reported a higher specialized NEP services score ( $M=3.31, SD=1.27$ ) than health department employees

( $M=2.84$ ,  $SD=1.10$ ). The mean difference was .47. The results were supported by the Mann-Whitney U, which also showed a significant difference between employee type in regard to the Specialized NEP Services Score ( $z=2.045$ ;  $p=.021$ ).

**Basic needs score.** The Basic Needs Score (BNS) was computed for each respondent by taking the sum of eight items in the NEP services list. Basic needs score variables included feminine hygiene products, housing assistance, employment services, clothing services, food bank services, ability to apply for state health insurance, ability to apply for a birth certificate and the ability to apply for state ID card/driver's license.

BNS scores ranged from 1.0 to 24.0, with a mean of 10.77 and a standard deviation of 5.89. Over 44% of respondents scored an 11.0 or higher on the BNS. High scores on the BNS indicated the NEP the respondent works with offers or should offer a large number of basic need services to clients.

### **Independent t-Test**

An independent t-test was performed to examine the BNS and statistically significant differences between the means by Kentucky versus non-Kentucky, employee type (health department versus non-health department), NEP type (fixed location versus other location types) and NEP location (urban versus rural). The results showed all but employee type are statistically non-significant.

The independent t-test examined the basic needs services score based on employee type (health department employee and non-health department employee). The results showed a significant difference between health department employees and non-health department employees  $t(107)=-3.56$ ,  $p=.001$ . Non-health department employees reported a higher basic needs score ( $M=12.69$ ,  $SD=6.00$ ) than health department

employees ( $M=9.04$ ,  $SD=5.24$ ). The mean difference was 3.65. The results were supported by the Mann-Whitney U, which also showed a significant difference between employee type in regard to the Basic Needs Services Score ( $z=3.46$ ;  $p=.001$ ).

### **Targeted Outreach to Females**

Respondents were asked if their NEP conducted any targeted recruitment/outreach initiatives toward females who inject drugs. Nearly 17% indicated they had conducted some form of targeted recruitment/outreach toward FWID.

### **Chi-square Test of Independence**

The results indicate the NEP type and targeted recruitment toward FWID are related in the population. The results showed a significant association between the two variables  $X^2(1, N=122) = 3.89$ ;  $p < .05$ . The results of the contingency table reflected 87.7% of respondents from a fixed NEP had not conducted targeted recruitment toward FWID. Almost 74% of respondents from other NEP types had not conducted targeted recruitment toward FWID. The phi coefficient indicated targeted recruitment toward FWID explained 3.20% of the variance in the NEP type, which reflected the two variables have a weak positive relationship.

### **Independent t-Test**

An independent t-test was performed to examine targeted recruitment/outreach initiatives and statistically significant differences between the means of Kentucky versus non-Kentucky, employee type (health department versus non-health department), NEP type (fixed location versus other location types) and NEP location (urban versus rural). The results showed all but NEP type are statistically non-significant.

The independent t-test examined targeted recruitment/outreach initiatives based on NEP type (fixed location and other location types). The results showed a significant difference between a fixed NEP location and other location type  $t(120)=-1.99, p=.054$ . Other NEP location types reported more targeted recruitment/outreach initiatives toward FWID ( $M=1.26, SD=.444$ ) than fixed NEP locations ( $M=1.12, SD=.331$ ). The mean difference was .24. The results were supported by the Mann-Whitney U, which also showed a significant difference between NEP type in regard to targeted outreach ( $z=1.97; p=.049$ ).

### **Advantages of Offering Females Only Services**

Respondents were asked if they believed there were advantages to offering female only services. Over 51% indicated there were advantages to offering females only services.

### **Chi-square Test of Independence**

The results indicated the state the NEP is located in and offering females only services are related in the population. The results showed a significant association between the two variables  $X^2(1, N=122) = 6.77; p<.05$ . The results of the contingency table showed 52.8% of respondents in Kentucky believe there are advantages to offering females only services. Seventy-six percent (76%) of non-Kentucky respondents do not believe there are advantages to offering females only services. The phi coefficient indicated offering females only services explained <1% of the variance in the state of the NEP, which reflected the two variables have a weak positive relationship.

## **Advantages of Offering Females Only Services by Program Location**

### **Chi-square Test of Independence**

The results indicated the NEP location and offering females only services are related in the population. The results showed a significant association between the two variables  $X^2(1, N=121) = 3.58; p < .05$ . The results of the contingency table reflected 29.3% of respondents from an urban NEP believed there are advantages to offering females only services. Forty-six percent (46%) of respondents from a rural NEP believed there are advantages to offering females only services. The phi coefficient indicated offering females only services explained 2.95% of the variance in the NEP location, which reflected the two variables have a weak negative relationship.

### **Qualitative Data Analysis**

#### **Barriers to Needle Exchange Program Usage**

Respondents were asked if there were any other barriers to NEP usage. Three themes emerged (n=41) from these data: (a) operational barriers; (b) stigma; and (c) service restrictions. Almost 59% of respondents commented operational barriers (n=24) were an issue. This included the inability to educate specific populations about the NEP, extending NEP days and times, the need for more volunteers, issues relating to the agency running the NEP, the lack of services linkages within the community, law enforcement involvement and the need for a mobile NEP unit.

Stigma (n=11) was identified by over 26% of respondents. These concerns included lack of trust with staff, confidentiality and females's relationship dynamics with staff. Services restrictions (n=6) were identified by nearly 15% of respondents. Restrictions mentioned were the one-to-one rule, inability to use federal funds to

purchase syringes, the lack of NEP services being offered in rural areas, city government’s unwillingness to allow NEP advertising and expanding the days and times of NEP services and downplaying the drug problem within the service area.

Respondent quotes enhance the richness of the data and provides additional perspective. Quotes related to emergent themes are outlined in Table 13.

**Table 13**

*Needle Exchange Program Usage Barriers Quotes*

Theme	Quote
Operational barrier – educating specific populations about the NEP	“The biggest barrier we face is engaging the black/brown communities”
Operational barrier – law enforcement involvement	“They (NEP client) feel they cannot take and use a sharps container or dispose of a used syringe properly, because they are afraid of being arrested for having drug residue on the used syringes in the sharps container”.
Stigma	“Males can sleep around, and no one bats and eye, but when females do it, she’s promiscuous”.
Service restrictions	“The rule makes it difficult for participants to get all the supplies they need”.

**Facilitators to Needle Exchange Program Usage**

Staff were asked if there were any additional facilitators (n=23) they believed should be discussed and four themes were identified: (a) supportive relationships; (b) staffing; (c) NEP operations; and (d) client awareness. A facilitator identified by almost 35% of the respondents was the supportive relationships (n=8) that staff build with clients through providing a welcoming environment, educating clients about NEP services and

motivating them to continue to use their services. As one respondent stated “a big facilitator is establishing a good rapport with participants so they feel comfortable using the services and will return/refer others”.

Over 25% of respondents mentioned facilitators related to staffing (n=6) which included the consistency in staff, adequate staff salaries, staff training and the ability of clients to request to be seen by a staff member based on their gender. NEP operations (n=5) as a facilitator were noted in over 20% of the responses. Specifics mentioned were providing linkages to other services, accessibility of the program and offering private individual visits. Client awareness (n=4) of the NEP through word of mouth was reported by 17.3% of the respondents as facilitator to NEP usage for FWID.

### **Other Services Provided**

Respondents were asked if additional services were provided, and two themes emerged (n=23) which included: (a) referrals; and (b) on-site services. Referrals for service (n=12) were identified by over 52% of respondents and included HIV and Hepatitis C treatment, clothing, healthcare, food pantry, drug treatment and housing. Over 45% of respondents mentioned on site services (n=11) which included providing other injection equipment such as sharps containers and fentanyl test strips, WIC, NA/AA meetings, medical care, peer support services and providing personal items such as hygiene kits.

### **Targeted Outreach Initiatives**

Respondents were asked to provide information on targeted recruitment/outreach initiatives conducted toward females who inject drugs. Two themes were identified (n=29) which included: (a) networking; and (b) advertising. Over 72% of respondents



reported they network with other community agencies and target specific populations (n=21). Agencies included treatment facilities, shelters, food pantries and hotels with high drug activity and overdose rates. Specific populations focused on are sex workers, persons who are homeless and those that are being released from incarceration. As one respondent mentioned “we target known areas of high drug activity with our mobile unit”.

Advertising targeted at females who inject drugs was noted by nearly 28% of respondents (n=8). Advertising included the use of Facebook and other social media, posting printed flyers and word of mouth by other female clients.

### **Encouraging Continuation of Needle Exchange Program Usage**

NEP staff were asked how they encouraged females who inject drugs to continue NEP usage. Five themes emerged (n=151) from these data: (a) positive client interactions; (b) client education; (c) providing on-site services and referrals; (d) promoting awareness; and (e) confidential service. Over 40% of respondents believed positive client interaction promoted continual NEP usage (n=65). Specific items mentioned included staff not being judgmental, developing a positive rapport with female clients, creating a welcoming environment and making sure that FWID are made to feel safe and comfortable. As one respondent stated, “I encourage them by telling them I want them to be safe and stay alive. I give them my phone number and tell them to reach out to me if they need anything”.

Almost 30% of staff indicated regular client education (n=33) encouraged the return of FWID to the NEP. This included educating clients about the services the NEP offers and the harms associated with reusing syringes.

Providing female specific onsite services and referrals (n=17) was noted as facilitating the return of female clients. Specific services included providing feminine hygiene products, other female health related supplies and screening females for assault and domestic violence.

Promoting awareness of the NEP through various mechanisms was identified by almost 11% of respondents (n=16). Promotion included female clients encouraging other females who inject drugs to use the NEP, offering peer support, staff gender and ability of clients to request specific staff. Formal outreach included working with other community agencies, advertising via social and print media and offering large quantities of syringes as part of a secondary exchange.

Nearly 6% of respondents believed continual NEP usage is promoted through providing individual and confidential service (n=9). This type of environment includes seeing clients individually away from males and allowing for one-on-one communication with staff.

Respondent quotes are provided for context and to enhance the depth of the data. Quotes related to emergent themes are outlined in Table 14.

**Table 14**

*Needle Exchange Program Continuation Quotes*

Theme	Quote
Positive client interactions	“I treat them like a real person that they are. I show them respect without any stigmatization”.
Client education	“I stress the importance of harm reduction services and wanting to be a partner with the person to assist them in staying as healthy as possible. Developing a positive and personal relationship with all participants is crucial to the success of NEPs”.

Theme	Quote
Providing on-site services and referrals	“We encourage large secondary exchanges so that supplies get to where they are needed without having to show up in person”.
Promoting awareness	“Ask FWID to bring in other FWID. Honestly, it has never been a problem”.
Confidential service	“Continue to let them know everything is confidential”.

### **Improvement of Outreach**

Respondents were asked how outreach to females who inject drugs could be improved and three themes were identified (n=36): (a) increased program awareness; (b) site improvements; and (c) environment. Over 40% of respondents felt there was a need to increase program awareness (n=13). Ideas mentioned were to collaborate with more community partners, focus on specific populations such as persons released from jail and sex workers, finding new locations for the mobile unit to serve and providing time for NEP staff to conduct outreach.

Site improvements (n=11) were mentioned by over 30% of respondents. Suggested upgrades were offering peer support, providing more resources to females, having a larger space, increasing the number and gender of staff and offering more availability of NEP services.

Improving the environment (n=10) was commented on by 27.7% of respondents. This included addressing stigma, providing consistent and thoughtful approaches to care and offering female only services.

## **Advantages to Female Only Services**

Staff were asked if they believed there were advantages to offering females-only services and what they believed the advantages were. Four themes emerged (n=95) from these data: (a) increased connection to resources; (b) empowerment; (c) education; and (d) increase in usage. Over 55% of respondents felt females only services allowed for an increased connection to resources (n=54) which in turn impacts a FWID health and well-being. This included offering female specific services and supplies, referrals and providing a safe space.

Over a quarter (25.2%) of respondents believed offering female services allows females to feel empowered. This included a safe, comfortable environment where FWID do not feel like they are being judged. A respondent shared “making females feel empowered, safe, connected, and heard is vital to their well-being and is very advantageous. The advantages are more meaningful conversations/connections and more useful referrals to outside resources”.

Nearly 12% of respondents believed another advantage was the ability to educate females (n=11). Educating FWIDs included providing self-help classes, educating them on harms against females, drug related crimes, the dangers of drug use during pregnancy and the role of child protective services. As one staff member stated “females are historically caretakers and victims. By providing (female only) services we can help children and others in their care as well as help prevent drug-related crimes against females”. Over 6% of staff believed offering female only services would promote increased NEP usage (n=6).

## **Modifying Needle Exchange Program Policy**

Respondents were asked to provide recommendations for policy changes at their NEP. Three themes were identified (n=98) which included: (a) site service improvements; (b) one-to-one exchange policy; and (3) law enforcement education. Over 68% of staff would like to see service site improvements. Nearly a third of the suggestions pertained to increasing operating days and times and allowing clients to make appointments. Items also mentioned included offering peer support, providing more referrals to drug treatment, a larger location, offering a mobile unit, advertising, increase in staff and staff training. A respondent stated “if we were able to advertise our services more openly then we would be able to reach more users and not make them feel like they should be ashamed of using”. Site policy changes mentioned included reducing red tape for clients and staff and allowing children at the NEP. A staff member shared “no ID ...don't need an ID to vote, but need an ID to get supplies that may save a life”.

Almost a quarter (24.4%) of staff believed the one-to-one needle exchange policy needs to be modified (n=24). As one respondent stated “I wish we offered more supplies and syringes for our people. The more clean product we get on the streets the more people who will inject with clean supplies and lower and slow the transmission of HIV/Hepatitis C. As well as STDs”.

Four percent (4%) of respondents believed law enforcement should be educated about the NEP in order to ease client’s fears of their involvement. A staff member stated “it would greatly help if participants didn't have to fear criminal justice consequences when getting pulled over with new and used syringes. We don't receive nearly as many used syringes back, simply because of this very real and very scary reality”.

## **Additional Comments**

Respondents were asked to provide additional comments and three themes emerged (n=19) which included: (a) organizational operations; (b) program awareness; and (3) future research. Over 50% of staff commented on the need to improve organizational operations. This included the ability to increase staffing, provide staff training, provide additional services, offer a mobile unit and revise funding limitations.

Increased program awareness through education and advertising was mentioned by 21% of respondents. As one person stated “the population needs education on addiction and how the disease runs its course. The stigma is horrible, media/TV/Hollywood exploit people with SUD as monsters...that is just not true”.

Over a quarter (26.3%) of respondents provided comments related to the survey and future research suggestions. Comments included clarifying the definition of a community member, not using the verbiage of needle exchange but syringe service program and making a distinction between female as gender and female as sex. A respondent stated “I do feel there needs to be research done for the male population. There are just as many males who have access issues as the females. This should not be a one-way street. Everyone regardless of age, race, religion etc. etc. are welcomed to the syringe program and no one is turned away, everyone is given the same opportunities equally. It’s up to the individual syringe participant on how successful the program works for them”.

## Policy Analysis

### State Law Considerations for Needle Exchange Programs

As previously mentioned in Chapter 1, Burris (2017) and the Centers for Disease Control (2017, September) proposed the following program components for NEP programs, which must be considered at the state level. Table 7 reflects the components which are in place in each state included in the research.

**Table 15**

*Needle Exchange Program Components by State*

Component	IL	IN	KY	MO	OH	TN	VA	WVA
Is the sale and distribution of drug paraphernalia prohibited by state law?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Does paraphernalia include syringes?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Does paraphernalia exclude any drug related equipment?	No	No	No	No	No	No	No	No
If paraphernalia includes syringes, are there any exceptions for disease prevention?	Yes	Yes	Yes	No	No	Yes	Yes	No
If so, what are the exceptions (e.g., NEP	NEP	NEP	NEP	n/a	n/a	NEP	NEP Pharmacy	n/a

Component	IL	IN	KY	MO	OH	TN	VA	WVA
use, medical purposes, etc.)?								
Are the sale of syringes regulated by state law?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Is a prescription required for the purchase of syringes?	Yes	No	No	No	No	No	No	No
If so, is there a minimum number of syringes that can be obtained without a prescription?	<100	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Can syringes only be sold through a pharmacy?	Yes	Yes	Yes	No	Yes	Yes	Yes	No
What information is the buyer required to provide to purchase syringes?	No	Name Address	Name Address Purpose	n/a	No	Purpose	Name Address Purpose	n/a
Does state law prohibit NEPs?	No	No	No	No	No	No	No	No
Does a NEP require local approval?	No	Yes	Yes	No	No	No	No	Yes
Are NEPs required to operate a one-to-one	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes



Component	IL	IN	KY	MO	OH	TN	VA	WVA
exchange for syringes?								
Are syringe starter sets permitted?	No	No	No	No	No	No	No	No

In reflecting on the relevant considerations that Burris (2017) and the Centers for Disease Control (2017, September) suggest when considering a NEP, 100% of the states prohibit the sale and distribution of drug paraphernalia, the definition of paraphernalia includes syringes and there are no exclusions to paraphernalia with regards to drug use equipment. Nearly 38% of the states do not exclude syringes from the definition of paraphernalia based on disease prevention. Those states that do offer an exclusion based on disease prevention allow syringes for NEP use. Illinois is the only state that requires a prescription for syringes for more than 100. Missouri and West Virginia allow syringes to be sold in other settings than a pharmacy. Fifty percent (50%) of states require some form of information from the buyer when purchasing syringes. All of the states examined allow NEPs and almost 38% require local approval to operate. One-hundred percent (100%) of states require a one-for-one exchange and do not permit starter sets.

### **Policies Impacting Females Who Use Drugs**

A list of policies has been compiled which impact females who use drugs are outlined in Table 16. Policy data was collected through an extensive internet search.

**Table 16**

*Policies Impacting Females Who Use Drugs by State*

Policy	IL	IN	KY	MO	OH	TN	VA	WVA
Legal Policies/Laws								
Substance abuse during	No	No	No	No	No	Yes	No	No

Policy	IL	IN	KY	MO	OH	TN	VA	WVA
pregnancy is a crime								
Substance abuse during pregnancy is child abuse	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Females have been prosecuted for drug use during pregnancy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Drug charge may impact child custody and visitation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State has felony 3 strikes law	No	Yes	No	No	No	Yes	Yes	No
State has habitual offender law	No	Yes	No	No	No	Yes	No	No
Drug Testing and Treatment								
Drug testing is required if drug use during pregnancy is suspected	No	No	Yes	No	No	No	No	No
Drug use diagnosed or suspected during pregnancy state requires reporting	Yes	No	Yes	No	Yes	No	Yes	No
Drug use during pregnancy considered grounds for civil commitment	No	No	No	No	No	No	No	No
Drug treatment for pregnant females targeted	No	Yes	Yes	No	Yes	Yes	Yes	No
Pregnant females given priority access in general treatment programs	Yes	No	Yes	Yes	Yes	Yes	No	No

Policy	IL	IN	KY	MO	OH	TN	VA	WVA
Pregnant substance abusing females protected from discrimination in publicly funded drug treatment programs	Yes	No	Yes	Yes	Yes	Yes	No	No
Eligibility for Social Services and Other Services								
SNAP public assistance with drug charge	No	M <sup>1</sup>	M <sup>1</sup>	M <sup>1</sup>	No	M <sup>1</sup>	M <sup>1</sup>	Yes
TANF public assistance with drug charge	M <sup>1</sup>	M <sup>1</sup>	M <sup>1</sup>	Yes	Yes	M <sup>1</sup>	M <sup>1</sup>	Yes
Section 8 Housing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Social security	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Educational financial aid	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Voting after completing probation/parole	Yes	Yes	Yes	Yes	Yes	No	No <sup>2</sup>	Yes

<sup>1</sup>Modified ban

<sup>2</sup>Have to apply to be reinstated.

### ***Legal Policies/Laws***

Tennessee is the only state that makes it a crime to use drugs while pregnant. Tennessee and West Virginia do not consider drug use during pregnancy child abuse. All of the states have prosecuted females for drug use during pregnancy and drug use can impact child custody and visitation. Almost 38% of states have a federal felony 3-strikes law which requires a mandatory life sentence for anyone with a “serious violent felony who have two or more prior felony convictions” (Felonies.org, 2020, para. 9). Habitual offender laws are in place in Indiana and Tennessee and may increase the penalty received for being convicted of a crime regardless of the seriousness of the offense.

### ***Drug Testing and Treatment***

Kentucky requires drug testing of babies born to females who have reported or are suspected of drug use. Fifty percent (50%) of states require the reporting of pregnant females who have been diagnosed or are suspected of using drugs. None of the states have the authority to use civil commitment for drug use while pregnant. Nearly 63% of states target pregnant females for drug treatment and provide them priority access to treatment. Discrimination of substance abusing females is prohibited in almost 63% of states.

### ***Eligibility for Social Services and Other Services***

In examining social services such as Supplemental Nutrition Assistance Program (SNAP) benefits, females convicted of a drug charge are not eligible in Illinois and Ohio. Five states offer a modified ban on receiving SNAP benefits. Modified bans allow states to impose eligibility restrictions which may include requiring drug testing, drug treatment participation, etc. (NCSL, 2019). Five states have a modified ban on the receipt of Temporary Assistance for Needy Families (TANF) with a drug conviction. All of the states allow females who have a drug conviction to be eligible for Section 8 Housing. Those who have been convicted of producing methamphetamine in federally assisted housing are ineligible for Section 8 Housing (hirefelons.org, 2021). In all states females who have been convicted of a drug charge are eligible to receive social security and educational financial aid. A convicted substance abusing female will lose their voting rights in Tennessee. Virginia allows for reinstatement of voting rights through an application process.

This chapter reflects a detailed analysis on NEP service provider opinions related to barriers, facilitators and services that promote or impede NEP usage by FWID. The qualitative data provides additional insights and confirms some of the quantitative findings. The policy analysis focuses on the extent to which policies in each state are consistent with recommended best practices. Chapter V contains a detailed discussion of the research findings and their implications for practice, policy and research.

## CHAPTER V

### DISCUSSION AND CONCLUSION

#### **Overview**

While research has shown NEPs are an effective tool in combatting the health effects of injection drug use, little is known about females and their utilization of this service (Mills, 2015; Bowen, 2012; Knox, 2012; Kerr et al., 2010; Villarreal & Fogg, 2006; Wodak & Cooney, 2004). Historically, much of the information examining individuals who inject drugs is “gender neutral or male focused” (UNODC, 2014). If studies do recognize gender as part of the drug culture, “females’s experiences still lag behind males’s in research around drugs” (Ettorre, 2004).

The purpose of this exploratory research was to investigate service provider perspectives on barriers and facilitators to needle exchange program participation by females who inject drugs (FWID). This chapter includes a discussion of major findings based on the research questions within the context of the extant literature, limitations of the research and implications for practice, policy and research as they relate to needle exchange program usage by females who inject drugs. The research questions are outlined below.

#### Organizational Questions

- What are the barriers and facilitators to NEP participation by females who inject drugs?
- What NEP service delivery approaches may hinder and/or facilitate use by females who inject drugs?

#### Practice Questions

- What services are currently available for females at NEPs?
- What additional service needs do females have that could be offered by NEPs?

### Policy Questions

- How do NEP service delivery approaches vary by state?
- What are the policies related to NEPs by state?
- What state NEP policies may promote and hinder the use of NEPs by females who inject drugs?

The theoretical frameworks which were used to help explain NEP utilization by FWID include: (a) exchange theory; (b) the health belief model; and (c) feminist theory and intersectionality. Factors which promote or impede usage are often a combination of NEP organizational, practice and policy characteristics which are rooted within these frameworks.

### **Interpretation of Research Findings**

Barriers and facilitators to NEP usage were examined overall, and then explored for differences based on respondent characteristics, which included Kentucky versus non-Kentucky, employee type (health department versus non-health department), NEP type (fixed location versus other location types) and NEP location (urban versus rural). Table 17 provides a directional summary to remind the reader of the barriers and facilitators that had a statistically significant difference in perceptions based on chi-square testing. While detailed results were reported in the prior chapter, this discussion will highlight the extent to which these items are consistent with existing research or represent a significant new contribution to the literature. Differences based on the NEP location (urban versus rural) was associated with the largest number of barriers and facilitators.

**Table 17**

*Chi-square Summary of Barriers and Facilitators to Needle Exchange Program Use*

Barriers	KY vs. Non-KY	Employee Type (Health dept. vs. non-health dept.)	NEP Type (Fixed NEP vs. other NEP types)	NEP Location (Urban vs. rural)	
Staff are community members	KY	Health Dept.	Other NEP types	Rural	
Staff turnover	Non-KY			Urban	
Availability of a parking space	Non-KY			Urban	
Accessibility of public transportation	KY			Rural	
Availability of supplies	Non-KY			Urban	
Registration of clients					
Gender of staff					
Race/ethnicity of staff				Other NEP types	Urban
Mobile unit services				Other NEP types	
Client concern regarding punitive action				Fixed NEP	
Availability of childcare		Fixed NEP	Rural		
Facilitators	KY vs. Non-KY	Employee Type (Health dept. vs. non-health dept.)	NEP Type (Fixed NEP vs. other NEP types)	NEP Location (Urban vs. rural)	
Staff are community members	Non-KY	Non-health dept.	Fixed NEP	Urban	
Accessibility of public transportation				Urban	
Availability of supplies				Urban	
Gender of staff				Urban	
Race/ethnicity of staff				Urban	
Law enforcement involvement				Non-health dept.	
Availability of a parking space					Fixed NEP
Quality of supplies					Fixed NEP



Staff knowledge regarding services provided			Fixed NEP	
Availability of male condoms			Fixed NEP	
Number of supplies females can receive weekly			Fixed NEP	
Level of community support for a harm reduction program				Urban

***Barriers to Needle Exchange Program Participation***

The majority of the usage barriers identified by the current study are consistent with what had already been established in NEP and other research literature (except the availability of supplies and the availability of a parking space). It should be noted that most of the research is not gender specific, except the availability of childcare. It was surprising that the availability of a parking spot was identified as an obstacle. While no other NEP research was located addressing this factor, several international healthcare studies found parking was a barrier to care and created patient stress (Shaheen, et al., 2020; McGrath, 2015; Kale, 2012). While a parking space may seem like a trivial issue, the more difficult it is to obtain NEP services the less likely a FWID will utilize the service. This was particularly true for urban versus rural sites, and certain states which may also be associated with where their NEPs were located.

Urban and rural areas each face their own challenges and a closer examination of barriers by location (urban and rural) revealed respondents from urban sites identified slightly more obstacles to NEP usage compared to rural sites. Current findings mirror existing literature regarding research with nongender-specific samples, except the availability of childcare. An example of a barrier identified by rural respondents was the

availability of childcare. This has been shown to be one of the largest barriers females face in obtaining social services (MacMaster, 2013; Jackson & Shannon, 2012; Tuchman, 2010). Many females in rural areas often live in poverty and/or may be unemployed. Therefore, the financial resources needed to pay for childcare are often limited. NEPs typically do not allow children to be present with the client and therefore females in rural areas face tough decisions regarding NEP utilization.

While urban areas may offer a variety of services, it is often problematic to access services due to operating hours. This finding underscores the importance of acknowledging that barriers exist in urban areas which appear to be somewhat overlooked in the research.

Race/ethnicity of staff was acknowledged as a barrier across two respondent types. Urban respondents viewed this as more of a barrier than rural respondents. In a recent drug treatment study, it was determined that while clients and counselors may be the same race and/or gender there were variables such as acculturation that impacted client engagement and completion of treatment (Scoles, 2020). While no NEP research was located on this topic, drug treatment studies have produced varied retention outcomes when clients were matched with staff of the same race and gender (Sterling, Gottheil, Weinstein & Serota, 2001; Sterling, Gottheil, Weinstein & Serota, 1998; Beutler, Zetzer & Yost, 1997). A 2007 correctional drug treatment study emphasized staff should be reflective of the population they are serving (Covington & Bloom, 2007). A prison study found Black inmates had higher rates of behavioral issues compared to other races, but issues decreased when staff were Black (Wade-Olson, 2016). A community court study found the racial makeup of court staff was beneficial in supporting a

therapeutic relationship with non-white defendants (Connor, 2020). Based on the varied results, further research on this topic should be considered.

### ***Facilitators to Needle Exchange Program Participation***

Perceptions regarding the extent to which the availability of supplies was viewed as a facilitator in two of four respondent categories, suggesting that this programmatic feature may be greatly influenced by context. Former research has not examined this factor. Further study of this is warranted.

Respondents from urban locations identified the largest number of facilitators to NEP usage. The majority of facilitators identified are well documented throughout the NEP literature. It should be noted, however, that prior NEP research has not focused on females specifically which is an important contribution made by the current study.

Accessibility to public transportation was viewed as both a facilitator and a barrier. NEPs located near or on the public transportation system allows for accessible services. A recent study on primary care usage by persons who inject drugs found convenient transportation contributed to the receipt of care (Motavalli, et al., 2021). A facilitator to HCV treatment adherence among persons who inject drugs was also found to be transportation (Rich, et al., 2016).

Urban NEP respondents viewed community support for harm reduction programs as more of a facilitator compared to rural respondents. Community support for harm reduction programs has been well documented in the literature and is critical to program operations (Davis, et al., 2018; Downing, et al., 2005, Sherman & Purchase, 2001; Henman, et al., 1998). Some believe NEPs promote continued drug use and therefore, buy-in from key community partners is necessary (Davis, et al., 2018). Even with buy-in,

current drug paraphernalia and syringe laws are viewed as contradictory to NEP operations and often cause confusion and frustration for clients, law enforcement and community members.

### **Service Delivery Approaches**

While fixed locations are an important approach to NEP service delivery, these locations often have usage barriers such as accessibility to public transportation, lack of client parking and fear of punitive action as identified by the current research. Varied models of needle exchange program delivery are designed to increase utilization and improve access for persons who inject drugs (Strike, Challacombe, Myers & Millson, 2002). Sixty (60%) of respondents reported they offer mobile unit services. When service data was examined by respondent characteristics, health department staff endorsed the need to offer mobile unit services. This was also confirmed throughout the qualitative data. The findings are consistent with the NEP research literature and indicates respondents understand there are accessibility issues that may be overcome through the use of mobile units. Research on mobile NEP usage has been examined by gender in conjunction with offering additional services such as reproductive health (Moore, et al., 2012).

### **Services for Females**

Since this study contributes to the evidence base regarding facilitators and barriers to NEP usage by FWIDs specifically, results regarding services of particular relevance to females are particularly notable. In examination of the descriptive statistics, drug treatment referrals were the most common service provided which is consistent with the

mission of a NEP. Human trafficking literature and PrEP for HIV were the services selected by the largest number of respondents that should be offered.

### *Service Composite Scores*

When differences of composite scores were examined by respondent characteristics the educational services score showed no statistically significant differences. The healthcare services score (HSS) revealed rural NEPs in Kentucky with health department employees have a higher composite score. This finding is reflective of the study respondents which is comprised of a large portion of health department employees from rural areas of Kentucky and therefore may not reflect a more generalized difference in comprehensiveness of services in rural locations. Health department employees comprise over 62% of the Kentucky respondents. Kentucky respondents from rural areas comprised three and a half times more of the respondents than respondents from urban areas. Therefore, it is determined that while there were statistically significant differences the information has limited relevance given the numbers of respondents within each respondent characteristic.

The specialized needle exchange program score (SNS) and basic needs score (BNS) showed non-health department respondents provide more comprehensive specialized and basic needs services compared to health department respondents. This may reflect that NEPs which are not affiliated with a health department view the NEP as a more holistic service compared to a health department affiliated NEP. This does not mean that NEPs operated by the health department do not view these services as important but their sites appear to follow the traditional mission of a health department.

The HSS confirmed this and reflected health department respondents provided a more comprehensive array of healthcare services such as STI/STD testing and tetanus shots.

### ***Service Delivery Approaches by State***

Service delivery approaches varied across states and included fixed and mobile sites. Other delivery approaches mentioned by two respondents in the qualitative data included an after-hours drop box and persons delivering supplies on foot with a backpack. Both methods are consistent with the NEP research literature (Montigny, Moudon, Leigh & Young, 2010; Herbert, et al., 2008; Riley, et al., 1998). Research findings will be summarized and disseminated back to the NEP staff from participating sites. Key data will be provided which may useful to NEP operational decision-making.

### **Needle Exchange Program Policies by State**

In order to examine state policy, the the needle exchange program best practice components developed by Burris (2017) and the Center for Disease Control (2017, September) to eliminate barriers to NEP access were used. It is notable that policies in the studied states are inconsistent with several of these best practice recommendations. All states included in the study have drug paraphernalia laws which include syringes and have been a source of confusion when applied to needle exchange programs. Two states (Missouri and West Virginia) do not allow exceptions to drug paraphernalia laws for disease prevention and allow the purchase of syringes through sites that are not affiliated with a pharmacy. Both states made the news this year with substantial legal changes related to NEPs. In May 2021, a Missouri bill legalizing NEP operation was passed, and therefore the law related to syringe exception for disease prevention may be revised as a result (Associated Press, 2021). In April 2021, West Virginia enacted a law that required

NEP clients to show photo identification to access services, labeled syringes are linked to clients and only a one-for-one exchange is permitted (Associated Press, 2021). Within the qualitative data, a respondent provided feedback on current NEP policy and stated “No ID . . . don’t need an ID to vote, but need an ID to get supplies that may save a life. Absurd.”. Based on the tightening of the laws in West Virginia surrounding NEPs, it could be assumed that the syringe exception for disease prevention will not be revised and the syringe purchasing laws may also change. The West Virginia law restricts access to NEPs and clean syringes and is contradictory to suggested best practices.

### ***Policies that Promote or Hinder Needle Exchange Program Use***

Needle exchange program usage is encouraged through current laws which allow for syringes to be excluded from the definition of drug paraphernalia for disease prevention and NEP use. Persons who inject drugs can utilize the NEP to obtain sterile syringes hopefully without fear of legal prosecution. Syringe prescription laws also promote NEP usage given syringes are available for purchase without a prescription. FWID may not have the money to purchase syringes and use the NEP where they can be obtained at no cost.

The majority of policies reviewed as part of this study hinder NEP utilization, such as the sale of syringes, are regulated by state law in all of the studied states. Many identified barriers in this study support those noted in previous research including: (a) confusion surrounding the drug paraphernalia laws; (b) one-to-one exchange; and (3) NEP operational days and times, all of which are consistent with prior research (Fernandez-Vina, et al., 2020; Mgbere, et al., 2015; State ex Rel Atlantic County, 2005; Beletsky, Macalino & Burris, 2005; Davis, et al., 2005; Kerr, et al., 2005; Bluthenthal, et

al., 2004; Doe, 2001; Heimer, et al., 1998; Spokane County, 1992). Newly identified barriers include the availability of a parking space and the availability of supplies

The policy analysis found mandatory drug testing, restrictive treatment and eligibility policies related to social services may also impact NEP use as well as healthcare service utilization more broadly. It is important to note there are consequences for children related to the nutritional assistance program and TANF policies if a FWID has had a drug conviction. Longitudinal research should be conducted on policies related to FWID with a drug charge and the consequences on her children.

### **Limitations of the Research**

There are limitations to this study that must be acknowledged. Purposive sampling was employed which is often susceptible to researcher bias and generalizability may be limited (Etikan, Musa & Alkassim, 2016). Individual state policies vary on drug laws and NEPs which may impact results related to perceptions of facilitators and barriers to NEP use. Additionally, the states included in the research are at the height of the opioid epidemic and this may also impact current policy (NIDA, 2020). The barriers, facilitators and services identified by this sample may not be representative of the overall population of needle exchange program staff across the United States.

It is also important to acknowledge that this study is based on the opinions of treatment providers and not female clients of the NEP. While the perceptions of staff are relevant, future research should focus on FWID and their lived experience to better understand the facilitators and barriers to NEP utilization. In order to truly understand what may facilitate or hinder NEP usage by FWID, they, themselves, are the ultimate



source of information, despite difficulties gaining access to this population. The extent to which perceptions of service providers may differ from those of FWID is unknown.

During the development of this study, it was determined there was not a validated survey instrument available for use, and therefore one had to be created. A review of the survey results indicated several revisions should be made to the instrument which include: (a) definitions should have been provided with the phrasing of the categories in the services section because skip patterns can be difficult in paper surveys and result in high error rates (Dillman, Smyth & Christian 2014); (b) the visual design elements of both the web and paper survey need to be improved due to the impact of how respondents process questions (Dillman, Smyth & Christian 2014); (c) identical variables were used in both the examination of barriers and facilitators, which resulted in some redundancy as they can be interpreted as two sides of the same coin; (d) self-administered survey measurement differences may have been impacted by the primacy and recency of the response options given the length of the variable lists respondents were asked to provide feedback on (Dillman, Smyth & Christian 2014); and (e) the survey lends itself to potential respondent fatigue in which the quality of the data provided may have been impacted and may require a decrease in the amount of information being collected (Revilla & Ochoa, 2017 B2B International, n.d. Bogen, n.d.). These instrumentation issues may have influenced study results to some degree.

Another limitation of a self-administered survey is that there is a possibility that the intended respondent did not personally complete the survey or may have had assistance with its completion (Coughlan, Cronin & Ryan, 2008). This can further impact the sampling error and the “representativeness of the sample” which is already

viewed as problematic when using a convenience sample (Coughlan, Cronin & Ryan, 2008, p. 2; Kelley, Clark, Brown and Sitzia, 2003).

The qualitative data should be viewed with caution. Rather than providing additional information not included in the survey instrument, many used the open-ended questions to discuss some of these existing items. Because of this, there was an inability to gather more robust qualitative data on factors that may impact utilization not already present in the literature. However, some of the qualitative data lent further support to the quantitative results.

A more extensive piloting of the survey could have resulted in decreased measurement error, identification of unnecessary questions and detection of issues with item comprehension as mentioned above. The pilot could have also included potential respondents in addition to experts in the field (Ruel, Wagner & Gillespie, 2016). Additionally, during this process an individual debriefing with each respondent to solicit additional feedback on the survey may have been useful in preventing instrumentation limitations (Ruel, Wagner & Gillespie, 2016).

An example of differences related to respondent interpretation was found in the services section of the survey. Respondents indicated if a service listed was offered, not offered or should be offered. Directions asked that if respondents indicated a service was not offered and believed it should be offered to select should be offered. Some of those that selected they offered the service as well as those that stated the service was not offered responded the service should be offered. Measurement of whether services were offered should have been separated from measurement of perception of what services should be offered for clarity purposes and ease on the respondent.

While surveys were received from all states included in the study except Virginia, the survey response rate was still over 50%. It is not known why no surveys were submitted by staff from Virginia NEP sites. Providing a token of appreciation with each survey request may have yielded a higher response rate but was not feasible due to limited fiscal resources (Dillman, Smyth & Christian 2014). Despite these limitations, this study does contribute to the literature on NEPs, particularly as relates to usage by FWID.

### **Implications for Practice, Policy and Research**

#### ***Practice***

NEPs may provide a comprehensive, integrative approach to prevent the harms associated with injection drug use (Gibson, et al., 2011; Blome, et al., 2011; MacNeil & Pauly, 2010; Azim, et al., 2008; Wood, et al., 2007; MacDonald, et al., 2003; Rabound, et al., 2003, Belanger, et al., 2002). They are also a key form of outreach to a population that is difficult to reach due to stigma and fear of law enforcement (Brown, et al., 2016; Philbin & FuJie, 2014; Roberts, et al., 2010; Beletsky, et al., 2010; Klein, 2007; Treloar & Cao, 2005). NEPs have the ability to make a positive impact on the life of FWID (Islam, et al., 2013; Moore, et al., 2012; Riley, et al., 2002; Miller, et al., 2001; Hay & McKeaney, 2001; Brienza, et al., 2000; Brahmhatt, Bigg & Strathdee, 2000). The study results paint a picture of what a NEP could do to increase utilization by FWID, a previously understudied population. Qualitative results suggest that targeted outreach to females needs to be conducted which should include the development of collaborative partnerships with community organizations and law enforcement. Regular outreach should be conducted at shelters, areas with high sex work and drug use statistics. These

types of initiatives have the ability to increase NEP utilization by all persons who inject drugs.

This study, unlike most existing NEP literature, was focused on FWID. When respondents were asked about offering female only services, a mixed response was received. It may be that NEP staff do not believe it is needed but FWID would like to see this service available. Further research with FWID is needed on this topic.

Certainly some of the results may not be unique to female clients. Research results which could be applied across all NEPs include offering mobile unit services, placing NEP sites close to or on public transportation routes and offering NEP client parking. Community support and positive law enforcement involvement could improve utilization. This will require extensive time and relationship building but can empower FWID and decrease stigma. Law enforcement agencies need to be educated on the positive outcomes NEPs produce and the impact their relationship has on NEP utilization. NEP staff should make clients feel welcome, be knowledgeable regarding services offered and reflect the gender and race/ethnicity of NEP clients. Mechanisms should be developed to decrease NEP staff turnover. There should also be consistent availability of quality supplies including male condoms. Childcare or a monitored child waiting area should be available for persons who inject drugs when using the NEP. Clients should not be fearful of children being removed from their custody or legal consequences for NEP use. The findings confirm prior research and should be considered by programs.

### ***Policy***

Policies that promote or hinder NEP use were discussed earlier in this chapter, including drug paraphernalia laws and the one-to-one exchange rule. It should be

acknowledged that all states included in the research had several of the recommended NEP components that were not followed. For example, state policies regarding the purchasing of syringes from pharmacies and whether a prescription is required were not consistent with practices and policies recommended by the CDC (2017, September) and others (Burris, 2017). These best practice components should be considered in order for states to maximize the positive outcomes NEPs may yield.

The policy analysis highlighted concerns associated with the criminalization of drug use during pregnancy. This policy nearly doubled across the United States between 2000 and 2015 (Faherty, et al., 2019). Policy makers hoped this policy would protect the neonate, discourage females from using drugs and encourage them to seek treatment. A recent study examining states that criminalize drug use during pregnancy found there were higher odds of neonatal abstinence syndrome (NAS) (Faherty, et al., 2019). The policy has been shown to deter females who use drugs from seeking medical care if they are of reproductive age, pregnant or recently had a child (Gressler, Shah & Shaya, 2019; Patrick & Schiff, 2017; Angelotta, C., Weiss, Angelotta, J. & Friedman, 2016; Krans & Patrick, 2016; Roberts & Pies, 2011).

Criminalization of drug use during pregnancy may detract from NEP usage because the FWID may fear being reported. Pregnant females who use drugs should be encouraged to use a NEP and staff need to educate clients on their role and the role of the NEP. A NEP client Bill of Rights may be beneficial to promote awareness and emphasize that an NEP is a safe place for FWID.

NEP staff can be a conduit to promote prenatal care so both mother and child have the opportunity for better health outcomes (Moore, et al., 2012). Prenatal services

may be a gateway into treatment. The female should be referred to a family friendly residential drug treatment program that specializes in NAS. While these services would be costly, it may not be as costly as continuing to incarcerate females who use drugs while pregnant and placing their children in foster care.

Three states (Indiana, Kentucky and West Virginia) require local approval of a NEP to operate. This can be problematic for areas that have a high infectious disease rate due to injection drug use and do not have the community support for a harm reduction program. This gives the local population enormous power related to an issue that can impact lives outside their area. In Indiana, a NEP is allowed to operate for two years and can be renewed or terminated by the local government (Associate Press, 2021). In June, 2021 Scott County, Indiana commissioners voted to close the NEP at the end of the year, which curtailed the largest HIV outbreak caused by injection drugs in U.S. history (Bruce, 2021). Local approval may negatively influence availability of this service due to the lack of information and bias, when research has demonstrated NEPs are effective (Nguyen, et al., 2014; Knittel, Wren & Gore, 2010; Holtzman, et al., 2009; Hue, et al., 2006; MacDonald, et al., 2003; Laufer, et al., 2001; Hagan & Thiede, 2000; Hagan, et al., 2000). If there is a validated need which can impact the health and safety of the population, states should have the ability to implement a NEP. The Scott County NEP closure is an example of a community that has been positively impacted by this service and two county commissioners were given the ability to impact an unprecedented number of lives (Cafardi & Feinberg, 2021; Gonsalves & Crawford, 2018; Janowicz, 2016). The current study contributes an array of information that could inform revision of individual state policies regarding NEP structures and practices.

## ***Research***

While surveying the NEP providers yielded worthwhile data, additional research on barriers and facilitators to NEP usage needs to be conducted with FWID. Further studies should include FWID that have not used a NEP to understand barriers to participation and service needs.

Additional research should examine barriers, facilitators and services based on NEP location (urban and rural) since each present different challenges as suggested in the current study, but it is unclear the extent to which these data were skewed by the rural nature of the sample. Further research into urban/rural differences in factors associated with utilization will allow for the modification of services which can assist in decreasing the spread of infectious diseases within a hard to reach population. Research has shown drug treatment services should be designed to address the needs of females (Jemal, Gunn & Inyang, 2020; Grace, 2017; Covington, Burke, Keaton & Norcott, 2011). NEP services also need to be designed to meet the needs of females who inject drugs.

Future research should also explore strategies for offering basic medical services at NEPs not affiliated with a health department. Several medical services such as STI/STD testing and vaccinations/immunizations were found to be services that respondents believed should be offered. This could yield an opportunity to create several types of collaborative models and evaluate their effectiveness.

The relationship between specific factors associated with accessibility to NEPs and health outcomes needs further study. Research on accessibility barriers should be of utmost importance given the impact it has on NEP utilization. For example, research should examine NEP utilization based on location and proximity to public transportation.

Additionally, parking at NEP sites warrants further exploration based on the current research findings. As previously mentioned, this has been examined in the use of healthcare services and yielded fruitful recommendations (Shaheen, et al., 2020; McGrath, 2015; Kale, 2012).

NEP outreach campaigns toward FWID need to be assessed to determine if they increase utilization. Effective and ineffective messaging and recruitment strategies deserve study. Data should be collected from both NEP participants and non-participants in order to inform the field on factors associated with program usage decisions.

Outcomes research on NEPs and FWID should assess the relative impact of facilitators, barriers, and services and their relationship to service needs and utilization, frequency of NEP use and NEP program satisfaction. For example, a randomized study could be conducted to examine outcomes associated with one-to-one versus unlimited exchange policies. This would allow for examination of differences in the number of syringes distributed, types of drugs used, syringe sharing practices and health status.

Based on the policy analysis, research on pregnant FWID should be conducted to examine the impact these policies have had on the clients, as well as the criminal justice and healthcare systems. Characteristics of this population need to be further explored to examine their service needs and barriers and facilitators to NEP use. Pre-pregnancy, during pregnancy and post pregnancy NEP usage, injection/sharing practices and health status should also be examined.

## **Conclusion**

Findings from this study indicate there are multiple barriers to and facilitators of NEP utilization for FWID. Identified environmental and policy factors viewed through



feminist intersectionality theory reflect a highly punitive and repressive environment toward FWID. The failed “war on drugs” has shown drug use should be viewed through a public health lens of treatment and prevention that acknowledges the value of these outcomes for FWID, their families and the community (The Lancet, 2001). Efforts to provide needed services and address current issues will require NEP staff, community partners, politicians and law enforcement to work collaboratively to create viable solutions, if decreasing infectious diseases and creating better health outcomes for FWID is of importance. This will no doubt be an arduous task but can be an impactful practice which will yield a plethora of positive outcomes for both the FWID and her community. There is a continued need for research on FWID, NEPs and drug policy if we want to implement gender responsive harm reduction programs. Increasing the number of NEPs across the United States and connecting FWID to this service is essential if we are going to decrease the infectious disease rates within this population.

## REFERENCES

- Abdala, N., Reyes, R., Carney, J.M. & Heimer, R. (2000). Survival of HIV-1 in syringes: Effects of temperature during storage. *Substance Use Misuse*, 35(10); 1369-1383.
- Aceijas, C., Stimson, G.V., Hickman, M., & Rhodes, T. (2004). Global overview of injecting drug use and HIV infection among injecting drug users. *AIDS*, Volume 18.
- Allen, K. (1994). Development of an instrument to identify barriers to treatment for addicted females from their perspective. *International Journal of Addictions*, 29(4). 429-444.
- American Sociological Association (ASA). (n.d.). Charles H. Cooley. Retrieved from <http://www.asanet.org/about-asa/asa-story/asa-history/past-asa-officers/past-asa-presidents/charles-h-cooley>
- AMFAR, The Foundation for AIDS Research. (2013, March). Fact sheet. Retrieved from [https://www.amfar.org/uploadedFiles/amfarorg/Articles/On\\_The\\_Hill/2013/fact%20sheet%20Syringe%20Exchange%20031413.pdf](https://www.amfar.org/uploadedFiles/amfarorg/Articles/On_The_Hill/2013/fact%20sheet%20Syringe%20Exchange%20031413.pdf)
- Angelotta C., Weiss, C.J., Angelotta, J.W., & Friedman, R.A. (2016). A moral or medical problem: the relationship between legal penalties and treatment practices for opioid use disorders in pregnant females. *Womens Health Issues*, 26 (6):595-601.
- Associated Press. (2021, July 16). Judge scraps order halting West Virginia needle exchange law. Retrieved from <https://newyorkdaily247.com/2021/07/judge-scraps-order-halting-west-virginia-needle-exchange-law/>
- Aumndsen, E.J., Eskild, A., Stigum, H., Smith, E. & Aalen, O.O. (2003). Legal access to needles and syringes/needle exchange programs versus HIV counseling and testing to prevent transmission of HIV among intravenous drug users. *European Journal of Public Health*, 13; 252-258.
- Azim, T., Bontell, I. & Strathdee, S.A. (2015). Females, drugs and HIV. *International Journal of Drug Policy*, Volume 26.
- Azim, T., Chowdhury, E.I., Reza, M., Faruque, M.O., Ahmed, G., Khan, R., Rahman, M., Pervez, M.M., Jana, S. & Strathdee, S.A. (2008). Prevalence of infections, HIV risk behaviors and factors associated with HIV infection among male injecting drug users attending a needle/syringe exchange program in Dhaka, Bangladesh. *Substance Use & Misuse*, 43; 2124-2144.
- B2B International. (n.d.) <https://www.b2binternational.com/research/methods/faq/questionnaire-length/>

- Bassetti, S. & Battegay, M. (2004). Staphylococcus aureus infections in injection drug users: Risk factors and prevention strategies. *Infection*, 32, No. 3.
- Bastos, F.I., Malta, M., Hacker, M.A., Petersen, M., Sudbrack, M., Colombo, M. & Caiaffa, W.T. (2006). Assessing needle exchange operations in a poor Brazilian community. *Substance Use & Misuse*, 41: 937-951.
- Belanger, D., Alary, M., Godin, G. & Bernard, P.M. (2002). Factors explaining the intention to use condoms among injecting drug users participating in a needle exchange program. *Journal of Applied Social Psychology*, 32, 5, pp. 1047 – 1063.
- Beletsky, L., Grau, L.E., White, E., Bowman, S. & Heimer, R. (2010). The roles of law, client race and program visibility in shaping police interference with the operation of U.S. syringe exchange programs. *Addiction*, 106, 357-365.
- Beletsky, L., Davis, C. S., Anderson, E., & Burris, S. (2008). The law (and politics) of safe injection facilities in the United States. *American journal of public health*, 98(2), 231–237.
- Beletsky, L., Macalino, GE. & Burris, S. (2005). Attitudes of police officers towards syringe access, occupational needle-sticks, and drug use: A qualitative study of one city police department in the United States. *Int J Drug Policy*, 16(4):267-274.
- Beutler, L.E., Zetzer, H., and Yost, E. (1997). Tailoring interventions to clients: Effects on engagement and retention. In L.S. Onken, J.D. Blaine, and J.J. Boren (Eds.), *Beyond the therapeutic alliance: Keeping the drug-dependent individual in treatment*. NIDA Research Monograph 165. Rockville, MD: U.S. Department of Health and Human Services. 85-109.
- Biana, H.T. (2020). Extending bell hooks' feminist theory. *Journal of International Females's Studies*, 21(1), 13-29.
- Blome, M.A., Bjorkman, P., Flamholc, L., Jacobsson, H., Molnegren, V. & Widell, A. (2011). Minimal transmission of HIV despite persistently high transmission of hepatitis C virus in Swedish needle exchange program. *Journal of Viral Hepatitis*, 18, 831 – 839.
- Bluthenthal, R.N., Ridgeway, G., Schell, T., Anderson, R., Flynn, N.M. & Kral, A.H. (2007). Examination of the association between syringe exchange program dispensation policy and SEP client-level syringe coverage among injection drug users. *Addiction*, 102, 638-646.

- Bluthenthal, R.N., Malik, M.R., Grau, L.E., Singer, M., Marshall, P. & Heimer, R. (2004). Sterile syringe access conditions and variations in HIV risk among drug injectors in three cities. *Society for the Study of Addiction*, 99, 1136-1146.
- Bluthenthal, R.N., Malik, M.R., Grau, L.E., Singer, M., Marshall, P., Heimer, R. (2004, September). Diffusion of benefit through syringe exchange study team. Sterile syringe access conditions and variations in HIV risk among drug injectors in three cities. *Addiction*, 99(9):1136-46.
- Bohan, J.S. (1993). Regarding gender. Essentialism, constructionism, and feminist psychology. *Psychology of Females Quarterly*, 17, 5 – 21.
- Bonar, E. & Rosenberg, E.B. (2011). Using the health belief model to predict injecting drug users' intentions to employ harm reduction strategies. *Addictive Behaviors*, 36, 1038-1044.
- Boundless. (26, May 2016). Differential association theory. Retrieved from <https://www.boundless.com/sociology/textbooks/boundless-sociology-textbook/deviance-social-control-and-crime-7/the-symbolic-interactionist-perspective-on-deviance-64/differential-association-theory-381-8939/>
- Bowen, E. A. (2012). Clean needles and bad blood: Needle exchange as morality policy. *Journal of Sociology & Social Welfare*, Volume XXXIX, Number 2.
- Brahmbhatt, H., Bigg, D. & Strathdee, S.A. (2000, September). Characteristics and utilization patterns of needle exchange attendees in Chicago: 1994 – 1999. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, Volume 77, Number 3.
- Brienza, R.S., Stein, M.D., Chen, M.H., Gogineni, A., Sobota, M., Maksad, J., Hu, P., & Clarke, J. (2000). Depression among needle exchange program and methadone maintenance clients. *Journal of Substance Abuse Treatment*, 18; 331-337.
- Browne, T., Priester, M.A., Clone, S., Iachini, A., DeHart, D. & Hock, R. (2016). Barriers and facilitators to substance use treatment in the rural south: A qualitative study. *The Journal of Rural Health*, 32; 92-101.
- Bruce, G. (2021, July 7). This Indiana needle exchange program was a big success – before officials killed it. Center for Health Journalism. University of Southern California. Retrieved from <https://centerforhealthjournalism.org/2021/07/06/indiana-needle-exchange-program-was-big-success-officials-killed-it>
- Bryant, J. & Treload, C. (2008). Initiators: An examination of young injecting drug users who initiate others to injecting. *AIDS Behavior*. 12(6):885-890.

- Bryant, J. & Treload, C. (2007). The gendered context of initiation to injecting drug use: Evidence for females as active initiates. *Drug Alcohol Rev.* 26; 287-293.
- Burla, L., Knierim, B., Barth, J., Liewald, K., Duetz, M. & Abel, T. (2008, March/April). From text to codings. *Nursing Research*, Vol. 57, No. 2.
- Burris, S.B. (2017, July). Syringe distribution laws. The Policy Surveillance Program. Retrieved from [lawatlas.org/datasets/syring-policies-laws-regulating-non-retail-distribution-of-drug-parapherna](http://lawatlas.org/datasets/syring-policies-laws-regulating-non-retail-distribution-of-drug-parapherna)
- Cafardi, J. & Feinberg, J. (2021). Chapter 2 - The case of Scott County: Injection drug use and the HIV and hepatitis C virus outbreak, Editor(s): Brianna L. Norton, *The Opioid Epidemic and Infectious Diseases*, Elsevier, pages 11-24.
- Cambridge Dictionary. (2020). Intervention. Retrieved from <https://dictionary.cambridge.org/us/dictionary/english/intervention>
- Carastathis, A. (2014). The concept of intersectionality in feminist theory. *Philosophy Compass*, 9/5; 304-314.
- Centers for Disease Control. (2020, April 16). Hepatitis A. Retrieved from <https://www.cdc.gov/hepatitis/hav/index.htm>
- Centers for Disease Control. (2020, April 7). Nonfatal drug overdoses. Retrieved from <https://www.cdc.gov/drugoverdose/data/nonfatal.html>
- Centers for Disease Control. (2020, March 24). America's drug overdose epidemic: Data to action. Retrieved from <https://www.cdc.gov/injury/features/prescription-drug-overdose/index.html>
- Centers for Disease Control. (2019, August 6). PEP. Retrieved from <https://www.cdc.gov/hiv/basics/pep.html>
- Centers for Disease Control. (2019, June 17). Medication-assisted treatment for opioid use disorder study (MAT study). Retrieved from <https://www.cdc.gov/opioids/Medication-Assisted-Treatment-Opioid-Use-Disorder-Study.html>
- Centers for Disease Control. (2018, March 9). HIV among females. Retrieved from <https://www.cdc.gov/hiv/group/gender/females/index.html>
- Centers for Disease Control. (2018, January 11). HIV in the United States by geography. Retrieve from <https://www.cdc.gov/hiv/statistics/overview/geographicdistribution.html>

- Centers for Disease Control. (2017, December 19). Drug overdose death data. Retrieved from <https://www.cdc.gov/drugoverdose/data/statedeaths.html>
- Centers for Disease Control. (2017, September 27). Law related to drug paraphernalia. Retrieved from [www.cdc.gov/hepatitis/policy/DrugParaphernalia.htm](http://www.cdc.gov/hepatitis/policy/DrugParaphernalia.htm)
- Centers for Disease Control and Prevention. *Principles of Community Engagement*. 2. Washington, DC: NIH Publication; 2011
- Centers for Disease Control. (2001, June). HIV and AIDS – United States, 1981-2000. Retrieved from <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5021a2.htm>
- Charmaz, K. (2014). *Constructing grounded theory* (2<sup>nd</sup> ed). London: Sage.
- Cho, S., Crenshaw, K.W. & McCall, L. (2013, Summer). Toward a field of intersectionality studies: Theory, applications, and praxis. *Signs*, Vol. 38, No. 4.
- Chun, J.J., George, L. & Young, S. (2013). “Intersectionality as a Social Movement Strategy: Asian Immigrant Females Advocates.” *Signs*, 38(4): 917–40.
- Conley, P., Hewitt D., Mitic W., Polin C., Riley D., Room R., Sawka E. et al. (1998) Harm reduction: concepts and practice [On-line]. Available: <http://www.ccsa.ca/wgharm.htm>
- Connor, T.A. (2020, August 7). Community courts and race: An examination of community court judges, staff and racial dynamics. *Race and Justice*.
- Conrad, C., Steffen, T. and Gutzwiller, F. (2000) Die Entwicklung von Hauterkrankungen bei intravenösen Drogenabhängigen in der heroingestützten Behandlung. *Schweiz Rundsch. Med Prax*; 89: 1899–1906.
- Cooper, H.L., Brady, J.E., Friedman, S.R., Tempalski, B., Gostnell, K. & Flom, P.L. (2008). Estimating the prevalence of injection drug use among black and white adults in large U.S. metropolitan areas over time (1992-2002): Estimation methods and prevalence trends. *Journal of Urban Health*, Vol. 85, No. 6.
- Cooper, H.L., Brady, J.E., Ciccarone, D., Tempalski, B., Gostnell, K. & Friedman, S.R. (2007, November 1). Nationwide increase in the number of hospitalizations for illicit injection drug use – related infective endocarditis. *Clinical Infectious Diseases*, 45, 120-1203.
- Council of State Governments (CSG). (2015, June 25). Needle exchange programs. Retrieved from <http://knowledgecenter.csg.org/kc/content/needle-exchange-programs>
- Courtwright, D.T. (1983, February). The hidden epidemic: Opiate addiction and cocaine use in the south, 1860-1920. *The Journal of Southern History*, Vol. 49, No. 1.

- Courtwright, D.T. (2004). The Controlled Substances Act: How a “big tent” reform became a punitive drug law. *Drug and Alcohol Dependence*, Volume 76.
- Covington, S.S., Burke, C., Keaton, S. & Norcott, C. (2008). Evaluation of a trauma-informed and gender-responsive intervention for females in drug treatment, *Journal of Psychoactive Drugs*, 40:sup5, 387-398.
- Covington, S.S. & Bloom, B.E. (2007). Gender Responsive Treatment and Services in Correctional Settings, *Females & Therapy*, 29:3-4, 9-33.
- Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3<sup>rd</sup> ed.). Thousand Oaks, CA: Sage.
- Crocq, M.A. (2007). Historical and cultural aspects of male’s relationship with addictive drugs. *Dialogues in Clinical Neuroscience*, Volume 9. No. 4.
- Crofts, N., Louie, R., Rosenthal, D. & Jolley, D. (1996). The first hit: Circumstances surrounding initiation into injecting. *Addiction*. 91(8):1187-1196.
- Cronk, G. (n.d.). George Herbert Mead. Internet Encyclopedia of Philosophy. Retrieved from <http://www.iep.utm.edu/mead/#H3>
- Dalsgaard, P. (2014). Pragmatism and design thinking. *International Journal of Design*, Vol. 8, No. 1.
- Darke, S. & Hall, W. (2003). Heroin overdose: research and evidence-based intervention. *J. Urban Health*, 80, 189–200.
- Davis, S.M., Davidov, D., Kristjansson, A.L., Zullig, K., Baus, A. & Fisher, M. (2018, October 12). Qualitative case study of needle exchange programs in the Central Appalachian region of the United States. *PLoS ONE*, 13(10); e0205466.
- Davis, C.S., Burris, S., Kraut-Becher, J., Lynch, K.G., & Metzger, D. (2005). Effects of an intensive street-level police intervention on syringe exchange program use in Philadelphia, PA. *Am J Public Health*, 95(2): 233-236.
- Day, C.A., Ross, J., Dietze, P. & Dolan, K. (2005). Initiation to heroin injecting among heroin users in Sydney, Australia: Cross sectional survey. *Harm Reduction Journal*. 2(2):1-7.
- De, P., Cox, J., Boivin, J., Platt, R.W. & Jolly, A.M. (2007). The importance of social networks in their association to drug equipment sharing among injection drug users: A review. *Addiction*, 102, 1730 – 1739.

- Degenhardt, L., Peacock, A., Colledge, S., Lueng, J., Grebely, J., Vicerma, P., Stone, J., Cunningham, E.B., Trickey, A., Dumchev, K., Lynskey, M., Griffiths, P., Mattick, R.P., Hickerman, M. & Larney, S. (2017, December). Global prevalence of HIV, HBV, and HCV in people who inject drugs: A multistage systematic review. *Lancet Global Health*, 5(12); e192-e1207.
- Des Jarlais, D.C., McKnight, C., Arasteh, K., Feelemyer, J., Perlman, D.C., Hagan, H., Dauria, E.F. & Cooper, H.L.F. (2014, June). A perfect storm: Cocaine, HSV-2 and HIV among non-injecting drug users in New York City. *Substance Use Misuse*. 49(7): 783-792.
- Des Jarlais D., Friedman S. & Ward T. (1993). Harm reduction: A public health response to the AIDS epidemic among injecting drug users. *Annual Review of Public Health*, 14, 413-450.
- Dillman, D.A., Smyth, J.D. & Christian, L.M. (2014). *Internet, phone, mail and mixed-mode surveys. The tailored design method. Fourth Edition*. John Wiley & Sons, Inc.
- Doe v Bridgeport Police Department, 198 F.R.D. 325 (D. Conn. 2001).
- Doherty, M.C., Junge, B., Rathouz, P., Garfein, R.S., Riley, E. & Vlahov, D. (2000, June). The effect of a needle exchange program on the numbers of discarded needles: A 2-year follow-up. *American Journal of Public Health*, Vol. 90, No. 6.
- Dominelli, L. (2002). *Feminist Social Work Theory and Practice*, Palgrave MacMillan, New York, NY.
- Downing, M., Riess, T.H., Vernon, K., Mulia, N., Hollinquest, M., McKnight, C. (2005). What's community got to do with it? Implementation models of syringe exchange programs. *AIDS Education and Prevention*, 17(1):68–78.
- Dudovskiy, J. (2017). Exploratory research. Retrieved from <https://research-methodology.net/research-methodology/research-design/exploratory-research/>
- El-Bassel, N. & Strathdee, S.A. (2015, June 1). Females who use or inject drugs: An action agenda for females-specific, multilevel and combination HIV prevention and research. *Journal of Acquired Immune Deficiency Syndrome*, 69(Suppl 2); S182-S190.
- Emerson, R. M. (1976). Social exchange theory. *Annual Review of Sociology*, Vol. 2, pp. 335 – 362.
- Epele, M.E. (2002). Gender, violence and HIV: Females's survival in the streets. *Cult Med Psychiatry*, 26; 33- 54.



- Esmaeili, A., Mirzazadeh, A., Morris, M.D., Hajarizadeh, B., Sacks, H.S., Maher, L., Grebely, J., Kim, A.Y., Lauer, G., Cox, A.L., Hellard, M., Dietze, P., Bruneau, J., Shoukry, N.H., Dore, G.J., Lloyd, A.R., Prins, M. & Page, K. (2018, January 1). The effect of female sex on hepatitis C incidence among people who inject drugs: Results from the international multicohort InC3 collaborative. *Clinical Infectious Diseases*, 66; 20-28.
- Etikan, I. & Bala, K. (2017). Sampling and sampling method. *Biometrics & Biostatistics International Journal*, 5(6).
- Etikan, I., Musa, S.A., & Alkassim, R.S. (2016). Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*, Vol. 5, No. 1, pp. 1-4.
- Ettorre, E. (2004). Revisioning females and drug use: gender sensitivity, embodiment and reducing harm. *International Journal of Drug Policy*, 15(5), 327-335.
- Evans, S.M. & Foltin, R.W. (2006). Exogenous progesterone attenuates the subjective effects of smoked cocaine in females, but not males. *Neuropsychopharmacology*, 31(3); 659-674.
- Evans, J., Hahn, J., Page-Shafer, K., Lum, P.J., Stein, E.S., Davidson, P.J. & Moss, A.R. (2003). Gender differences in sexual and injection risk behavior among active young injection drug users in San Francisco (the UFO Study). *Journal of Urban Health*, 80; 137-146.
- Executive office of the President, Office of National Drug Control Policy. (2016, December). FY 2017 budget and performance summary. Companion to the National Drug Control Strategy.
- Felluga, D. (2011, January 31). "Modules on Butler: On gender and sex." Introductory Guide to Critical Theory. Purdue University. Retrieved from <https://cla.purdue.edu/academic/english/theory/genderandsex/modules/butlergendersex.html>
- Fernandez-Vina, M.H., Prood, N.E., Herpolsheimer, A., Waimberg, J. & Burris, S. (2020, July 31). State laws governing syringe services programs and participant syringe possession, 2014-2019. *Public Health Reports*, 128S-137S.
- Finnegan, L.P., Connaughton, J.F., Kron, R.E. & Emich, J.P. (1975). Neonatal abstinence syndrome: Assessment and management. *Addiction and Disease*, Volume 2.
- Fisher, J. & Fisher, W., Peterson, J.L. & DiClemente, R. J. (2000). *Handbook of HIV prevention*. Kluwer Academic Press; New York.

- Fisher, K., Smith, T., Nairn, K. & Anderson, D. (2017). Rural people who inject drugs: A cross-sectional survey addressing the dimensions of access to secondary needle and syringe program outlets. *Aust. J. Rural Health*, 25; 94-101.
- Food & Drug Administration (FDA). (2019, February 14). Information about medication-assisted treatment (MAT). Retrieved from <https://www.fda.gov/drugs/information-drug-class/information-about-medication-assisted-treatment-mat>
- Fox, E. (1997, September 3). Predominance of the curative model of medical care: A residual problem. *American Medical Association*, Volume 278(9), 761-764. Retrieved from <https://courses.washington.edu/pcare/educational-experiences/curative-model/>
- Frajzyngier, V., Neaigus, A., Gyarmathy, V.A., et al., (2007). Gender differences in injection risk behaviors at the first injection episode. *Drug Alcohol Depend*, 89: 145-152.
- Frontera, J.A. & Gradon, J.D. (2000). Right-side endocarditis in injection drug users: Review of Proposed Mechanisms of Pathogenesis. *Clinical Infectious Diseases*, 30; 374-379.
- Fullerton, C.A., Dougherty, R.H., Kim, M., Daniels, A.S., Thomas, C.P., Ghose, S.S., Lyman, D.R., Delphin-Rittmon, M.E. & Montejano, L.B. (2014, February). Medication-assisted treatment with methadone: Assessing the evidence. *Psychiatric Services*, Vol. 65, No. 2.
- Gale, J.A. (2016, April). Rural communities in crisis: Strategies to address the opioid crisis. National Rural Health Association Policy Brief.
- Garfein, R.S., Golub, E.T., Greenberg, A.E., Hagan, H., Hanson, D.L., Hudson, S.M., Kapadia, F., Latka, M.H., Ouellet, L.J., Purcell, D.W., Strathdee, S.A. & Thiede, H. (2007). A peer-education intervention to reduce injection risk behaviors for HIV and hepatitis C virus infection in your injection drug user. *AIDS*. 21:1923-1932.
- Gibson, E.K., Exner, H., Stone, R., Lindquist, J., Cowen, L. & Roth, E.A. (2011, July). A mixed methods approach to delineating and understanding injection practices among clientele of a Victoria, British Columbia needle exchange program. *Drug and Alcohol Review*. 30, 360-365.
- Gilliard, D. (1993, May). Bureau of justice statistics bulletin prisoners in 1992, U.S. Department of Justice.

- Gindi, R.M., Rucker, M.G., Serio-Chapman, C.E. & Sherman, S.G. (2009). Utilization patterns and correlates of retention among clients of the needle exchange program in Baltimore, Maryland. *Drug and Alcohol Dependence*. 93-98.
- Glanz, K., (2016). Behavioral & social sciences research. Retrieved from <https://obssr.od.nih.gov/wp-content/uploads/2016/05/Social-and-Behavioral-Theories.pdf>
- Glasser, I. (1999). American drug laws: The new Jim Crow. *Albany Law Review*, Volume 63.
- Gollub, E.L., Rey, D., Obadia, Y., & Moatti, J.P. (1998). The manif 2000 study group. Gender differences in risk behaviors among HIV and persons with an IDU history. The link between partner characteristics and females's higher drug-sex risks. *Sex Transm Dis*, 25; 483-488.
- Golub, A.L. & Johnson, B.D. (1999, November). Cohort changes in illegal drug use among arrestees in Manhattan: From the heroin injection generation to the blunts generation. *Substance Use Misuse*. 34(13):1733-63.
- Gonsalves, G.S. & Crawford, F.W. (2018). Dynamics of the HIV outbreak and response in Scott County, IN, USA, 2011–15: A modelling study, *The Lancet HIV*, Volume 5, Issue 10, pages e569-e577.
- Gordon, R.J. & Lowy, F.D. (2005, November 3). Bacterial infections in drug users. *N Engl J Med*, 353; 1945-1954.
- Gosten, L. (1994). National Research Council and Institute of Medicine Panel on Needle Exchange and Bleach Distribution Programs. Washington, DC. Retrieved from [www.ncbi.nlm.nih.gov/books/NBK236633/](http://www.ncbi.nlm.nih.gov/books/NBK236633/)
- Grace, S. (2017) Effective interventions for drug using females offenders: A narrative literature review. *Journal of Substance Use* 22:6, pages 664-671.
- Graves M.K, Soto L. (1992). Left-sided endocarditis in parenteral drug abusers: Recent experience at a large community hospital. *South Med J*, 85: 378–80
- Greenfield, S.F., Back, S.E., Lawson, K. & Brady, K.T. (2010). Substance abuse in females. *Psychiatr Clin North Am*, 33(2); 339-355.
- Gressler, L.E., Shah, S., & Shaya, F.T. (2019). Association of criminal statutes for opioid use disorder with prevalence and treatment among pregnant females with commercial insurance in the United States. *JAMA Netw Open*, 2(3).

- Grimes, D.A., & Schulz, K.F. (2002). Descriptive studies: What they can and cannot do. *The Lancet*, 359(9301), 145-149.
- Gyarmathy, V.A., Csak, R., Balint, K., Bene, E., Varga, A.E., Varga, M., Csiszer, N., Vingender, I. & Racz, J. (2016). A needle in the haystack – the dire straits of needle exchange in Hungary. *BMC Public Health*, 16:157.
- Gyarmathy, V. A., Li, N., Tobin, K. E., Hoffman, I. F., Sokolov, N., Levchenko, J., Batluk, J., Kozlov, A.A., Kozlov, A.P. & Latkin, C.A. (2009). Correlates of unsafe equipment sharing among injecting drug users in St. Petersburg, Russia. *European Addiction Research*, 15, 163–170.
- Hagan H., McGough J.P., Thiede H., Hopkins S., Duchin J., & Alexander E.R. (2000). Reduced injection frequency and increased entry and retention in drug treatment associated with needle-exchange participation in Seattle drug injectors. *Journal of Substance Abuse Treatment*. 9:247–252.
- Hagan, H. & Thiede, H. (2000, September). Changes in injection risk behavior associated with participation in the Seattle needle exchange program. *Journal of Urban Health*, Volume 77, Number 3.
- Harm Reduction International (HRI). (2020). What is harm reduction? Retrieved from <https://www.hri.global/what-is-harm-reduction#:~:text=Principles%20of%20harm%20reduction%20%20Respecting%20the%20rights,compassion%20and%20dignity%20is%20integral%20to%20harm%20reduction.>
- Harm Reduction International (HRI). (2018). What is harm reduction? Retrieved from <https://www.hri.global/what-is-harm-reduction>
- Harris, Z.K. (2006). Efficient allocation of resources to prevent HIV infection among injection drug users: the Prevention Point Philadelphia (PPP) needle exchange program. *Health Economics*, 15: 147 – 158.
- Havens, J., Oser, C., Crosby, R., & Leukefeld, C. (2010, July). *Proceedings from the 18<sup>th</sup> International AIDS Conference: Social network factors predict engagement in HIV risk behaviors among rural Appalachian drug users in the United States*. Vienna, Austria.
- Havens, J.R., Latkin, C.A., Pu, M., Cornelius, L.J., Bishai, D., Huettner, S., Rapp, C., Ricketts, E.P., Lloyd, J.J. & Strathdee, S. A. (2009). Predictors of opiate agonist treatment retention among injection drug users referred from a needle exchange program. *Journal of Substance Abuse*. 36; 306-312.
- Hay, G. & McKeganey, N. (2001). The attendance pattern of clients at a Scottish needle exchange. *Addiction*. 96, 259-266.

- Heath, A. (1971, January). Social behavior: Its elementary forms by G.C. Homans: Exchange and power in social life by P.M. Blau. *British Journal of Political Science*, Volume 1, Number 1.
- Health Research Board. (2008, Winter). Profile of needle exchange services in Ireland. Retrieved from [https://www.drugsandalcohol.ie/12145/1/Drugnet\\_28.pdf](https://www.drugsandalcohol.ie/12145/1/Drugnet_28.pdf)
- Health Resources & Services Administration (HRSA). (2020, September). Defining rural population. Retrieved from <https://www.hrsa.gov/rural-health/about-us/definition/index.html>
- Hecksher, D. & Hesse, M. (2009). Females and substance use disorders. *Mens Sana Monographs*, 7(1); 50-62.
- Heimer, R., Khoshnood, K., Bigg, D., Guydish, J., & Junge, B. (1998). Syringe use and reuse: effects of syringe exchange programs in four cities. *J Acquir Immune Defic Syndr Hum Retrovirol*, 18 Suppl 1:S37-44.
- Henman, A.R., Paone, D., Des Jarlais, D.C., Kochems, L.M., Friedman, S.R. (1998). From ideology to logistics: the organizational aspects of syringe exchange in a period of institutional consolidation. *Subst Use Misuse*, 33(5):1213–30.
- Hickman, T.A. (2004, March). Mania Americana: Narcotic addiction and modernity in the United States, 1970-1920. *The Journal of American History*.
- Hilton, B.A., Thompson, R., Moore-Dempsey, L. & Janzen, R.G. (2000). Harm reduction theories and strategies for control of human immunodeficiency virus; a review of the literature. *Journal of Advanced Nursing*, 33(3), 357-370.
- Hochbaum, G.M. (1958). *Public Participation in Medical Screening Programmes: A Socio-Psychological Study*. Washington DC: Government Printing Office.
- Holtzman, D., Barry, V., Ouellet, L.J., Des Jarlais, D.C., Vlahov, D., Golub, E.T., Hudson, S.M. & Garfein, R.S. (2009). The influence of needle exchange programs on injection risk behaviors and infection with hepatitis C virus among young injection drug users in select cities in the United States, 1994 – 2004. *Preventive Medicine*, 49, 68 – 73.
- Homans, G.C. (1958, May). Social behavior as exchange. *American Journal of Sociology*, Vol. 63, No. 6, pp. 597-606.
- hooks, b. (1984). *Feminist theory: From margin to center*. Cambridge, Mass.: South End Press.
- Huff, M. (2016, January 4). Bell hooks: Intersectional feminist. Retrieved from <https://info.umkc.edu/womenc/2016/01/04/bell-hooks-intersectional-feminist/>

- Hunt, N., Stillwell, G., Taylor, C. & Griffiths, P. (1998). Evaluations of a brief intervention to prevent initiation into injecting. *Drugs*, 5(2):185-94.
- Huo, D., Bailey, S.L. & Ouellet, L.J. (2006). Cessation of injection drug use and change in injection frequency: The Chicago needle evaluation study. *Addiction*, 101: 1606-1613.
- Huo, D. & Ouellet, L.J. (2009, January). Needle exchange and sexual risk behaviors among a cohort of injection drug users in Chicago, Illinois. *Sexually Transmitted Diseases*, Vol. 36, No. 1, 35 – 40.
- Hyshka, E., Strathdee, S., Wood, E., & Kerr, T. (2012, July). Needle exchange and the HIV epidemic in Vancouver: Lessons learned from 15 years of research. *International Journal of Drug Policy*, 23(4): 261-270.
- IBM Corporation. (2017). IBM SPSS statistics for Windows, Version 25.0. Armonk, NY: IBM Corporation.
- Irish, C., Maxwell, R., Dancox, M., Brown, P., Trotter, C., Verne, J. & Shaw, M. (2007, October). Skin and soft tissue infections and vascular disease among drug user, England. *Emerging Infectious Diseases*, Vol. 13, No. 10.
- Irwin, K.S. & Fry, C. L. (2007). Strengthening drug policy and practice through ethics engagement: An old challenge for a new harm reduction. *International Journal of Drug Policy*, Vol. 18, 75-83.
- Islam, M.M., Topp, L., Iversen, J., Day, C., Conigrave, K.M. & Maher, L. (2013). Healthcare utilization and disclosure of injecting drug use among clients of Australia's needle and syringe programs. *Australian and New Zealand Journal of Public Health*, Vol. 37, No. 2.
- Iversen, J., Page K., Madden, A., & Maher, L. (2015). HIV, HCV, and health-related harms among females who inject drugs: Implications for prevention and treatment. *Journal of Acquired Immune Deficiency Syndrome*, 69(Suppl 2):S176-181.
- Iversen, J., Page, K., Madden, A. & Maher, L. (1999). HIV, HCV and health-related harms among females who inject drugs: Implications for prevention and treatment. *Journal of Acquired Immune Deficiency Syndromes*.
- Jackson, A. & Shannon, L. (2012). Barriers to receiving substance abuse treatment among rural pregnant females in Kentucky. *Maternal Child Health Journal*, 16; 1762-1770.

- Jakubiec, D., Kilcer, A. & Sager, W. (2009). The war on drugs. Rochester Institute of Technology: College of Liberal Arts. Retrieved from <http://scholarworks.rit.edu/article/1662>
- Janowicz D. M. (2016). HIV Transmission and injection drug use: Lessons from the Indiana outbreak. *Topics in antiviral medicine*, 24(2), 90–92.
- Jemal, A., Gunn, A. & Inyang, C. (2020)/ Transforming responses: Exploring the treatment of substance-using African American females. *Journal of Ethnicity in Substance Abuse* 19:4, pages 659-687.
- Jessup, M.A., Humphrey, J.C., Brindis, C.D. & Lee, K.A. (2003, Spring). Extrinsic barriers to substance abuse treatment among pregnant drug dependent females. *The Journal of Drug Issues*.
- Jonnes, J. (1995, August). The rise of the modern addict. *American Journal of Public Health*, Volume 85, No. 8.
- Kale, R. (2012, January 10). Parking-centered health care. *Canadian Medical Association Journal*, 184 (1) 11.
- Kelley, K., Clark, B., Brown, V. & Sitzia, J. (2003). Good practice in the conduct and reporting of survey research. *International Journal of Quality Health Care*, 15(3), 261-266.
- Kermode, M., Longleng, V., Singh, B.C., Hocking, J., Langkham, B. 7 Croft, N. (2007). My first time: Initiation into injecting drug use in Manipur and Nagaland, north-east India. *Harm Reduction Journal*. 4(19):1-11.
- Kerr, T., Small, W., Buchner, C., Zhang, R., Li, K., Montaner, J. & Wood, E. (2010). Syringe sharing and HIV incidence among injection drug users and increased access to sterile syringes. *American Journal of Public Health*. 100(8): 1449-1453.
- Kerr, T., Small, W., Wood, E. (2005). The public health and social impacts of drug market enforcement: A review of the evidence. *Int J Drug Policy*, 16(4):210-220.
- Kimber, J., Macdonald, M., va Beck, I., et al., (2003). The Sydney medically supervised injecting center: Client characteristics and predictors of frequent attendance during the first 12 months of operation. *Journal of Drug Issues*, 33; 639-648.
- Kirp, David L. (2010). Needle exchange comes of age – fighting AIDS in the streets. Retrieved from <http://www.thenation.com/article/needle-exchange-comes-age/>
- Klein, A. (2007). Sticking points: Barriers to access to needle and syringe programs in Canada. Toronto: Canadian HIV/AIDS Legal Network.



- Kleinig, J. (2008). Harm reduction: Ethics. *Substance Use & Misuse*, 43: 1 – 16.
- Knittel, A.K., Wren, P.A. & Gore, L. (2010). Lessons learned from a peri-urban needle exchange. *Harm Reduction Journal*, 7:8.
- Knox, R. (2012). Needle exchanges often overlooked in AIDS fight. Retrieved from <http://www.npr.org/sections/health-shots/2012/07/24/157283038/needle-exchanges-often-overlooked-in-aids-fight>
- Kocherlakota, P. (2014, August). Neonatal abstinence syndrome. *Pediatrics*, Volume 134, Number 2.
- Kooreman, H. & Greene, M. (2016, January). Injection drug use in Indiana: A major risk for HIV transmission. Center for Health Policy. 16-H71.
- Krans, E.E. & Patrick, S.W. (2016). Opioid use disorder in pregnancy: Health policy and practice in the midst of an epidemic. *Obstet Gynecol*, 28(1):4-10.
- Ksobiech, K. (2004, April 20). Assessing and improving needle exchange programs: Gaps and problems in the literature. *Harm Reduction Journal*, 1:4.
- Kuo, I., Brady, J., Butler, C., Schwartz, R., Brooner, R., Vlahov, D. & Strathdee, S.A. (2003). Feasibility of referring drug users from needle exchange program into an addiction treatment program: Experience with a mobile treatment van and LAAM maintenance. *Journal of Substance Abuse Treatment*. 24: 67-74.
- LaMorte, W. (2019, September 9). The health belief model. Retrieved from <https://sphweb.bumc.bu.edu/otlt/mph-modules/sb/behavioralchangetheories/behavioralchangetheories2.html>
- Lang, K., Neil, J., Wright, J., Dell, C.A., Berenbaum, S. El-Aneed, A. (2013). Qualitative investigation of barriers to accessing care by people who inject drugs in Saskatoon, Canada: Perspective of service providers. *Substance Abuse Treatment, Prevention and Policy*, Vol. 8, No.1, 1 – 11.
- Langan, P.A. (1995, October 1). The racial disparity in U.S. drug arrests. Bureau of Justice Statistics, U.S. Department of Justice.
- Lansky, A., Finlayson, T., Johnson, C., Hotlzman, D., Wejnert, C., Mitsch, A. . . . . Crepaz, N. (2014, May 19). Estimating the number of person who inject drugs in the United States by meta-analysis to calculate national rates of HIV and hepatitis C virus infections. *PLOS One*, Retrieved from <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0097596>
- Larney, S., Mathers, B.M., Poteat, T., Kamarulzaman, A., & Degenhardt, L. (2015). Global epidemiology of HIV among females and girls who use or inject drugs:



- Current knowledge and limitations of existing data. *Journal of Acquired Immune Deficiency Syndrome*, 69:S100–9.
- Latkin, C.A., Davey, M.A., Hua, W. (2006). Needle exchange program utilization and entry into drug treatment: Is there a long-term connection in Baltimore, Maryland? *Substance Use & Misuse*, 41.
- Laufer FN. (2001). Cost-effectiveness of syringe exchange as an HIV prevention Strategy. *J Acquir Immune Defic Syndr*;28(3):273-8.
- Lerner, G. (1986). *The Creation of Patriarchy*. Oxford, Oxford University Press.
- Leukefeld, C.G., Logan, T.K., Farabee, D. & Clayton, R. (2002). Drug use and AIDS: Estimating injection prevalence in a rural state. *Substance Use & Misuse*, 37; 767-782.
- Levin, H. G. (2002). The secret of worldwide drug prohibition. The varieties and uses of drug prohibition. *The Independence Review VII*, 2, 165-80.
- Lewin, K., Dembo, T., Festinger, L., Sears, P.S., Hunt, J.M. (1944). *Level of aspiration personality and the behavior disorders*. Ronald Press; Oxford England.
- Lilley, G., Mak, D.B. & Fredericks, T. (2013, May). Needle and syringe distribution trends in Western Australia, 1990 to 2009. *Drug and Alcohol Review*, 32, 320-327.
- Luoma, J.B., Twohig, M.P., Waltz, T., Hayes, S.C., Roget, N., Padilla, M. & Fisher, G. (2007, July). An investigation of stigma in individuals receiving treatment for substance abuse. *Addict Behav.* 32(7):1331-46.
- MacDonald, M., Law, M., Kaldor, J. Hales, J., & Dore, G.J. (2003). Effectiveness of needle and syringe programs for preventing HIV transmission. *International Journal of Drug Policy*, 14; 353-357.
- MacNeil, J. (2010). Impact: A case study examining the closure of a large urban fixed site needle exchange in Canada. *Harm Reduction Journal*, 7:11.
- MacNeil, J. & Pauly, B. (2011, January). Needle exchange as a safe haven in an unsafe world. *Drug and Alcohol Review*, 30, 26 – 32.
- MacRae, R. & Aalto, E. (2000). Gendered power dynamics and the HIV risk in drug using sexual relationships. *AIDS Care*, 12; 505-515.
- Mark, H.D., Nanda, J., Vogel-Davis, A., Navaline, H., Scott, R., Wickrema, R., Metzger, D. & Sochalski, J. (2006, January/February). Profiles of self-reported HIV risk behaviors among injection drug users in methadone maintenance treatment,

- detoxification, and needle exchange programs. *Public Health Nursing*, Vol. 23, No. 1, pp. 11 – 19.
- Marlatt G.A. (1999). From hindsight to foresight: A commentary on project MATCH. In *Changing Addictive Behavior: Bridging Clinical and Public Health Strategies* (Tucker J.A., Donovan D.M. & Marlatt G.A. eds), The Guilford Press, New York, pp. 45-66.
- Marlatt, G.A. (1996). Harm reduction: Come as you are. *Addictive Behaviors*, Vol. 21, No. 6.
- Marpsat, M. & Razafindratsima, N. (2010). Survey methods for hard to reach populations: Introduction to the special issue. *Methodological Innovations*, 5(2), 3-16.
- Marx, M.A., Crape, B., Brookmeyer, R.S., Junge, B., Latkin, C., Vlahov, D. & Strathdee, S.A. (2000). Trends in crime and the introduction of a needle exchange program. *American Journal of Public Health*, Vol. 90, No. 12.
- Mauer, L.A., Bass, S.B., Ye, D., Benitez, J., Mazzella, S. & Krafty, R. (2016). Trend analyses of users of a syringe exchange program in Philadelphia, Pennsylvania: 1999-2014. *AIDS Behavior*, 20; 2922-2932.
- McAfee, N. (Fall 2018 Edition). Feminist philosophy. *Stanford Encyclopedia of Philosophy*. Retrieved from <https://plato.stanford.edu/entries/feminist-philosophy/>
- McCaughrin, W. & Howard, D. (1996). Variation in access to outpatient substance abuse treatment: Organizational factors and conceptual issues. *Journal of Substance Abuse*. 8(4): 403-415.
- McGrath, P. (2015, June). Parking problems: An important access issue for Australian specialist metropolitan hospital. *Health Issues*, No. 114, 26 – 31.
- McLean, K. (2012). Needle exchange and the geography of survival in the South Bronx. *International Journal of Drug Policy*, 23, 295 – 302.
- McMaster University. (2019). Evidence brief. Preventing and managing diseases among people who inject drugs in Ontario.
- McQueen, K. & Murphy-Oikonen, J. (2016, December). Neonatal abstinence syndrome. *The New England Journal of Medicine*, Volume 375(25).
- Mills, D. (2015). Supporters of needle exchanges say programs in places like Washington and Indiana are changing perceptions of the issue. Retrieved from <http://www.healthline.com/health-news/washington-dc-needle-exchange-program-saving-lives-and-millions-of-dollars-090315#1>

- Miller, M., Eskils, A., Mella, I., Moi, H., & Magnus, P. (2001). Gender differences in syringe exchange program use in Oslo, Norway. *Addiction*, 96, 1639-1651.
- Miller, P.G. (2001). Needle and syringe provision and disposal in an Australian regional centre. *Drug and Alcohol Review*, 20, 431-438.
- Montgomery, S., Hyde, J., DeRosa, C., Rohrbach, L.A., Ennett, S., Harvey, S.M., Clatts, M., Iverson, E. & Kipke, M.D. (2002). Gender differences in HIV risk behaviors among young injectors and their social network members. *American Journal of Drug & Alcohol Abuse*, 28; 453-475.
- Montigny, L., Moudon, A.V., Leigh, B. & Young, K. (2010). Assessing a drop box programme: A spatial analysis of discarded needles, *International Journal of Drug Policy*, Volume 21, Issue 3, pages 208-214.
- Moore, E., Han, J., Serio-Chapman, C., Mobley, C., Watson, C., & Terplan, M. (2012). Contraception and clean needles: Feasibility of combining needle mobile reproductive health and needle exchange services for female exotic dancers. *American Journal of Public Health* 102(10), 1833-1836.
- Motavalli, D., Taylor, J. L., Childs, E., Valente, P.K., Salhaney, P., Olson, J., Biancarelli, D.L., Edeza, A., Earlywine, J.J., Marshall, B., Drainoni, M.L., Mimiaga, M., Biello, K.B. & Bazzi, A.R. (2021). Health is on the back burner: Multi-level barriers and facilitators to primary care among people who inject drugs. *Journal of General Internal Medicine*, 36, 129-137.
- Musto, D.F. (1972, February). The history of the Marihuana Tax Act of 1937. *Archives General Psychiatry*, Volume 26(2).
- National Institute of Drug Abuse (NIDA). (2020, April 16). Opioid summaries by state. Retrieved from <https://www.drugabuse.gov/drug-topics/opioids/opioid-summaries-by-state>
- National Institute of Drug Abuse (NIDA). (2018, June 6). Understanding drug use and addiction drug facts. Retrieved from <https://www.drugabuse.gov/publications/drugfacts/understanding-drug-use-addiction>
- National Institute on Drug Abuse (NIDA). (2018, February). Principles of drug addiction treatment: A research-based guide (3<sup>rd</sup> edition). Retrieved from <https://www.drugabuse.gov/publications/principles-drug-addiction-treatment-research-based-guide-third-edition/frequently-asked-questions/what-drug-addiction-treatment>

- National Institute on Drug Abuse (NIDA). (2014, July). Drugs, brains, and behavior. The science of addiction. NIH Publication No. 14-5605.
- National Institute on Drug Abuse (NIDA). (n.d.). Commonly used drug charts. Retrieved from [Commonly Used Drugs Charts | National Institute on Drug Abuse \(NIDA\)](#)
- National Institutes of Health (NIH). (2020). The importance of including females in research. Retrieved from <https://www.drugabuse.gov/publications/research-reports/substance-use-in-females/importance-including-females-in-research>
- Neale, J., Tompkins, C. & Sheard, L. (2008). Barriers to accessing generic health and social care services: A qualitative study of injecting drug users. *Health and Social Care in the Community*, 16(2), 147-54.
- Nguyen, T.Q., Weir, B.W., Des Jarlais, D.C., Pinkerton, S.D. & Hotgrave, D.R. (2014, November). Syringe exchange in the United States: A national level economic evaluation of hypothetical increases in investment. *AIDS Behavior*, Volume 18(11).
- Nigro, L., Casciaro, A., Matalone, M., Aloisio, P. & Bruno, S. (2000). Feasibility in needle exchange program: An evaluation of a pilot program in Catania, Sicily. *International Journal of Drug Policy*, 11, 299 – 303.
- Normand, J., Vlahov, D. & Moses, L.E. (1995). *Preventing HIV Transmission: The Role of Sterile Needles and Bleach*. National Research Council and the Institute of Medicine. National Academy Press. Washington, D.C. Retrieved from <https://www.nap.edu/read/4975/chapter/6>
- North American Syringe Exchange Network (NASEN). (2020). SEP locations. Retrieved from <https://www.nasen.org/map/>
- North American Syringe Exchange Network (NASEN). (2020). Home page. Retrieved from <https://nasen.org/>
- O’Driscoll, P.T., McGough, J., Hagan, H., Thiede, H., Critchlow, C. & Alexander, R. (2001). Predictors of accidental fatal drug overdose among a cohort of injection drug users. *American Journal of Public Health*, 91(6); 984-987.
- Patrick, S.W. & Schiff, D.M. (2017). Committee on substance use and prevention. A public health response to opioid use in pregnancy. *Pediatrics*, 139(3).
- Paz-Bailey, G. (26 April, 2016). *HHS Implementation Guidance to Support Certain Components of Syringe Services Program* [PowerPoint slides]. Retrieved from [www.cdc.gov/hiv/risk/ssps.html](http://www.cdc.gov/hiv/risk/ssps.html)

- Philbin, M.M., & FuJie, Z. (2014, February). Exploring collaborator perceptions of facilitators and barriers to using needle exchange programs in Yunnan Province, China. *PLoS ONE* 9(2): e86873. doi: 10.1371/journal.pone.0086873
- Philbin, M., Mantsios, A., Lozada, R. Case, P., Pollini, R., Alvelais, J., Latkin, C.A., Magis-Rodriguez, C. & Strathdee, S.A. (2009). Exploring collaborator perceptions of acceptability and feasibility of needle exchange programs, syringe vending machines and safe injection facilities in Tijuana, Mexico. *International Journal of Drug Policy*, 20(4), 329-335.
- Piazza, N.J., Vrbka, J. L. & Yeager, R.D. (1989). Telescoping of alcoholism in females alcoholics. *The International Journal of Addictions*, 24; 19-28.
- Pinkham, S. & Malinowska-Sempruch, K. (2008). Females, harm reduction and HIV. *Reproductive Health Matters*, 16; 168-181.
- Pletcher, K. (2018). Opium wars. *The Encyclopedia Britannica*. Retrieved from <https://www.britannica.com/topic/Opium-Wars>
- Powis, B., Griffiths, P., Gossop, M. & Strang, J. (1996). The differences between male and female drug users: Community samples of heroin and cocaine users compared. *Substance Use & Misuse*, 31(5); 529-543.
- Ponce, A.N. & Lawless, M.S. (2014). Homelessness, behavioral health disorders and intimate partner violence: Barriers to services for females. *Community Mental Health Journal*, 50: 831-840.
- Rabound, J.M., Boily, M.C., Rajeswaran, J., O'Shaughnessy, M.V. & Schecter, M.T. (2003, June). The impact of needle-exchange programs on the spread of HIV among injection drug users: A simulation study. *Journal of Urban Health*, Vol. 80, No. 2.
- Reihman, K., Iguchi, M.Y., Morral, A. & Zeller, M. (2003). The influence of partner drug use and relationship power on treatment engagement. *Drug & Alcohol Dependency*, 70; 1- 10.
- Renteria, E. (n.d.). Harm reduction as an ethical basis for needle exchange programs: A case-study analysis for Stanislaus County. Retrieved from <https://www.csustan.edu/sites/default/files/honors/documents/journals/Edgings/HarmReductionEthicalBasis.pdf>
- Revilla, M. & Ochoa, C. (2017, September 1). Ideal and maximum length of a web survey. *International Journal of Market Research*, Vol. 59, Issue 5.
- Rich, Z.C., Chu, C., Mao, J., Zhou, K., Cai, W., Ma, Q., Volberding, P. & Tucker, J.D. (2016). Facilitators of HCV treatment adherence among people who inject drugs:

A systematic qualitative review and implications for scale up of direct acting antivirals. *BMC Public Health*, 16:994.

- Riley, E.D., Safaeian, M., Strathdee, S.A., Brooner, R.K., Beilenson, P. & Vlahov, D. (2002). Drug user treatment referrals and entry among participants of a needle exchange program. *Substance Use & Misuse*, Vol. 37, No. 14.
- Riley, E.D., Vlahov, D., Huettner, S., Beilenson, P., Bonds, M. & Chaisson, R.E. (2002, March). Characteristics of injections drug users who utilize tuberculosis services at sites of the Baltimore city needle exchange program. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, Vol. 79, No. 1.
- Riley, E., Beilenson, P., Vlahov, D., Smith, L., Koenig, M., Jones, T., Doherty, S. (1998). Operation red box: A pilot project of needle and syringe drop boxes for injection drug users in East Baltimore, *Journal of Acquired Immune Deficiency Syndromes & Human Retrovirology*, Volume 18 - Issue - p S120-S125.
- Ritzer, G. & Stepnisk, J. (2018). *Sociological Theory*. SAGE Publications, Thousand Oaks, CA.
- Ritzer, G. (2010). Contemporary sociological theory and its classical roots, the basics. Lengermann, P.M. & Niebrugge, G. (Eds.), *Contemporary feminist theories* (3<sup>rd</sup> ed., Chapter 8). New York, NY.
- Roberts, A., Mathers, B. & Degenhardt, L. (2010). Females who inject drugs: A review of their risks, experiences and needs. A report prepared on behalf of the Reference Group to the United Nations on HIV and Injecting Drug Use. Australia Sydney: National Drug and Alcohol Research Center, University of New South Wales.
- Roberts, A. & Mathers, L. (2010). Females who inject drugs: A review of their risks, experiences and needs. The Independent Reference Group to the United Nations on HIV and Injecting Drug Use.
- Roberts, A., Wechsberg, W., Zule, W. & Burroughs, A. (2003). Contextual factors and other correlates of sexual risk of HIV among African-Americans crack-abusing females. *Addictive Behavior*, 28; 523-536.
- Roe, G. (2005, September). Harm reduction as paradigm: Is better than bad good enough? The origins of harm reduction. *Critical Public Health*, 15(3): 243-250.
- Rosenstock, I.M., Strecher, V.J., Becker, M.H. (1994). The Health Belief Model and HIV Risk Behavior Change. In: DiClemente R.J., Peterson J.L. (Eds.). *Preventing AIDS. AIDS Prevention and Mental Health*. Springer, Boston, MA.

- Rosenstock, I.M. (1974). Historical origins of the health belief model. *Health Education Monographs*, Vol. 2, No. 4.
- Rosenstock, I. M. (1966). Why people use health services. *The Milbank Memorial Fund Quarterly*, 44, 94-127.
- Rosenthal, E.S., Karchmer, A.W., Theisen-Toupal, J., Castillo, R.A. & Rowley, C.F. (2016, May). Suboptimal addiction interventions for patients hospitalized with injection drug use-associated infective endocarditis. *The American Journal of Medicine*, Volume 129, Issue 5.
- Rotondi, N.K., Strike, C., Kolla, G., Rotondi, M.A., Rudzinski, K., Guimond, T. & Roy, E. (2014). Transition to injection drug use: The role of initiators. *AIDS Behavior*. 18: 486-494.
- Roy, E., Haley, N., Lecleric, P., Cedras, I. & Boivin, J. (2002). Drug injection among street youth: The first time. *Addiction*, 97; 1003-1009.
- Ruel, E., Wagner, W.E. & Gillespie, B.J. (2016). Book Chapter 6 Pretesting and Pilot Testing in the Practice of Survey Research: Theory and Applications.
- SAMSHA. (2020, April). Medication-assisted treatment (MAT). Retrieved from <https://www.samhsa.gov/medication-assisted-treatment>
- Substance Abuse and Mental Health Services Administration. (2018). [Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health](#).
- SAMSHA. (2014, September). Results from the 2013 national survey on drug use and health: Summary of national findings. NSDUH Series H-48, HHS Publication No. (SMA) 14-4863. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2014.
- Schwartz, R.P., Gryczynski, J., O'Grady, K., Sharfstein, J.M., Warren, G., Olsen, Y., Mitchell, S.G. & Jaffe, J.H. (2013). Opioid agonist treatments and heroin overdose deaths in Baltimore, Maryland 1995-2009. *American Journal of Public Health*, 103(5).
- Scoles, P. (2020). Cultural competence, race, and ethnicity in community based recovery treatment programs. *International Journal of Addiction Research and Therapy*. 3:22.
- Semple, S.J., Strathdee, S.A., Zians, J., Patterson, T.L. (2012). Factors associated with experiences of stigma in a sample of HIV-positive, methamphetamine-using males who have sex with males. *Drug Alcohol Depend*. 125:154-159.

- Shaheen, A.M., Hamdan, K.M., Albqoor, M.A. & Arabiat, D.H. (2020, August). Perceived barriers to healthcare utilization among Jordanian families: A family centered approach. *Applied Nursing Research*, Volume 54.
- Shaghghi, A., Bhopal, R. & Sheikh, A. (2011). Approaches to recruiting hard to reach populations into research: A review of the literature. *Health Promotion Perspectives*, Vol. 1 (2), 86-94.
- Sheridan, J., Lovell, S., Turnbull, P., Parsons, J., Stimson, G. & Strang, J. (2000). Pharmacy-based needle exchange in South East England: A survey of service providers. *Addiction*, 95(10), 551-1560.
- Sherman, S. G., Latkin, C.A. & Gielen, A.C. (2001). Social factors related to syringe sharing among injecting partners: A focus on gender. *Substance Use Misuse*, 36:2113-36.
- Sherman, S.G., Purchase, D. (2001). Point Defiance: A case study of the United States' first public needle exchange in Tacoma, Washington. *International Journal of Drug Policy*, 12(1):45-57.
- Singelmann, P. (1972, August). Exchange as symbolic interaction: Convergences between two theoretical perspectives. *American Sociological Review*, Volume 37(4).
- Sofuoglu, M., Dudish-Poulsen, S., Nelson, D., et al., (1999). Sex and menstrual cycle differences in the subjective effects from smoked cocaine in humans. *Exp Clin Psychopharmacol*, 7(3) 274-283.
- Spokane County Health District v Brockett, 120 Wash. 2d 140 (Wa. SC 1992).
- Springer, S.A., Larney, S., Alam-Mehrjerdi Z., Altice, F.L., Metzger, D., & Shoptaw, S. (2015). Drug treatment as HIV prevention among females and girls who inject drugs from a global perspective: Progress, gaps, and future directions. *Journal of Acquired Immune Deficiency Syndrome*, 69 (Suppl 2):S155-161.
- State ex Rel Atlantic County v Atlantic City, 379 N.J. Super. 515 (2005).
- Stein, M.D. & Friedmann, P. (2002). Need for medical and psychosocial services among injection drug users: A comparative study of needle exchange and methadone maintenance. *The American Journal on Addictions*. 11: 262-270.
- Stein, M.D., Anderson, B., Charuvastra, A., Maksad, J. & Friedmann, P.D. (2002). A brief intervention for hazardous drinkers in a needle exchange program. *Journal of Substance Abuse Treatment*, 22: 23 – 31.



- Sterling, R.C., Gottheil, E., Weinstein, S.P. & Serota, R. (2001, July). The effect of therapist/patient race and sex matching in individual treatment. *Addiction*. 96(7), 1015-1022.
- Sterling, R.C., Gottheil, E., Weinstein, S.P. & Serota, R. (1998). Therapist/patient race and sex matching: Treatment retention and 9-month follow-up. *Addiction*. 93(7), 1043-1050.
- Strang, J., Des Jarlais, D.C., Griffiths, P., & Gossop, M. (1992). The study of transitions in the route of drug use: The route from one route to another. *British Journal of Addiction*. 87, 473-83.
- Strauss, A. & Corbin, J. (1994). "Grounded Theory Methodology." In NK Denzin & YS Lincoln (Eds.) *Handbook of Qualitative Research* (pp. 217-285). Thousand Oaks, Sage Publications.
- Strecher, V.J., Rosenstock, I.M. (1997). The Health Belief Model. In: Glanz, K., Lewis, F.M., Timer, B.K. (Eds.). *Health behavior and health education: Theory, research, and practice*. 2nd ed., Jossey-Bass Publishers; San Francisco, California, pp. 41–59.
- Strike, C., Rotondi, M., Kolla, G., Roy, E., Rotondi, N.K., Rudzinski, K., Balian, R., Guimond, T., Penn, R., Silver, R.B., Millson, M., Sirois, K., Altenberg, J. & Hunt, N. (2014). Interrupting the social processing linked with initiation of injection drug use: Result from a pilot study. *Drug & Alcohol Dependence*. 137, 48-54.
- Strike, C.J., Myers, T. & Millson, M. (2004, September). Finding a place for needle exchange programs. *Critical Public Health*, Vol. 14, No. 3, 261-275.
- Strike, C.J., Challacombe, L., Myers, T., & Millson, M. (2002). Needle exchange programs: Delivery and access issues. *J Public Health*. 93(5):339–43.
- Swift, W & Copeland, J. (1996). Treatment needs and experiences of Australian females with alcohol and other drug problems. *Drug and Alcohol Dependence*, 40, 211 – 219.
- Sweeting, M.J., Angelis, D.D., Ades, A.E. & Hickman, M. (2009). Estimating the prevalence of ex-injecting drug use in the population. *Statistical Methods in Medical Research*. Volume 18.
- Tammi, T. & Hurme, T. (2006). How the harm reduction movement contrasts itself against punitive prohibition. *International Journal of Drug Policy*, 8; 84-87.

- The Lancet. (2001, March 31). Editorial - rethinking America's "war on drugs" as a public health issue. *The Lancet*, Volume 357, Issue 9261, p. 971.
- Tkacz, J., Severt, J., Cacciola, J. & Ruetsch, C. (2011). Compliance with buprenorphine medication-assisted treatment and relapse to opioid use. *The American Journal on Addictions*, 21; 55-62.
- Tobler, N.S. & Stratton, H.H. (1997). Effectiveness of school-based drug prevention programs: A meta-analysis of the research. *The Journal of Primary Prevention*, Vol. 18, No. 1.
- Treloar, C., & Holt, M. (2006 August). Deficit models and divergent philosophies: Service providers' perspectives on barriers and incentives to drug treatment. *Drugs, Education, Prevention and Policy*. 13(4), 367-382.
- Treloar, C. & Cao, W. (2005). Barriers to use of needle and syringe programmes in a high drug use area of Sydney, New South Wales. *International Journal of Drug Policy*, 16; 308-315.
- Trevino, A. Javier. (2009). George C. Homans, the human group and elementary social behavior. *The Encyclopedia of Pedagogy and Informal Education*. Retrieved from [https://infed.org/mobi/george-c-homans-the-human-group-and-elementary-social-behaviour/#:~:text=The%20Aggression%2DApproval%20Proposition%3A%20Part,\(Homans%201974%3A%2037\).](https://infed.org/mobi/george-c-homans-the-human-group-and-elementary-social-behaviour/#:~:text=The%20Aggression%2DApproval%20Proposition%3A%20Part,(Homans%201974%3A%2037).)
- Tsui, J.I., Evans, J.L., Lum, P.J., Hahn, J.A. & Page, K. (2014). Association of opioid agonist therapy with lower incidence of hepatitis C and virus infection in young adult injection drug users. *JAMA Internal Medicine*, 174(12); 1974-1981.
- Tuchman, E. (2015). Females's injection drug practices in their own words: A qualitative study. *Harm Reduction Journal*, Volume 12(6).
- United National Office on Drugs and Crime (UNODC). (2014) Females who inject drugs and HIV: Addressing specific needs. Retrieved from [https://www.unodc.org/documents/hiv-aids/publications/FEMALES\\_POLICY\\_BRIEF2014.pdf](https://www.unodc.org/documents/hiv-aids/publications/FEMALES_POLICY_BRIEF2014.pdf)
- United Nations. Office on Drugs and Crime. (2004). Substance abuse treatment and care for females: Case studies and lessons learned. New York. Retrieved from [https://www.unodc.org/docs/treatment/Case\\_Studies\\_E.pdf](https://www.unodc.org/docs/treatment/Case_Studies_E.pdf)
- U.S. Department of Justice. (2020, January). Drug courts. Retrieved from <https://www.ncjrs.gov/pdffiles1/nij/238527.pdf>

- Valente, T.W., Foreman, R.K., Junge, B., & Vlahov, D. (2001, June). Needle-exchange participation, effectiveness, and policy: Syringe relay, gender, and the paradox of public health. *Journal of Urban Health*, Vol. 78, No. 2.
- Valente, T.W. & Vlahov, D. (2001, March). Selective risk taking among needle exchange participants: Implications for supplemental interventions. *American Journal of Public Health*, Vol. 91, No. 3.
- Van Ameijden E. J., Coutinho R. A. (2001). Large decline in injecting drug use in Amsterdam, 1986–98: explanatory mechanisms and determinants of injecting transitions. *J Epidemiol Commun Health*, 55: 356–63.
- Vaux, A. (1988) *Social Support: Theory, Research, and Intervention*. New York: Praeger
- Verissimo, A.D.O. & Grella, C.E. (2016). Influence of gender and race/ethnicity on perceived barriers to help-seeking for alcohol or drug problems. *Journal of Substance Abuse Treatment*, 75; 54-61.
- Villarreal, H. & Fogg, C. (2006). Syringe-exchange programs and HIV prevention. *American Journal of Nursing*, Vol. 106, No. 5.
- Wade-Olson, J. (2016, October 10). Race, staff and punishment: Representative bureaucracy in American state prisons. *Administration & Society*, Volume 51, Issue 9.
- Welch-Lazoritz, M., Habecker, P., Dombrowski, K., Villegas, A.R., Davila, C.A., Colon, Y.R. & De Leon, S.M. (2017). Differential access to syringe exchange and other prevention activities among people who inject drugs in rural and urban areas of Puerto Rico. *International Journal of Drug Policy*, 43, 16 – 22.
- West, C. & Zimmerman, D.H. (1987, June). Doing gender. *Gender & Society*, Vol. 1, No. 2, 125-151.
- Westermeyer, J. (1988). The pursuit of intoxication: Our 100 century –old romance with psychoactive substances. *American Journal of Drug & Alcohol Abuse*, Volume 14(2).
- Wodak, A., & Cooney, A. (2004). Effectiveness of sterile needle and syringe programming in reducing HIV/AIDS among injecting drug users. Geneva: World Health Organization.
- Wood, E., Lloyd-Smith, E., Li, K., Strathdee, S.A., Small, W., Tyndall, M.W., Montaner, J.S.G., & Kerr, T. (2007). Frequent needle exchange use and HIV incidence in Vancouver, Canada. *The American Journal of Medicine*, 120, 172 – 79.

- World Health Organization (WHO). (2017). People who inject drugs. Retrieved from <http://www.who.int/hiv/topics/idu/en/>
- World Health Organization (WHO). (2004). Effectiveness of sterile needle and syringe programming in reducing HIV/AIDS among injection drug users. Retrieved from [https://www.who.int/hiv/pub/prev\\_care/effectivenesssterileneedle.pdf?ua=1](https://www.who.int/hiv/pub/prev_care/effectivenesssterileneedle.pdf?ua=1)
- Wu, F., Peng, C., Haifeng, J., Zhang, R., Zhao, M. . . . Hser, Y. (19 September 2012). Methadone maintenance treatment in China: Perceived challenges from the perspectives of service providers and patients. *Journal of Public Health*, Vol. 35, No. 2, 206-212.
- Young, A.M., Havens, J.R. (2011). Transition from first illicit drug use to first injection drug use among rural Appalachian drug users: A cross-sectional comparison and retrospective survival analysis. *Addiction*, Volume 107.

APPENDIX A

Institutional Review Board Study Approval

# UNIVERSITY OF LOUISVILLE

Human Subjects Protection Program Office  
 MedCenter One – Suite 200  
 501 E. Broadway  
 Louisville, KY 40202-1798

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**DATE:** February 19, 2021  
**TO:** Crystal E Collins-Camargo, Ph.D.  
**FROM:** The University of Louisville Institutional Review Board  
**IRB NUMBER:** 20.1025  
**STUDY TITLE:** Exploring Service Provider Perspectives on Facilitators and Barriers to Needle Exchange Program Participation by Females Who Inject Drugs  
**REFERENCE #:** 717092  
**IRB STAFF**  
**CONTACT:** Jackie Powell, CIP 852-4101 jspowe01@louisville.edu

This study was reviewed on 02/19/2021 by the Chair of the Institutional Review Board and approved through Expedited Review Procedure, according to 45 CFR 46.110(b), since this study falls under Category 7: Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies

This study now has final IRB approval from 02/19/2021 through 02/18/2024.

This study was also approved through 45 CFR 46.116 (C), which means that an IRB may waive the requirement for the investigator to obtain a signed informed consent form for some or all subjects.

The following items have been approved:

Submission Components		
Form Name	Version	Outcome
Submit for Initial Review	Version 1.1	Approved as Submitted
Review Response Submission Form	Version 1.0	Approved as Submitted
IRB Study Application	Version 1.2	Approved as Submitted

Study Document			
Title	Version #	Version Date	Outcome
Thank you reminder postcard clean copy	Version 1.0	02/18/2021	Approved
Follow-up reminder and thank you letter clean copy	Version 1.0	02/18/2021	Approved
Survey Cover Letter Clean Copy	Version 1.0	02/18/2021	Approved
Survey Prenotice Clean Copy	Version 1.0	02/18/2021	Approved
Revised Research Protocol Clean Copy	Version 1.0	02/18/2021	Approved
NEP mailing list	Version 1.0	02/08/2021	Approved
NEP Survey	Version 1.0	02/07/2021	Approved
Preamble Consent clean copy	Version 1.0	02/18/2021	Approved

IRB policy requires that investigators use the IRB “stamped” approved version of informed consents, assents, and other materials given to research participants. For instructions on locating the IRB stamped documents in iRIS visit:

<https://louisville.edu/research/humansubjects/iRISSubmissionManual.pdf>

Your study does not require annual continuing review. Your study has been set with a three year expiration date. If your study is still ongoing you will receive iRIS automated reminders to submit a request to continue your study prior to the expiration date above.

All other IRB requirements are still applicable. You are still required to submit amendments, personnel changes, deviations, etc... to the IRB for review. Please submit a closure amendment to close out your study with the IRB if it ends prior to the three year expiration date.

Human Subjects & HIPAA Research training are required for all study personnel. It is the responsibility of the investigator to ensure that all study personnel maintain current Human Subjects & HIPAA Research training while the study is ongoing.

#### **Site Approval**

Permission from the institution or organization where this research will be conducted **must** be obtained before the research can begin. For example, site approval is required for research conducted in UofL Hospital/UofL Health, Norton Healthcare, and Jefferson County Public Schools, etc...

#### **Privacy & Encryption Statement**

The University of Louisville's Privacy and Encryption Policy requires identifiable medical and health records; credit card, bank account and other personal financial information; social security numbers; proprietary research data; and dates of birth (when combined with name, address and/or phone numbers) to be encrypted. For additional information:

<http://louisville.edu/security/policies>.

#### **Implementation of Changes to Previously Approved Research**

Prior to the implementation of any changes in the approved research, the investigator must submit modifications to the IRB and await approval before implementing the changes, unless the change is being made to ensure the safety and welfare of the subjects enrolled in the research. If such occurs, a Protocol Deviation/Violation should be submitted within five days of the occurrence indicating what safety measures were taken, along with an amendment to revise the protocol.

#### **Unanticipated Problems Involving Risks to Subjects or Others (UPIRTSOs)**

A UPIRTSO is any incident, experience, or outcome, which has been associated with an unexpected event(s), related or possibly related to participation in the research, and suggests that the research places subjects or others at a greater risk of harm than was previously known or suspected. The investigator is responsible for reporting UPIRTSOs to



the IRB within 5 working days. Use the UPIRTSO form located within the iRIS system. Event reporting requirements can be found at:

<http://louisville.edu/research/humansubjects/lifecycle/event-reporting>.

**Payments to Subjects**

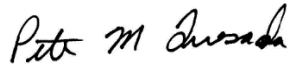
In compliance with University policies and Internal Revenue Service code, payments to research subjects from University of Louisville funds, must be reported to the University Controller's Office. For additional information, please call 852-8237 or email

[controll@louisville.edu](mailto:controll@louisville.edu). For additional information:

<http://louisville.edu/research/humansubjects/policies/PayingHumanSubjectsPolicy201412.pdf>

The committee will be advised of this action at a regularly scheduled meeting.

If you have any questions, please contact: Jackie Powell 852-4101 [jspowe01@louisville.edu](mailto:jspowe01@louisville.edu)



Peter M. Quesada, Ph.D., Chair  
Social/Behavioral/Educational Institutional Review  
Board PMQ/jsp

We value your feedback; let us know how we are doing:

<https://www.surveymonkey.com/r/CCLHXP>

APPENDIX B  
Survey Pre-notice

## Survey Pre-notice

Date

Dear Needle Exchange Program Director,

I am writing to ask for your assistance with my dissertation research project. In a couple of weeks, your NEP will receive a large envelope of surveys. There will be a cover letter and survey for each staff member that works at your needle exchange program (NEP) as well as a postage paid, return addressed envelope. The packet of information will also provide information regarding completing the survey electronically. If you could notify your staff a survey is forthcoming, this would be extremely beneficial. I know you and your staff are extremely busy and the survey should take approximately 15 - 20 minutes to complete.

The purpose of the research is to explore the perspectives of service providers on facilitators and barriers to needle exchange program participation by females who inject drugs. I am contacting NEP personnel in Kentucky, Indiana, Missouri, Tennessee, Ohio, West Virginia and Illinois. These states were selected because they are suffering from the brunt of the opioid epidemic and the consequences of injection drug use. There is limited research on females who inject drugs and needle exchange programs and this study will assist in filling an important gap in the literature and may directly benefit your community.

The survey is confidential and can be completed in hard copy format or electronically via a web link that will be provided. The researchers will make no attempt to link any staff person's individual answers to your NEP. All information will be presented in aggregate format. The participation of your staff is voluntary and if they come to a question they prefer not to answer, they are welcome to skip it and go to the next question. Should you have any questions or comments, please contact me at [tammi.thomas@louisville.edu](mailto:tammi.thomas@louisville.edu) or Dr. Crystal Collins-Camargo, dissertation committee chair at [crystal.collinscamargo@louisville.edu](mailto:crystal.collinscamargo@louisville.edu)

I look forward to your feedback and appreciate your assistance with my dissertation.

Many thanks,

Tammi Alvey Thomas, MSSW  
Doctoral Student  
Kent School of Social Work

APPENDIX C

Survey Cover Letter

## Survey Cover Letter

Date

Dear Needle Exchange Program Staff Member,

I am writing to ask for your assistance with my dissertation research project. The purpose of the research is to explore the perspectives of service providers on facilitators and barriers to needle exchange program participation by females who inject drugs. I am contacting NEP personnel in Kentucky, Indiana, Missouri, Tennessee, Ohio, West Virginia and Illinois. These states were selected because they are suffering from the brunt of the opioid epidemic and the consequences of injection drug use. There is limited research on females who inject drugs and needle exchange programs and this study will assist in filling an important gap and may directly benefit your community.

The survey should take approximately 15-20 minutes to complete. A postage-paid return addressed envelope has been provided for your ease and convenience. You can also complete the survey electronically at: (*insert survey link*).

The survey is confidential and can be completed in hard copy format or electronically. The researchers will make no attempt to link your individual answers to your NEP. All information will be presented in aggregate format. Your participation is voluntary and if you come to any question you prefer not to answer, you are welcomed to skip it and go to the next. Should you have any questions or comments, please contact me at [tammi.thomas@louisville.edu](mailto:tammi.thomas@louisville.edu) or Dr. Crystal Collins-Camargo, dissertation committee chair at [crystal.collinscamargo@louisville.edu](mailto:crystal.collinscamargo@louisville.edu)

I know you are extremely busy and I appreciate your assistance with my dissertation.

Many thanks,

Tammi Alvey Thomas, MSSW  
Doctoral Student  
Kent School of Social Work

APPENDIX D

Preamble Consent

**EXPLORING SERVICE PROVIDER PERSPECTIVES ON FACILITATORS  
AND BARRIERS TO NEEDLE EXCHANGE PROGRAM PARTICIPATION  
BY FEMALES WHO INJECT DRUGS**

Date

Dear NEP staff member,

You are being invited to participate in a research study by answering questions in the attached survey or electronically about facilitators and barriers to needle exchange program participation by females who inject drugs. This study is conducted by Dr. Crystal Collins-Camargo and Tammi Alvey Thomas, a doctoral student of the University of Louisville. There are no known risks for your participation in this research study. The information collected may not benefit you directly. The information learned in this study may be helpful to others. The information you provide will assist in explaining facilitators and barriers to needle exchange programs of female injection drug users. Your completed survey will be stored at the University of Louisville, School of Public Health and Information Sciences in a locked filing cabinet. The survey will take approximately 15 – 20 minutes time to complete.

Individuals from the Kent School of Social Work, the Institutional Review Board (IRB), the Human Subjects Protection Program Office (HSPPO), and other regulatory agencies may inspect these records. In all other respects, however, the data will be held in confidence to the extent permitted by law. Should the data be published, your identity will not be disclosed.

Taking part in this study is voluntary. By answering survey questions you agree to take part in this research study. You do not have to answer any questions that make you uncomfortable. You may choose not to take part at all. If you decide to be in this study you may stop taking part at any time. If you decide not to be in this study or if you stop taking part at any time, you will not lose any benefits for which you may qualify. Your individual answers will not be linked to your NEP. All information will be presented in aggregate format.

You will have the opportunity to register for a \$25 Walmart gift card drawing. The entry form will be at the end of the survey. If you return a hard copy survey, upon receipt of your survey, the gift card entry form will be removed from the survey and stored in a different file. This will provide confidentiality safeguarding of your data. If you complete a survey electronically, at the end of the survey you will be directed to a new web link to register for the drawing to prevent the data from being linked to you.

If you have any questions, concerns, or complaints about the research study, please contact: Dr. Crystal Collins-Camargo at 502-599-4661 or Tammi Alvey Thomas at 502-262-7210.

If you have any questions about your rights as a research subject, you may call the Human Subjects Protection Program Office at (502) 852-5188. You can discuss any



questions about your rights as a research subject, in private, with a member of the Institutional Review Board (IRB). You may also call this number if you have other questions about the research, and you cannot reach the research staff, or want to talk to someone else. The IRB is an independent committee made up of people from the University community, staff of the institutions, as well as people from the community not connected with these institutions. The IRB has reviewed this research study.

If you have concerns or complaints about the research or research staff and you do not wish to give your name, you may call 1-877-852-1167. This is a 24 hour hot line answered by people who do not work at the University of Louisville.

Sincerely,

Crystal Collins-Camargo, MSW, PhD  
MSSW  
Associate Dean for Research and Professor  
Kent School of Social Work  
University of Louisville  
109 Oppenheimer Hall  
Louisville, KY 40292  
502-599-4661  
[crystal.collinscamargo@louisville.edu](mailto:crystal.collinscamargo@louisville.edu)

Tammi Alvey Thomas,  
Doctoral Student  
School of Public Health  
University of Louisville  
485 E. Gray Street  
Louisville, KY 40202  
502-262-7210

[tammi.thomas@louisville.edu](mailto:tammi.thomas@louisville.edu)

## APPENDIX E

### Survey

**University of Louisville**  
**Kent School of Social Work**  
**Needle Exchange Program Provider Perception Survey**

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**Research Objective:** To explore service provider perspectives on facilitators and barriers to needle exchange program participation by females who inject drugs.

**SECTION A: DEMOGRAPHIC INFORMATION**

**INSTRUCTIONS:** As the survey respondent, please provide your information below. Only respond once to the survey via mail or electronically.

Date: \_\_\_\_\_

Age: \_\_\_\_\_

Gender:

- |  |   |
|--|---|
| <input type="checkbox"/> Male              | <input type="checkbox"/> Prefer to self-describe: |
| <input type="checkbox"/> Female            | _____   |
| <input type="checkbox"/> Prefer not to say |   |

Race:

- |   |  |
|---|--|
| <input type="checkbox"/> Asian                          | <input type="checkbox"/> White                               |
| <input type="checkbox"/> Black or African American      | <input type="checkbox"/> Native Hawaiian or Pacific Islander |
| <input type="checkbox"/> American Indian/Alaskan Native | <input type="checkbox"/> 2 or more races                     |
|   | <input type="checkbox"/> Other: _____                        |

Ethnicity:

- Hispanic or Latino  
 Not Hispanic or Latino

Zip code of the NEP you are completing the survey for: \_\_\_\_\_

The NEP organizational type is:

- Part of City/County Social Services (includes health departments)  
 Part of substance abuse treatment facility  
 Part of a hospital  
 Other: \_\_\_\_\_

What is your role at the NEP?

- Health department employee nursing staff  
 Health department other employee - Role: \_\_\_\_\_  
 Volunteer  
 Social worker  
 Physician  
 Peer mentor

- Other agency employee – Agency: \_\_\_\_\_ Position:  
\_\_\_\_\_
- Other agency employee – Agency: \_\_\_\_\_ Position:  
\_\_\_\_\_

Which type of NEP do you offer?

- Fixed location
- Mobile
- Both fixed and mobile  
location
- Other:  
\_\_\_\_\_

In a typical week at the NEP, do you see more male or female clients? Male      Female

In an average month, what is the percentage of your clients that identify as female?

\_\_\_\_\_

**SECTION B: BARRIERS TO USAGE**

INSTRUCTIONS: In your opinion, indicate (✓ or X in the box) the extent to which you believe the item listed below is a barrier for females who inject drugs (FWID) in using the Needle Exchange Program (NEP) in your community. Mark only 1 response.

Item	Major barrier	Minor barrier	Not a barrier	Not applicable
<b>Organizational Factors</b>				
Staff are community members				
Staff are persons who previously injected drugs				
Staff interaction with clients				
Number of NEP staff				
Gender of staff				
Age of staff				
Race/ethnicity of staff				
Staff turnover				
Staff knowledge about FWID and exchange sex for drugs				
Staff knowledge of sexual abuse/trauma/domestic violence females may have experienced				
Days and times NEP are open				
Location of NEP				
Availability of a parking space				
Client confidentiality				
Accessibility of public transportation				
NEP mobile unit services				
Wait times to be seen				
Level of community support for a harm reduction program				
Availability of supplies				
Quality of supplies				
NEP staff knowledge regarding services provided				
Medical services provided				
Number of visits for medical tests/treatment				

Item	Major barrier	Minor barrier	Not a barrier	Not applicable
Health communication campaigns reflect community/cultural norms				
Health communication campaigns reflect susceptibility/vulnerability of health complications related to injection drug use				
<b>Practice Factors</b>				
Availability of childcare				
Specified days and times for females				
Private areas for females				
Availability of male condoms				
Availability of female condoms				
Prenatal services provided				
Clients concern of punitive action (reporting to CPS, CJ system, etc.) for NEP use				
<b>Policy Factors</b>				
NEP registration of clients				
Number of supplies females can receive weekly				
Law enforcement involvement				

List any other barriers you believe are important for us to be aware of.

### SECTION C: FACILITATORS TO USAGE

INSTRUCTIONS: In your opinion, indicate (✓ or X in the box) the extent to which you believe the item listed below is a facilitator for females who inject drugs (FWID) in using the Needle Exchange Program (NEP) in your community. Mark only 1 response.

Item	Major facilitator	Minor facilitator	Not a facilitator	Not applicable
<b>Organizational Factors</b>				
Staff are community members				
Staff are persons who previously injected drugs				
Staff interaction with clients				
Number of NEP staff				
Gender of staff				

<b>Item</b>	<b>Major facilitator</b>	<b>Minor facilitator</b>	<b>Not a facilitator</b>	<b>Not applicable</b>
Age of staff				
Race/ethnicity of staff				
Staff turnover				
Staff knowledge about FWID and exchange sex for drugs				
Staff knowledge of sexual abuse/trauma/domestic violence female may have experienced				
Days and times NEP are open				
Location of NEP				
Availability of a parking space				
Client confidentiality				
Accessibility of public transportation				
NEP mobile unit services				
Wait times to be seen				
Level of community support for a harm reduction program				
Availability of supplies				
Quality of supplies				
NEP staff knowledge regarding services provided				
Medical services provided				
Number of visits for medical tests/treatment				
Health communication campaigns reflect community/cultural norms				
Health communication campaigns reflect susceptibility/vulnerability of health complications related to injection drug use				
<b>Practice Factors</b>				
Availability of childcare				
Specified days and times for females				
Private areas for females				
Availability of male condoms				
Availability of female condoms/internal condoms				
Prenatal services provided				

Item	Major facilitator	Minor facilitator	Not a facilitator	Not applicable
Clients concern of punitive action (reporting to CPS, CJ system, etc.) for NEP use				
<b>Policy Factors</b>				
NEP registration of clients				
Number of supplies persons can receive weekly				
Law enforcement involvement				

**List any other facilitators you believe are important for us to be aware of.**

#### **SECTION D: SERVICES**

**INSTRUCTIONS:** Below is a list of services that may be offered through your NEP. Please indicate (√ or X in the box) if the service is offered or not offered at your NEP. If a service is not offered, indicate (√ or X in the box) if you believe it should be offered at your NEP.

Service	Offered	Not Offered	Should be Offered (only if not offered selected)
HIV testing			
Hepatitis testing			
Specified days and times for females only			
Flu shot			
Pre-exposure prophylaxis (PrEP) for HIV			
STI/STD testing			
Tetanus shot			
Other vaccinations/immunizations			
NARCAN			
Drug treatment referrals			
Mental health counseling referrals			
Medication assisted treatment referrals			
Mobile NEP services			
Female condoms/internal condoms			
Male condoms			
Other birth control options			



Service	Offered	Not Offered	Should be Offered (only if not offered selected)
Feminine hygiene products			
OBGYN services			
Dental services			
Vision services			
Self-help classes			
Pediatric health services			
Wound care supplies			
Childcare for NEP visit only			
Parenting classes			
Housing assistance			
Employment services			
Clothing services			
Food bank			
Human trafficking literature			
Domestic violence literature			
Sexual abuse literature			
HIV literature			
STI/STD literature			
Ability to apply for state health insurance			
Ability to apply for a birth certificate			
Ability to apply for a state ID card/driver's license			

**List any services you offer that are not mentioned above.**

### **SECTION E: OPEN ENDED QUESTIONS**

1. Has there been any targeted recruitment/outreach initiatives conducted toward FWID?  
No    Yes. If yes, please explain below.
2. How do you encourage females who inject drugs to continue to use the NEP?
3. If outreach to females who inject drugs has been conducted, how could it be improved?

4. Do you believe there are advantages of offering females-only services? No  
Yes  
If yes, what do you believe are the advantages?
5. If you could change one NEP policy at your site what would it be? Why?
6. Please feel free to share any additional comments.

*Thank you for your time. Your responses are greatly appreciated!*

*Tammi Alvey Thomas, MSSW*

*485 E. Gray Street*

*Louisville, KY 40202*

*Phone: 502-262-7210*

*Email: [tammi.thomas@louisville.edu](mailto:tammi.thomas@louisville.edu)*

*If you would like to be entered into a \$25 dollar Walmart gift card drawing, please complete the information below. For confidentiality purposes, this information will be separated from your survey responses.*

**Gift Card Drawing Entry**

Name:

Mailing Address:

Email:

APPENDIX F

Reminder Postcard

## Follow-up Reminder Notice

Date

Dear Needle Exchange Program Staff Member,

About three weeks ago, I sent you a request to participate in research by answering survey items asking for your opinion on the facilitators and barriers to needle exchange program participation by females who inject drugs. I do not know if you have completed the survey but would appreciate it if you do. Many states across the country are battling the opioid epidemic and the harmful effects of an increase in injection drug use. My hope is that this study will provide needle exchange staff with information that can be used to increase participation of females who inject drugs in NEP services.

I am writing again because of the importance that your responses have for helping to get the best results. It is only by hearing from nearly everyone in the sample that I can accurately depict the facilitators and barriers females who inject drugs have accessing NEPs. Thus, I hope you will complete the survey soon.

Simply complete the previously mailed survey and return it in the postage paid return addressed envelope provided or you can complete the survey electronically at: (*insert survey link*). Your responses are voluntary and will be kept confidential. If you have any questions about this survey please contact me at [tammi.thomas@louisville.edu](mailto:tammi.thomas@louisville.edu) or 502-852-3289.

Thank you so much for assisting me with my dissertation research project.

With sincere gratitude,

Tammi Alvey Thomas, MSSW  
Doctoral Student  
Kent School of Social Work

## APPENDIX G

Thank you/follow-up letter

**Thank you reminder postcard**

**FRONT of a 5 ¾ in. x 11 in. postcard**

Reminder

Please help me complete my dissertation research by completing the NEP survey.

**BACK OF POSTCARD**

Dear Needle Exchange Program Staff Member,

Last week, I mailed you a request to participate in research by answering survey items asking for your feedback on the facilitators and barriers to needle exchange program participation by females who inject drugs.

If you have already completed the questionnaire, please accept my sincere thanks. If not, please take the time to complete the survey as soon as possible. The survey can also be completed online at: <https://www.surveymonkey.com/r/259DMZQ>. I am very grateful for your assistance with this important study.

If you do not have a survey, or if you have any questions, please feel free to contact me at [tammi.thomas@louisville.edu](mailto:tammi.thomas@louisville.edu) or 502-852-3289.

Thank you for your feedback!

Tammi Alvey Thomas, MSSW  
Doctoral Student  
Kent School of Social Work

## CURRICULUM VITAE

NAME: Tammi Alvey Thomas  
ADDRESS: University of Louisville  
School of Public Health & Information Sciences  
485 E. Gray Street  
Louisville, KY 40202

### EDUCATION

& TRAINING: B.S., in Criminal Justice  
San Diego State University  
1990-1991

MSSW, Social Work  
University of Louisville  
2009-2013

AWARDS: UofL Delphi Center for Teaching and Learning Faculty Favorite  
2019-2020  
2015-2016  
2014-2013

UofL Graduate Dean's Citation  
2013

Kent School of Social Work Mary Ann Millet Field Practicum Award for  
Outstanding Performance  
2013

Pi Phi Chapter of Phi Alpha National Social Work  
2013

UofL Staff Disability Awareness Award  
2008

### PROFESSIONAL SOCIETIES



National Academic Advising Association (NACADA)  
National Association of Student Personnel Administrators (NASPA)  
National Association of Graduate Admissions Professionals (NAGAP)

## NATIONAL MEETING PRESENTATIONS

March 2019. ASPPH Undergraduate Summit. Creating a student centered undergraduate public health practice experience with your local health department. Leslie Wolf, PhD, Matt Rhodes, MPH, Billie Castle, PhD, MPH and Tammi Alvey Thomas, MSSW, PhD(c).

March 2019. National HIV Prevention Conference. Using HIV-focused Monologues to Address HIV-related Stigma among African Americans in Louisville, Kentucky. Jelani Kerr, PhD, Lesley Harris, PhD, MSW, Timothy Crawford, PhD, MPH, Elizabeth Glass, MFA, Tammi Alvey Thomas, MSSW, ABD, and Verena Schmidt, MSSW, ABD.

May 2018, 14<sup>th</sup> International Congress of Qualitative Inquiry; The Process of Transforming Qualitative Data into Monologues; Verena Schmidt, MSSW, ABD, Tammi Alvey Thomas, MSSW, ABD, Lesley Harris, PhD, MSW and Jelani Kerr, PhD.

November 2017, American Public Health Association; African American Older Adults Living with HIV: Exploring Stress, Stigma and Engagement in HIV Care; Lesley Harris, PhD, MSW, Timothy Crawford, PhD, MPH, Jelani Kerr, PhD, Tammi Alvey Thomas, MSSW, ABD and Verena Schmidt, MSSW, ABD.

November 2017, American Public Health Association; Incarceration Experiences of Older African American Adults living with HIV: How Stigma and HIV Testing Impact Engagement in Care; Verena Schmidt, MSSW, ABD, Lesley Harris, PhD, MSW, Tammi Alvey Thomas, MSSW, ABD, Jelani Kerr, PhD, MPH and Tim Crawford, PhD, MPH.

May 2017, National Conference on HIV and Social Work; HIV + Incarceration: A Social Justice Issue Impacting Older African American Adults; Verena Schmidt, MSSW, ABD, Tammi Alvey Thomas, MSSW and Lesley M. Harris, PhD, MSW.

November 2016, American Society of Criminology; Historical Perspectives and Trends of Criminal Justice Involved Females; Tammi Alvey Thomas, MSSW, Amanda Velez, BA, Jordan Wilfong, ABD, MSW, LCSW and Seana Golder PhD.

April 2016, APHA Annual Meeting; Undergraduate Public Health Education Rooted in Critical Thinking: Program Development, Content Delivery, and Lessons Learned from the First Academic Year, David Johnson, PhD, MPH, CPH, Tammi Alvey Thomas, MSSW, Pete Walton, MD. University of Louisville School of Public Health and Information Sciences.

October 2015, 13th Annual UC Davis Pre-Medical & Pre-Health Professions National Conference; Panelist Careers in Public Health.

April 2014, National Conference on Child Abuse and Neglect, Implementation of Statewide Family Court Rules of Procedure and Practice: A Strategy Promoting Best Practice; Crystal Collins-Camargo, MSW, PhD, Sara Boswell Dent, J.D., Corey Boes, MSW and Tammi Thomas, MSSW.

#### REFEREED JOURNALS

Harris, L.M., Crawford, T.N., Kerr, J.C., Thomas, T.A. and Schmidt, V. (2020) African American older adults living with HIV: Exploring, stress, stigma and engagement in HIV care. *Journal of Health Care for the Poor and Underserved*.

Sears, J.S., Verbist, A.N., Wilfong, J., Thomas, T.A., Mount, S., Sabree, R. & Zyl van, M.A. (2018). Mapping the science of social work debate: An exercise in doctoral student education. *Journal of Social Work Education*, 54:3.

Leslie, K.F., Jones, V.F., Thomas, T.A. & Michalczyk, L. (Fall 2016). Sharing our stories with the future health care workforce: Perspectives of low income poverty simulation volunteers. *Journal of Community Engagement and Scholarship*.

Thomas, T., Collins-Camargo, C., & Boes, C.R. (July 2016). A process evaluation of a Kentucky court improvement initiative. *Family Court Review*.

Collins-Camargo, C., Boes, R., Thomas, T. (2015). Evaluation of Implementation of the Kentucky Court Rules of Procedure and Practice: An Approach to Assessing the Impact of Court Reform Efforts. *Juvenile and Family Court Journal*, v66. N4.