



Role of Needle Exchange Programs in Harm Reduction

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Citation this Article: Sudhir K Ambati, Veena Bhaskar S Gowda, Bhaskar H Nagaiah, “Role of Needle Exchange Programs in Harm Reduction”, IJMSIR- June - 2022, Vol – 7, Issue - 3, P. No. 34 – 41.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Needle exchange programs are the essential or key components for harm reduction. Due to the increasing cases of blood-borne infections, including HIV and hepatitis, and drug use, needle exchange programs or syringe service programs have been implemented across countries as harm reduction strategies. The increasing cases of blood-borne infections and drug use are associated with the sharing of contaminated or infected needles and syringes and injection of drugs. Therefore, people who inject drugs are highly vulnerable to blood-borne infections. Consequently, needle exchange programs are perceived to have significant contributions in reducing the harm caused by these infections and substance use. This article establishes that needle exchange programs play a crucial role in harm reduction by decreasing and preventing blood-borne infections through the exchange of contaminated injection equipment with sterile equipment as well as reducing drug-related harms and deaths and provide prevention programs for people who inject drugs. This helps them find access to health services.

Keywords: Needle Exchange Programs, Syringe Service Programs, Harm Reduction, HIV, Hepatitis, Drug Use, Injecting Drug Users, Blood-Borne Infections, Drug-Related Harms and Deaths

Introduction

Needle Syringe Exchange Program primarily involves providing new needles/syringes to Injection Drug Users and collecting old, used needles/syringes. Injecting drug users face high morbidity and mortality rates due to drug-related harm, including overdose, blood-borne infections, and drug-related deaths. The most common infections that Injecting drug users experience include hepatitis C, human immunodeficiency virus, and sepsis or bacteremia [1]. Based on the data on the global prevalence of blood-borne infections, it is well-established that a total of between 12.7 to 16 million Injecting drug users have the infections and 1.2 million of these people are living with HIV while 10 million are infected with hepatitis C [2]. The increase in the transmission of these infections is associated with sharing needles and syringes, and other paraphernalia, known as the key transmission routes [1]. Needle and syringe programs were developed and implemented in the 1980s as the appropriate response

strategy to the global epidemic of HIV [1]. Also, the needle exchange programs were introduced to offer access and encourage the utilization of sterile injection paraphernalia by Injecting drug users. Since that time, the provision of sterile injection services has rapidly grown, and the programs are favored as the critical components of harm minimization or harm reduction policies [3]. Such policies emphasize reducing all drug-related harms caused by blood-borne infections, reducing sharing and reuse of needles and syringes, and minimizing the volume of discarded syringes and needles within the environment [3]. Even though there is limited information on the effectiveness of needle exchange programs, existing studies have investigated the program's impacts on harm reduction [4, 5]. This article provides in-depth discussion on the roles of needle exchange programs in harm reduction. The article is organized by sub-themed sections, including prevention of blood-borne infections, reducing drug-related harms and deaths, and accessibility to appropriate health services and sterile paraphernalia

Roles of Needle Exchange Programs in Harm Reduction

Needle exchange programs are considered safe and highly effective harm reduction platforms that help promote health among Injecting drug users [6]. Despite that these programs are poorly funded and often perceived to be illegal in some countries because of the stigma and fear surrounding their utilization, their implementation and use are essential to promote public health and minimize structural inequality [6]. Several studies that have examined the efficacy of needle exchange programs have shown their effectiveness in preventing blood-borne infections, such as HIV and hepatitis, reducing drug-related harms, and improving

services that provide access to sterile equipment like syringes and needles [1, 7-9].

Reduction and Prevention of Blood-Borne Infections

Blood-borne pathogens are often spread through injection drug use when injection materials, such as needles and syringes, are shared or used. More than 60% of people who inject drugs are highly vulnerable to blood-borne infections because of needle and syringe sharing with the infected people especially HIV and hepatitis C infection. Besides, the World Health Organization reported that 10% of all new blood-borne infections, especially HIV, are associated with injection drug use. Reducing or preventing the risk of acquiring and spreading the infections through injection drug use requires appropriate interventions [10]. Needle exchange programs help prevent these infections, which in turn reduces the healthcare costs needed to treat the infected persons [10]. Clinical evidence establishes that the implementation and use of needle exchange programs prevent approximately 50% of hepatitis C and HIV incidences [11]. The programs have been implemented in some countries, including India, Ukraine, and Australia, and have reduced blood-borne infections. These programs effectively reduce blood-borne infections when used together with medications, such as medication-assisted treatment aimed at treating Opioid dependence & antiretroviral treatments [11, 12].

Further, with the introduction of needle exchange programs, injection drug users can exchange contaminated syringes for sterile ones daily. In doing this, the programs aim at reducing and preventing the circulation of contaminated injection materials; therefore, preventing the transmission of blood-borne pathogens [11]. Most needle exchange programs also provide other sterile paraphernalia that enhances safer injections. These programs serve as the pivotal entry point for drug

rehabilitation and treatment to prevent the spread of infections in the community [13]. Even though these needle exchange programs were introduced differently across countries, it is well demonstrated that in some cities the needle exchange programs are highly associated with a dramatic decline in HIV incidence, which reflects the assumption that the HIV epidemic among injection drug users has fundamentally been reversed [14]. The other prevention tools that needle exchange programs provide to reduce and prevent blood-borne infections include vaccinations, counseling programs, and condoms. These tools help protect against viral hepatitis, HIV, and other sexually transmitted infections [15].

Moreover, needle exchange programs have been introduced in various settings, including prisons, to reduce injecting drug use, thereby reducing the transmission of infections. A qualitative study investigated the perceptions of Irish senior management from the prison system regarding the use of needle exchange programs, focusing on the provision of clean needles to injecting drug users [9]. The study established that needle exchange programs are key components of harm reduction through the use of sterile equipment to reduce and prevent transmission of blood-borne infections. With the provision of clean needles and syringes, needle exchange programs prevent sharing contaminated injecting equipment among prisoners [9]. Also, the study revealed that the provision of sterile needles in the prison settings ensures that the prisoners do not use the contaminated equipment as weapons against colleagues and staff, therefore preventing the spread of infections within and outside the prison system [9]. Similar findings were found in a qualitative study that explored stake holders perceptions, including injecting drug users, regarding facilitators and barriers to using needle exchange programs in Yunnan Province,

China [16]. The study revealed that needle exchange programs increase awareness among injecting drug users on harm reduction interventions that can enable them to practice some behaviors that prevent the transmission of blood-borne infections [16]. Further, the study established that needle exchange programs provide psychological counseling, behavioral therapy, and training to injecting drug users, facilitating access to prevention practices of transmissible infections [16]. Thus, these findings imply that needle exchange programs are useful in harm reduction by ensuring that injecting drug users engage in activities that prevent the transmission of diseases, thereby decreasing the harms caused by the infections. Further, needle exchange programs are effective platforms that enable Injecting drug users to join substance use treatment and prevention programs, including access to needed health services and use of clean needles and syringes, which assist them in learning ways to abstain from using the drugs [17].

Reducing Drug-Related Harms and Deaths

Needle exchange programs serve as essential components of harm reduction through preventing or reducing drug-related harms and deaths. The programs help reduce deaths from drug overdose by providing teaching and counseling sessions to people who inject drugs on ways to prevent and respond to drug overdoses [11]. The programs also train Injecting drug users on the clinical benefits and use of appropriate medications like naloxone to reverse a drug overdose. Moreover, most needle exchange programs provide overdose prevention kits to those who inject drugs to reduce and prevent drug-related harms and deaths from overdose [11]. These programs have been implemented at community levels to reduce needle stick injuries and overdose deaths without supporting illegal injections of drugs. The existing body of knowledge that has investigated the role of needle

exchange programs have shown that these programs benefit the community and promote public safety by protecting Injecting drug users and the entire public by providing safe disposal of used needles and syringes and reducing the presence of used needles in the community environment [18, 19]. By engaging with injecting drug users, the needle exchange programs represent a harm reduction method for drug-related mortalities by reducing the transmission of deadly infectious diseases and decrease the risk of needle stick injuries that cause deaths. The programs ensure the used syringes or needles and their wastes in the community environment are disposed properly to prevent needle stick injuries-related death [6].

Needle stick injuries are the most common harms that can be concerning, and stressful events experienced by the public, including law officers. A research study that compared the prevalence of poor disposal of needles or syringes and self-reported disposal behaviors in San Francisco without needle syringe programs indicated that the community has many improperly disposed of needles and syringes [20]. The study revealed that with the introduction of a needle exchange program, the safe disposal of used needles and syringes has improved, which reduces needle-related injuries and deaths [20]. Similarly, it is illustrated that needle exchange programs reduce drug-related harms by improving the safety of community people by getting used syringes and needles off streets [21]. Since the programs mainly focus on collecting and safe disposal of used needles and exchanging them with sterile ones, the programs encourage Injecting drug users to safely dispose of used equipment and use sterile ones [21]. Overall, the studies imply that the programs work by decreasing the time the used needles or syringes are distributed in the community. This, therefore, reduces the public risk of

coming into contact with contaminated needles that can pose severe injuries.

With the prevention of the spread of blood-borne infections, needle exchange programs reduce drug-related mortalities through drug counseling [22]. It is evident that counseling Injecting drug users provides the basis for such individuals to seek the needed treatment that discourages them from using drugs and facilitates their recovery process. This is essential in decreasing the rate of mortalities that can arise with continuous drug overdose [22]. Injecting drug users should be made aware of the prevention strategies of overdose to reduce drug-related harms and deaths. Therefore, the needle exchange programs play a crucial role in providing the needed counseling on overdose prevention strategies, including the use of naloxone and fentanyl test strips. This counseling intervention on overdose prevention enables the Injecting drug users to engage in drug use discussions and promote provider-user relationships, therefore reducing harms from overdose drug use [23].

Further, needle exchange programs serve as harm reduction components for drug-related harms and deaths by reducing injecting drug use and injecting drug use-related complications. The programs are mainly used as a personalized strategy to the individual or the community, focusing on reducing the harmful effects of injection drug use [23]. When combined with other medication-assisted treatment options, including those for opioid use disorder, needle exchange programs have substantial public health roles in reducing the acquisition and spread of blood-borne infections, thereby reducing severe complications that can lead to death [24]. This shows that the implementation of needle exchange programs effectively reduces mortalities that result from drug-related injuries and harms. The programs help Injecting

drug users to take personalized care and seek appropriate care that would lead to enhanced health outcomes.

Accessibility to Appropriate Health Services and Sterile Paraphernalia

Needle exchange programs serve as the essential components that enable linkages to other health care services [11]. The programs allow for easier access to medical and health services, such as HIV and hepatitis diagnosis and treatment, and medication-assisted treatment for drug use [11]. Among Injecting drug users, most needle exchange programs give referrals to medication-assisted treatment. People who seek such health services are more likely to begin their treatment and report reduced or discontinued use of injecting drugs [25]. The programs facilitate access to the needed treatment, and people who are referred to health care facilities for enough support show high readiness to stop or reduce using the drugs [26]. There is also available evidence that needle exchange programs improve direct contact with nurses and other community-based venues that facilitate Injecting drug users easier access to primary care services. HIV and hepatitis infected people and the Injecting drug users who visit needle exchange programs get easier access to comprehensive community-based programs that provide a range of prevention services, including testing of infectious diseases, vaccination, and are connected to healthcare services [11].

In regard to sterile paraphernalia, clinical evidence demonstrates the role of a needle exchange program in providing access and use of sterile injection equipment, including needles, syringes, and other related drug preparation equipment [1]. The programs ensure that contaminated or used paraphernalia are properly disposed of, and sterile equipment is offered to prevent the spread of infections and needle stick injuries. Accessibility to

these sterile paraphernalia helps minimize syringe and needle sharing and reuse, therefore reducing all-drug-related and transmission of HIV and hepatitis infections [1]. A qualitative exploratory study that investigated the use of a needle exchange program as a harm reduction intervention for injecting drug users revealed that most injecting drug users who took part in the program reported less risk drug use behavior, with approximately 50% reporting that they no longer shared and reused needles [27]. The study revealed that close to 70% of the injecting drug users were able to access the clean needles at least every two weeks and a majority of them reported using sterile paraphernalia [27]. Therefore, these findings illustrate that needle exchange programs provide enough counseling to Injecting drug users and improve access to clean needles and syringes [27]. This improved access to sterile needles or syringes is essential towards reducing harms caused by transmissible infections and drug use. Research that investigated the accessibility to syringe service programs in Kentucky, North Carolina, and West Virginia between 2013 and 2017 found that access to the programs is associated with increased access to sterile equipment or injection paraphernalia that help mitigate or curb health effects associated with injecting drug use [28]. The research established that with appropriate support and authorization, effective implementation and access to needle exchange programs in all areas, including underserved places and in places with a higher number of Injecting drug users, is associated with sufficient access to safe and sterile injection equipment [28].

Conclusion

Blood-borne infections and drug use are among the leading health problems that have resulted in increased harm and deaths globally. Injecting drug users are at greater risks for contracting blood-borne infections,

including HIV and hepatitis. Population-based prevention strategies have been introduced to reduce harm from these blood-borne infections and drug use. Needle exchange programs are among the prevention strategies that serve as the key essential components for harm reduction. The programs play crucial roles in harm reduction by minimizing the transmission of blood-borne infections, reducing drug-related harms and deaths, and improving access to health services and sterile injecting equipment like needles, syringes, or paraphernalia. Based on the reviewed articles, needle exchange programs can be recommended as evidence-based prevention strategies for harm reduction.

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