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Research paper

Differential access to syringe exchange and other prevention activities among people who inject drugs in rural and urban areas of Puerto Rico

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ABSTRACT

Background: Injection drug use and its associated blood-borne infections has become a rapidly increasing problem in rural areas of the US recently. Syringe exchange programs have been shown to be effective for reducing transmission of blood borne infections, however access to these prevention efforts may be limited in rural areas.

Methods: This paper utilizes two separate community samples of people who inject drugs (PWID) in Puerto Rico to achieve the following research objectives: (1) compare rural and urban access to syringe exchange programs, free sterile syringes and other HIV/HCV prevention activities, and (2) examine whether utilization of prevention activities is associated with lower injection risk behaviors. Two samples were recruited with RDS (n = 315 rural sample; n = 512 urban sample) and included adults aged 18 years and older who have injected drugs within the past month.

Results: 78.5% of the urban sample utilized a syringe exchange program in the past year, compared to 58.4% of the rural sample ($p < .001$). 71.4% of the urban sample received free sterile needles, compared to 58.4% of the rural sample ($p < .001$). 66% of the urban sample received free works compared to 59% of the rural sample ($p = .034$). 29% of urban PWID had a conversation with an outreach worker about HIV prevention compared to 18% of the rural sample ($p < 0.001$). Receiving free needles significantly increases the frequency of using a sterile needle to inject ($p < .001$).

Conclusion: Urban PWID were significantly more likely to have utilized syringe exchange programs, received free sterile needles, received free works, and to have talked about HIV prevention with an outreach worker during the past year than PWID residing in rural areas. Individuals who accessed these prevention activities were significantly less likely to exhibit risky injection behavior. Policy implications call for increasing access to prevention services in rural areas to reduce disease transmission.

Introduction/lit review

In the United States, injection drug use and the associated blood-borne infections have traditionally been considered an urban problem, considering nearly all of the scientific research on injection drug use and its related harms come from large urban areas (National Research Council and Institute of Medicine Panel on Needle Exchange and Bleach Distribution, Normand, Vlahov, & Moses, 1995) although researchers have emphasized that rural drug use and its harms require greater attention (Dombrowski, Crawford, Khan, & Tyler, 2016). However, in 2015 this view began to shift as new HIV and Hepatitis C (HCV) outbreaks emerged, revealing widespread rural drug injection—the most public of which occurred in Scott County, Indiana (Harper, 2015; Peters et al., 2016; Strathdee & Beyrer, 2015). Between 2010 and 2013, HCV infections have risen 150% nationwide, with the largest increases (up to 364%) seen in rural areas (Centers for Disease Control & Prevention, 2016; Suryaprasad et al., 2014; Whalen, 2015). Injection drug use continues to be an important factor driving the spread of HIV and Hepatitis C (HCV) in the United States as a whole, and especially in Puerto Rico, where injection drug use was the exposure category for almost half of accumulated AIDS cases

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and more than one-fourth of HIV diagnoses between 2005–2011 (Miranda De León, Marrero Cajigas, Rolón Colon, & López Alvarado, 2011). Pérez, Torres, Roman, & Colon (2005) found lifetime cocaine and lifetime heroin use to be significant predictors of HCV prevalence in a sample of the general population (aged 21–64) in San Juan, PR. The shared use of injection equipment (including syringes, cookers, and cotton) is often responsible for these transmissions (Abadie, Welch-Lazoritz, Gelpi-Acosta, Reyes, & Dombrowski, 2016; Hagan et al., 2001). One method for abating the transmission of blood borne illnesses through drug use are syringe exchange programs (SEPs) which provide people who inject drugs (PWID) with sterile injection equipment (López et al., 2014).

Syringe exchange programs (also known as Needle Syringe Programs, as not all syringe exchange programs actually require an exchange) have been shown to be effective for preventing HIV risk behaviors and reducing transmission of HIV and viral Hepatitis. A 2013 systematic review found considerable evidence for the effectiveness of population level syringe coverage (where 10 or more syringes per PWID are distributed for free to at least 50% of the injecting population per year) on reducing HIV/HCV prevalence and incidence. In a 2001 meta-analysis which included syringe exchange programs of all sizes, Gibson, Flynn, and Perales (2001) found positive effects associated with syringe exchange programs in 28 of 42 studies, while 2 studies found negative associations and 14 found either no association or mixed results.

Unfortunately, access to syringe exchange programs and other public health campaigns aimed at reducing the health risks of injection drug use are scarce in rural areas (Centers for Disease Control & Prevention, 2015). In 2015 the CDC reported that only 20% of syringe exchange programs serve rural areas and rural SEPs operate under smaller budgets (average rural budget was $26,023, mean # of syringes exchanged was 91,536, which calculates to exchanging 3.5 syringes per $1 spent) than SEPs serving urban areas (average urban budget was $184,738, mean # of syringes exchanged was 305,694, which calculates to exchanging 1.65 needles per $1 spent) (Centers for Disease Control & Prevention, 2015). Rural areas also lack coverage for other prevention activities, such as counseling. According to the director of the CDC's National Center for HIV/AIDS, Viral Hepatitis, STD, and TB prevention Jonathan Mermin, "In many urban settings in the U.S., people who inject drugs have had years of preventative counseling and messaging and know how to protect themselves, yet in rural areas, many may not have received counseling and it presents a problem" (Whalen, 2015). The sentiment that HIV testing, counseling, and drug use education programs are lacking in rural areas, and that this is a key contributor to the spread of these diseases, has been echoed by scientific researchers in an explanation of the recent outbreak in rural Indiana (Peters et al., 2016; Strathdee & Beyrer, 2015) and in an overall assessment of drug-related harms in rural areas (Dombrowski et al., 2016).

The current paper examines differences between urban and rural people who inject drugs using two community samples from both rural and urban areas of Puerto Rico to assess (1) access to free sterile syringes and other HIV/HCV prevention activities, and (2) risk behaviors of those who did and did not access prevention activities.

Methods

This paper utilizes data from two separate samples of injection drug users in Puerto Rico. The *rural sample* consists of 315 injection drug users residing in four rural towns in the mountainous region of central Puerto Rico, about 40 miles from San Juan. The Injection Risk Networks in Rural Puerto Rico project completed interviews between April 2015 and June 2015. Sample recruitment was managed using respondent driven sampling (RDS) whereby eight "seed respondents" were chosen to serve as the first participants, then participants who completed the survey were given three referral coupons they could pass out to other PWID they knew and who had not previously participated in the study. Every eligible referral earned the recruiter an additional $10. Upon completion of the questionnaire participants were given $25. These four towns were chosen due to the presence of a syringe exchange program operating in this rural region in Puerto Rico, collaboration with whom facilitated seed selection—all eight seeds were identified by their participation in the rural syringe exchange program. Participants were 18 years of age or older, alert at the time of the interview, and active injection drug users (injected drugs within the last 30 days). The study received IRB approval through the University of Nebraska-Lincoln (IRB# 20131113844FB) and the University of Puerto Rico School of Medicine (IRB# A8480115).

The *urban sample* consists of 512 injection drug users residing in San Juan, Puerto Rico and the surrounding metropolitan area who participated in the CDC's National HIV Behavioral Surveillance (NHBS) cycle among persons who report injection drug use (IDU) Round 3 study. The NHBS IDU 3 study completed interviews between August 2012 and December 2012. Sample recruitment was also managed using Respondent Driven Sampling, whereby participants who completed the survey were given three referral coupons that they could pass out to other PWID they knew who had not previously participated in the study. NHBS participants were compensated with $25 for the interview and $10 for each referral.

Both the urban and rural questionnaires were very similar, the Injection Risk Networks in Rural Puerto Rico project interview was based off of the CDC NHBS IDU Round 3 Questionnaire version 13, and all measures analyzed in the current paper were exactly the same for rural and urban participants. In addition to demographic variables, this questionnaire collected information about type and frequency of drug use, as well as HIV and HCV risk behaviors such as sharing of needles, cookers, cotton, and water, and utilization of prevention activities. The existence of these two samples, one collected as part of the CDC's National HIV Behavioral Surveillance project, Injection Drug User Round 3, in urban San Juan, and the other, collected in rural areas surrounding San Juan in Puerto Rico as part of a NIDA funded project aimed at understanding risk networks in rural areas, provide a unique opportunity to compare data from rural and urban areas of the same geographic region at similar points in time.

Measures

Utilized syringe exchange program was assessed with the question "in the last 12 months when you injected, did you get your needles at any of the following places . . . Needle exchange program?" with responses of (0) no or (1) yes. *Received free needles* was assessed using the "in the past 12 months, have you gotten any new sterile needles for free, not including those given to you by a friend, relative, or sex partner?" with responses of (0) no or (1) yes. These two measures, *utilized syringe exchange program* and *received free needles* are very similar and include overlap (n = 463 responded "yes" to both), but both are included to add specificity to this paper. The *utilized syringe exchange program* measure has more item non-response (total n = 746) than *received free needles* and asked specifically about syringe exchange programs. However, the *received free needles* (total n = 770) measure includes syringes received from syringe exchange programs as well as syringes received other outreach efforts (excludes syringes from peers). *Received free works* was assessed using a similarly structured question "in the past 12 months, have you gotten any new cookers, cotton, or water for free, not including those given to you by a