Explaining the Relationship Between Race/Ethnicity and Pharmacy Purchased Syringes Among Injection Drug Users in New York City

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Objective: Pharmacy syringe sales without a prescription became legal in New York State on January 1, 2001 through the Expanded Syringe Access Demonstration Program (ESAP). At the same time, Pharmacy use among Black and Hispanic injection drug users was found to be significantly lower when compared to Whites. The purpose of this study was to assess the factors that could explain the relationship between race/ethnicity and pharmacy use.

Design: Data were combined from 2 on-going injection drug user (IDU) studies in 2 New York City neighborhoods. Social and behavioral factors independently associated with ever purchasing a nonprescription syringe in the past 6 months and examined using cross-sectional logistic regression.

Results: Of 337 IDUs, the majority were male (79%), Hispanic (73%) and had a mean age of 35 years. In bivariate analysis, IDUs who reported pharmacy use were less likely to be Black or Hispanic, older, and to have reported recent syringe exchange program (SEP) attendance compared to non-pharmacy users. Additionally, pharmacy users were more likely to have knowledge of ESAP, and report discrimination by police in the past year compared to non-users. After adjustment for recent SEP attendance (adjusted odds ratio [AOR]=0.27; 95% confidence interval [CI]=0.14–0.55), ESAP knowledge (AOR=13.11; 95% CI=6.54–26.31), discrimination by police (AOR=3.56; 95% CI=1.73–7.35), and discrimination due to race (AOR=0.25, 95% CI=0.11–0.58), race/ethnicity was not a significant predictor of pharmacy use.

Conclusions: Race/ethnicity may not be an important determinant of ESAP when more salient social circumstances, such as past discrimination, are considered. Educational efforts should be enhanced to reach those who continue to perceive barriers to ESAP. (*Ethn Dis.* 2004;14:589–596)

Key Words: HIV, Injection Drug Use, Pharmacy, Racial Disparities

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Introduction

Racial disparities in the burden of specific diseases persist in the United States in spite of substantial efforts to reduce differential morbidity in different racial/ethnic groups.[1] Current conceptions of race suggest that race is a construct with significance well beyond the biologic, and also reflects the differential power and access to social services and resources by racial groups.[2–4] Several factors have been proposed that may account for these disparities, including differential access to care,[5,6] health behaviors,[7] structural factors,[8,9] and individual characteristics (eg, socio-economic status, etc). Notably, research suggests that no factor alone accounts for differential health outcomes observed between racial/ethnic groups in the United States or abroad.[10] Differential experiences of discrimination may also contribute to disparities in health.[11,12] Multiple forms of discrimination, including institutionalized (eg, barriers to educational or economic opportunities), personally mediated (eg, daily insults or harassment), and internalized (eg, acceptance of negative attitudes toward one's racial group and manifesting through poor self-worth and high-risk behavior) discrimination have been identified. Each of these forms may contribute to differential access to, and adoption of, risk/harm reduction behaviors.

As with many diseases in the United States, there are racial disparities in the burden of human immunodeficiency virus (HIV), and hepatitis C (HCV) infection.[13–15] Injection drug use remains one of the primary modes of transmission of HIV, and HCV in both developed and developing countries.[13,16–20] It is important to identify the mechanisms and social processes that lead to, or explain, racial disparities in health, particularly with regard to the risk of HIV and HCV among specific high risk groups such as injection drug users (IDUs). Needle or syringe (hereafter "syringe") sharing is a well-established risk behavior associated with transmission of HIV, HCV, and other bloodborne pathogens. While a substantial international body of literature supports the use of syringe exchange programs (SEPs) (ie, exchanging used syringes for sterile syringes) to reduce the circulation of previously used syringes, a US federal ban on funding for SEPs forces healthcare programs to rely on alternative funding sources, which are often limited. This restricted and insufficient funding results in inadequate syringe supplies and limited days and hours of operation for SEPs.[21] Pharmacies, on the other hand, tend to have extended hours of operation thereby lending to a potentially more practical syringe source when SEPs are closed. Several researchers have urged the use of pharmacies as a safe syringe source, either through sales or exchange, which may supplement

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SEPs.[22–25] Some pharmacies may also meet the needs of those who are unable to get to SEPs because of travel distance[26,27] or those who are uncomfortable accessing syringes from SEPs due to the fear of being identified as an injection drug user (IDU) which may, in turn, result in police harassment.[25,28,29]

In New York State (NYS), Expanded Syringe Access Demonstration Program (ESAP) legislation has permitted pharmacy sale of syringes without a prescription and legal possession of those syringes since January 1, 2001. This NYS program was modeled after similar syringe deregulation laws were enacted in Connecticut and Minnesota.[30–32] Following educational, community-wide implementation of ESAP in NYS, pharmacy sales began to increase; however, demographic differences in ESAP participation continue to exist. Most notably, Black and Hispanic IDUs are significantly less likely to use pharmacies as a syringe source compared with White IDUs.[33–36]

These early data suggest that, while sterile syringes have been made available through pharmacies, IDUs of different races/ethnicities have not been accessing the program at similar rates. This may eventually add to the greater burden of HIV and HCV among minority IDUs in New York. Since Black and Hispanic IDUs are known to be at higher risk for HIV[14,37–39] compared to their White counterparts, it is important to identify those factors that may be contributing to the limited adoption of this harm reduction practice by this IDU population. In this study, we assessed social and behavioral factors associated with purchasing a syringe from a pharmacy without a prescription. Specifically, we hypothesized that previous history of discrimination and prior knowledge of ESAP would account for some of the racial/ethnic disparities in accessing sterile syringes from pharmacies as observed in early ESAP evaluations.

METHODS

Study Population

In August 2000, enrollment of an IDU cohort (Hepatitis C Cohort Study) began in several high-risk New York City neighborhoods (across East Harlem, Central Harlem, and South Bronx) targeting young, new IDUs between the ages of 15 to 40 years and with an injecting career ≤5 years. A second cross-sectional study (Urban Resource Center [URC] Cross-Sectional Survey) was implemented in October 2000 in the same neighborhoods targeting adult injection and non-injection drug users ≥18 years of age. Each of these studies used similar community-based, street-recruitment methodologies. Baseline data from the Hepatitis C Cohort Study and IDUs from the URC Cross-Sectional Survey from January 2001 through March 2003 were combined for this analysis. These studies were conducted at the Center for Urban Epidemiologic Studies at the New York Academy of Medicine (NYAM). The NYAM Institutional Review Board granted approval for each study.

Data Collection

Eligible and consenting participants underwent a private, structured interview administered by a trained interviewer. Demographic factors included age (≤30 years vs >30 years), race/ethnicity (Black, Hispanic, White, other race), gender, and education (≤high school or GED vs some college or higher). Social factors included knowledge of ESAP, recent homelessness (ever homeless in past 6 months vs. never), and past experience with discrimination in 3 specific situations (ie, in the legal system, by the police, and based on race/ethnicity) as measured in previous studies assessing discrimination.[40,41] To capture each of these, the following question was asked, "During the past year, can you tell me, how many times you have been discriminated against, prevented from doing something, or been hassled or made to feel inferior in the following situations or settings: 1) in the legal system or in the courts, and 2) by the police?" The third discrimination situation had to do with race/ethnicity and the following question was asked, "Have you ever been discriminated against, prevented from doing something, or been hassled or made to feel inferior because of your race?" Race discrimination was categorized as ever in lifetime vs never, and legal system/courts and police treatment were categorized as ever in the past year vs never (past year race discrimination was not available). High-risk injection and sex behaviors included duration of injection, frequency of injection, syringe sharing, sharing cooker, cotton or rinse water, shooting gallery use, recent SEP attendance (at last injection), and trading sex for money or drugs. Having recently (past 6 months) purchased any nonprescription syringe from a pharmacy was the outcome variable.

Data Analysis

To compare demographic, social, and behavioral factors that were associated with any purchase of a nonprescription syringe from a pharmacy, age and injection duration variables were categorized based on previously reported cut-points.[35] Frequencies and proportions were calculated for each variable of interest. After data cleaning and editing,

Table 1. Demographic and social characteristics associated with buying a nonprescription syringe from a pharmacy among IDUs in New York City, 2001–2003 (*N*=337)

Characteristic	*N* (%)	% Purchased Nonprescription Pharmacy Syringe	OR*	95% CI†
Sex				
Female	71 (21)	25.4	1.00	
Male	262 (79)	22.9	0.88	0.48–1.61
Age				
≤30	102 (30)	34.3	1.00	
>30	235 (70)	18.7	0.44	0.26–0.75
Race/ethnicity				
White	32 (9)	40.6	1.00	
Hispanic	247 (73)	22.3	0.42	0.20–0.90
Black	49 (15)	16.3	0.29	0.10–0.80
Other race	9 (3)	33.3	0.73	0.15–3.46
Education				
<12th grade	173 (51)	22.5	1.00	
≥High school diploma/GED	164 (49)	24.4	1.11	0.67–1.83
Recent homelessness				
No	142 (42)	19.7	1.00	
Yes	195 (58)	26.2	1.44	0.64–2.43
Knowledge of pharmacy nonprescription syringe sales				
No	201 (60)	8.0	1.00	
Yes	136 (40)	46.3	9.98	5.41–18.40
Discrimination due to race				
Never	256 (76)	25.8	1.00	
Ever	81 (24)	16.1	0.55	0.29–1.06
Discrimination in the legal system/courts in past year				
Never	290 (86)	21.7	1.00	
Ever	47 (14)	34.0	1.86	0.96–3.62
Discrimination by police in past year				
Never	206 (69)	20.8	1.00	
Ever	94 (31)	29.9	1.62	1.15–3.50
Calendar quarter of interview‡	—	—	1.18	0.97–1.45

* OR=odds ratio was calculated using logistic regression.
† 95% CI=95% confidence interval.
‡ Calendar time was treated as a continuous variable.

chi-square tests were used to determine bivariate statistical differences. Significant bivariate associations using *P* values <.1 were used to assist with determining which exposure variables to further explore during model building. Plausible interactions were also explored using *P* value <.2 to help guide selection of variables for inclusion in the final model. A final multiple logistic regression model was developed using a hierarchical approach to determine the independent effect of each variable of interest as it related to any purchase of a nonprescription syringe from a pharmacy. First, we included statistically significant demographic variables in the presence of each social variable (Model I–III), followed by the addition of behavioral variables (Model IV).

RESULTS

Of 337 IDUs, 23.1% (78) reported ever purchasing a non-prescription syringe from a pharmacy in the past 6 months. Table 1 presents demographic and social characteristics associated with buying a nonprescription syringe from a pharmacy among adult IDUs. Compared with non-pharmacy users, IDUs who reported pharmacy use were less likely to be older (odds ratio [OR]=0.44), Hispanic (OR=0.42) or Black (OR=0.29) compared to White. Pharmacy users were more likely to have experienced discrimination by police (OR=1.62), and more likely to have

Table 2. High-risk injection and sex behaviors associated with buying a nonprescription syringe from a pharmacy in New York City, 2001–2003 (*N*=337)

Characteristic	*N* (%)	% Purchased Nonprescription Pharmacy Syringe	OR*	95% CI†
Duration of injection				
>5 years	286 (86)	23.1	1.00	
≤5 years	47 (14)	27.7	1.28	0.64–2.56
Frequency of injection				
<1 per day	194 (58)	20.1	1.00	
≥1 per day	143 (42)	28.0	1.54	0.93–2.56
Injected with ''previously used'' syringe				
No	295 (88)	23.4	1.00	
Yes	42 (12)	23.8	1.02	0.48–2.19
Shared cooker, cotton or rinse water				
No	203 (60)	21.7	1.00	
Yes	134 (40)	26.1	1.28	0.77–2.13
Shooting gallery use				
No	272 (81)	22.8	1.00	
Yes	65 (19)	26.2	1.20	0.64–2.23
Recent SEP attendance‡				
No	194 (58)	30.9	1.00	
Yes	143 (42)	13.3	0.34	0.19–0.61
Trade sex for money or drugs				
No	248 (74)	23.0	1.00	
Yes	89 (26)	24.7	1.10	0.63–1.94

* OR=odds ratio was calculated using logistic regression.
† 95% CI=95% confidence interval.
‡ SEP attendance at last injection was ascertained.

knowledge of ESAP (OR=9.98) compared with non-pharmacy users. Pharmacy users were marginally more likely to have experienced discrimination within the legal system/courts (OR=1.86), and to some extent less likely to have experienced discrimination due to race (OR=0.55) compared to non-pharmacy users. There were no differences in pharmacy use in terms of gender, education, recent homelessness or calendar quarter of recruitment.

In Table 2, high-risk injection and sex behaviors associated with buying a nonprescription syringe from a pharmacy were examined. Compared with non-pharmacy users, pharmacy users were less likely to report recent SEP use (OR=0.34). Pharmacy users were no more likely than non-users to have a longer injection career, high frequency of injection, report direct or indirect sharing, ever use a shooting gallery, or trade sex for money or drugs.

In Table 3, we used multiple logistic regression to determine if race/ethnicity remained independently associated with pharmacy use as a syringe source. After taking into account the effects of age (adjusted odds ratio [AOR]=0.45), and past discrimination due to race (AOR=0.44) and by police (AOR=2.23), race/ethnicity differences (Hispanic [AOR=0.37]; Black [AOR=0.33]) continued to independently contribute to pharmacy use in this interim adjusted model (Model I and II). When the effect of prior ESAP knowledge was added (AOR=12.09), the race/ethnicity differences no longer persisted (Model III). In the final model (Model IV), pharmacy users were significantly less likely to have ever experienced discrimination due to race (AOR=0.25), more likely to have experience discrimination by police in the past year (AOR=3.56), to have knowledge of ESAP (AOR=13.11), and less likely to report recent SEP attendance (AOR=0.27) than non-pharmacy users (Model III). The effect of: 1) race discrimination, 2) discrimination by police, or 3) ESAP knowledge on pharmacy use was not significantly modified by race/ethnicity when these 3 interaction terms were tested (data not shown).

DISCUSSION

Previous studies of IDUs in New York found that Black and Hispanic IDUs were less likely to use pharmacies

Table 3. Final multiple logistic regression model for the association between social and demographic factors and buying a nonprescription syringe from a pharmacy in New York City, 2001–2003 (*N*=337)

	Crude	Model I		Model II		Model III		Model IV	
	OR*	Adj. OR‡	95% CI†	Adj. OR‡	95% CI†	Adj. OR‡	95% CI†	Adj. OR‡	95% CI†
Age									
≤30	1	1		1		1		1	
>30	0.44	0.46	0.27–0.80‖	0.45	0.26–0.82‖	0.43	0.23–0.80‖	0.58	0.30–1.12
Race/ethnicity									
White	1	1	0.19–0.92‖	1	0.17–0.83‖	1	0.30–1.81	1	0.30–2.00
Hispanic	0.42	0.42	0.12–1.02§	0.37	0.11–0.97‖	0.74	0.20–2.21	0.79	0.20–2.10
Black	0.29	0.35		0.33	0.17–4.02	0.66	0.13–4.70	0.60	0.20–6.70
Other race	0.73	0.95		0.81		0.79		1.01	
Discrimination due to race									
Never	1	1	0.30–1.16	1	0.22–0.91‖	1	0.12–0.63‖	1	0.11–0.58‖
Ever	0.55	0.59		0.44		0.28		0.25	
Discrimination by police in past year									
Never	1	—	—	1	1.23–4.04‖	1	1.50–5.98‖	1	1.73–7.35‖
Ever	1.62			2.23		2.99		3.56	
Knowledge of pharmacy syringe sales									
No	1	—	—	—	—	1		1	6.54–26.31‖
Yes	9.98					12.09	6.16–23.71‖	13.11	
SEP attendance									
No	1	—	—	—	—	—	—	1	0.14–0.55‖
Yes	0.44							0.27	

* OR=odds ratio was calculated using logistic regression.
† 95% CI=95% confidence interval.
‡ Adj. OR=adjusted odds ratio was calculated using logistic regression.
§ $P<.10$.
‖ $P<.05$.

as a syringe source.[33–35] In this study, we showed that these apparent racial/ethnic disparities in accessing syringes through pharmacies were explained by factors other than one's race/ethnicity. After adjusting for knowledge of ESAP, past discrimination, and previous SEP use, White IDUs were no more likely to purchase syringes from pharmacies than were Black or Hispanic IDUs.

Several factors have been proposed that may account for these disparities, including differential access to care,[5,6] health behaviors,[7] structural factors,[8,9] and individual characteristics.

In this study, race discrimination was significantly associated with a lack of pharmacy use as a syringe source. Given that the ESAP legislation prohibits its pharmacists from advertising their participation in ESAP, it is likely that a pharmacist's participation status is unknown to a customer until they enter a pharmacy and ask to purchase a syringe without a prescription. It is possible that drug users who have experienced race discrimination in the past may not feel comfortable engaging a pharmacist due to fear of being mistreated or stigmatized. There is no evidence that would indicate that pharmacists have mistreated drug users who have attempted to purchase syringes or that such mistreatment was differentiated by race/ethnicity,[42] and in this study no significant interactions persisted with respect to race/ethnicity and race discrimination (data not shown). However, given the small sample sizes of both Black and White subgroups in our study, there was limited power to confidently test these plausible interactions and, therefore, should be considered in future analyses with larger sample sizes.

We documented a positive association between discrimination by police and higher likelihood of syringe purchases from pharmacies. While at face value paradoxical, this is consistent with previously documented behavior patterns of IDUs. Rich and colleagues found that one of the major obstacles to participation in SEPs was fear of being identified as an injection drug user and fear of police harassment.[28] Similarly, police action and the threat of police action in a geographically different US

population of IDUs were associated with decreased utilization of SEPs.[29] Since participation in SEPs draws attention to and identifies individuals as IDUs, it is plausible that IDUs who have had previous negative experiences with police would be more likely to obtain syringes through pharmacies since entering and exiting a pharmacy is not likely to identify someone as an IDU.

A second issue that arises with regard to police treatment is the fact that the police discrimination measurement does not take account of the reason for this mistreatment. It ascertains whether or not discrimination was experienced in this particular setting and not the perceived basis for discrimination (eg, race/ethnicity, gender, poor appearance/drug use, etc). To further explore the possibility that police mistreatment may have been due to race, the interaction between police discrimination and race discrimination was evaluated and a significant crude association was observed. Injection drug users (IDUs) who experienced police discrimination and race discrimination were more likely to use pharmacies. However, the inclusion of this interaction term did not significantly contribute to the final model. The power to detect a significant contribution of this term was modest at best; therefore, the possibility for interaction exists and warrants investigation to further elucidate the impact of various types and causes of discrimination on health-seeking behavior such as safe syringe access.

One of the strongest correlates of ESAP participation in this study was having prior knowledge of ESAP, which is consistent with our earlier findings.[35] It is important to point out that prior ESAP knowledge, as opposed to the discrimination variables, primarily explained the effect of race on pharmacy use in our models as shown in the interim models. In the absence of ESAP knowledge, an unchanged independent effect of race/ethnicity remained in the presence of race discrimination. There are 2 plausible explanations. First, considering the various levels at which racism exists and is measurable, it is possible that the residual effect of race/ethnicity measured in this study was at the internalized level of racism characterized by resignation, helplessness, and hopelessness which can contribute to the adoption of high-risk behavior.[2,3,11,43] High-risk behavior is, in fact, what this study set forth to measure (ie, obtaining syringes from safe vs. potentially unsafe sources). Thus, measuring the actual occurrence of race discrimination experienced by an IDU, in and of itself, had an independent effect on pharmacy use that persisted in the overall final model, while the internal impact of this experience on a particular individual was explained through the remaining independent effect of one's race/ethnicity on the low likelihood of pharmacy use.

A second explanation is the possibility that one's individual race/ethnicity was a better measure of institutionalized racism, that is, the differential access to goods, services, and opportunities in society by different race/ethnic groups[2] than the race discrimination variable measured here when recalling past unfair treatment due to race/ethnicity. It is possible that the relatively high concentration of neighborhood disadvantage that characterizes poor US minority neighborhoods, as opposed to poor White neighborhoods,[44] may have an effect on pharmacy characteristics and subsequent syringe accessibility. Previous reports have noted that, for selling syringes over-the-counter, some pharmacists require additional procedures, such as picture identification, providing a reason for syringe use, and signing a log book which may result in refusal to sell syringes.[36] Even though pharmacists are told that such procedures are not required by law, there is no guarantee that pharmacists will discontinue such practices. While individual-level variables, from an IDUs perspective, may account for pharmacy practices (eg, knowledge of pharmacies refusing to sell syringes), there are neighborhood-level variables that may also capture this, independently or jointly with individual-level variables, and help explain the race/ethnicity effect on pharmacy use. Neighborhood-level variables that may account for the effect of race/ethnicity might include minority composition, poverty level, educational level, and pharmacy participation level (ie, proportion of ESAP-participating pharmacies by neighborhood).[11] Further examination of the effect of the social context of New York City neighborhoods, in the presence of individual-level characteristics, on safe syringe access is needed and underway.

A final key finding in this study was that recent SEP attendees were less likely to use pharmacies as a syringe source. Given how well-established SEPs have become and the extensive harm reduction education that is delivered through SEP staff, it is plausible that recent SEP attendance represents those comfortable with SEPs as safe syringe option, and therefore less motivated to try an alternate sterile syringe source. Thus, these 2 viable sterile syringe options—SEPs and pharmacies—together may be reaching a greater proportion of IDUs in this part of the United States. This phenomenon of complimenting syringe venues has, in fact, been documented in international settings.[45] Thus, further examination of the degree to which there is cross-over between the 2 syringe sources as well as the level of use of potentially unsafe sources (eg, needle dealer, drug dealer, IDU friend, shooting gallery) is needed, particularly in the United States, given the potential for ESAP to become more widely used in NYS over time, and the implementation of future similar syringe deregulation policies in other states.

These study findings suggest that factors such as ESAP knowledge, past discrimination, and past SEP use explained the differential effect of pharmacy use across racial/ethnic groups. This analysis did not reveal typical in-

jection or sexual behavioral risk factors associated with pharmacy use with the exception of not recently attending SEP. With regard to SEPs, these findings provide early evidence supporting the ability of ESAP to reach those who may not frequently use SEP as a syringe source.

Overall, implications for both public health research and practice arise from this study. Recognition of the role of past discrimination due to race and by police is critical when attempting to increase access to services among groups that have histories of unfair treatment. In addition, further qualitative and quantitative investigation of why specific subgroups prefer certain syringe sources will help guide educational efforts on access to sterile syringe services. From a public health intervention perspective, multi-level efforts to increase awareness of pharmacy sales and to eliminate perceived barriers to pharmacy syringe purchases (ie, IDU-level, pharmacy-level, community-level) should be implemented in New York to help reduce racial disparities in accessing syringes through pharmacies and other safe venues.

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