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INJECTING EQUIPMENT SHARING AND PERCEPTION OF HIV AND HEPATITIS RISK AMONG INJECTING DRUG USERS IN BUDAPEST

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Abstract

In Central European states, rates of HIV among IDUs have been low although HCV infection is widespread. The goal of our study was to assess HIV infection, risk perceptions and injecting equipment sharing among injection drug users in Budapest, Hungary. Altogether 150 IDUs were interviewed (121 structured between 1999-2000 and 29 ethnographic between 2003-2004). The majority of them injected heroin (52% and 79%) and many injected amphetamines (51% and 35%). One person tested positive for HIV. Two thirds (68% of 121) shared injecting equipment (syringes, cookers and filters). Some participants said they shared syringes because they were not carrying them for fear of police harassment, and that they reused filters as a backup drug supply. In multivariate analysis, sharing of injecting equipment was associated with higher perceived susceptibility to HIV/AIDS, lower self-efficacy for sterile equipment use, higher motivation to comply with peer pressure to use dirty injecting equipment, and with having a criminal record. The high levels of injecting risk behaviors found in this study are a cause for serious concern. HIV prevention interventions need to address not only sharing syringes but also sharing and reusing other injecting equipment and drug filters.

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INTRODUCTION

Drug-related infectious diseases, most notably HIV, Hepatitis B (HBV) and Hepatitis C (HCV), are among the gravest health consequences of injecting drug use. In 1998, 129 countries reported injecting drug use, and injection-related HIV infection was identified in 103 of them (Ball et al. 1998). In the Eastern European region, injecting drug use is the major route of HIV transmission. Since 1995, evidence has supported that HIV spread extremely rapidly in Belarus, Kazakhstan, Moldova, Russia and the Ukraine. It is estimated that injecting drug use is responsible for 50 to 90% of new infections in the Eastern European region (Rhodes et al. 1999). In the Central and Eastern European region, the Baltic States are the most seriously afflicted by HIV, HBV, and HCV. In Poland, the HIV epidemic among injecting drug users (IDUs) has been a serious concern, although infection rates have recently stabilized. In other Central European states, rates of HIV among IDUs have been low although hepatitis C (HCV) infection is widespread (European Monitoring Centre for Drugs and Drug Addiction 2002; Dehne et al. 1999; European Centre for the Epidemiological Monitoring of AIDS 2005; Hamers & Downs 2003). In Hungary, a Central European country with a population of 10 million, the estimated number of cumulative HIV infections was 2500 in 1999, and the number of registered AIDS-related deaths was below 100 (UNAIDS - World Health Organization 2000). In 2002, Hungary still had relatively low HIV infection rates, with only two HIV cases detected among IDUs (European Centre for the Epidemiological Monitoring of AIDS 2005; Racz et al. 2002).

Although the prevalence of HIV is currently low in Hungary both among the general population and among IDUs, the spread of HIV into the IDU population from higher prevalence populations may occur through transmission bridges, such as IDUs who are MSM, or mobile populations of IDUs in Hungary who travel to or from higher prevalence countries, such as the Ukraine, where HIV prevalence has been considerable among IDUs in some cities (Booth et al. 2004). Thus, it is important to assess injecting and sexual risk factors related to the risk of HIV infection among IDUs in Hungary. One theory that may explain health behavior is the Health Belief Model (Becker 1974; Falck et al. 1995; Strecher & Rosenstock 1997). The potential association of the elements of this model (perceived susceptibility, perceived severity, perceived barriers, perceived benefits and self-efficacy) may be utilized in individual-based HIV prevention interventions among IDUs. Many network-based interventions among IDUs can be complemented by other well-researched theories, such as the Theory of Reasoned Action and the Theory of Planned Behavior (Ajzen & Fishbein 1980), which explain behavior as a function of attitudes, peer norms and motivation to comply with peer norms (Fishbein & Ajzen 1975). The goal of our study, therefore, was to use qualitative and quantitative methods to explore the perception of HIV risk and the correlation of risk perception to injecting equipment sharing among IDUs in Budapest, Hungary.

METHODS

The study was conducted in Budapest among altogether 150 street recruited IDUs. Between 1999 and 2000, 121 IDUs were interviewed using structured questionnaires and between 2003 and 2004, 29 IDUs were administered ethnographic interviews. The two samples were recruited from non-treatment settings in downtown Budapest. Those eligible had to have injected drugs at least once in the past 30 days, which was based on self-report by study participants. Participants were given a small incentive for participation in the study. Structured and ethnographic interviews were administered in private settings at the field office. Members of the interviewer team conducting the structured interviews were hired based on "privileged access" (Griffiths et al. 1993), i.e. we sought candidates with existing connections to drug users (former drug users, and those associated with IDUs). The majority of the interviews in this group were conducted by former IDUs who recruited and interviewed the members of their

own social network or reached other drug users through members of their social network. The ethnographic interviews were conducted by social science students studying at ELTE University. Structured survey interviewers were trained by the first author, and ethnographic interviewers were trained by the second author.

Measures--Structured Questionnaires

Participants (N=121) were asked about attitudes towards HIV/AIDS/Hepatitis and sterile equipment use, drug use, and other variables (a detailed description of structured questionnaire attitude variables can be found in Table 1). Perception of risk variables were perceived susceptibility to HIV/AIDS, perceived severity of HIV/AIDS, perceived benefits of using sterile injecting equipment, perceived barriers to obtain sterile needles, self efficacy for sterile equipment use, perceived peer norms for sterile equipment use, motivation to comply with peer norms: resisting peer pressure to use dirty injecting equipment, and external locus of control (Becker 1974; Bandura 1977; Bandura et al. 1977; Wallston & Wallston 1978; Ajzen & Fishbein 1980). Risk perception variables were created using principal components analysis with varimax rotation. The original variables and the derived risk factor variables are described in Table 1. All variables loaded above 0.6 on their respective factors. Drug use related variables included having ever been in drug treatment, the types of drugs injected in the past 30 days, and severity of addiction. Socio-demographic characteristics assessed were age, gender, homelessness, employment (at least part time vs. other) and having a criminal record; and having been tested for HIV in the past and having an IDU sex partner. The dependent variable in this analysis was sharing injecting equipment (including syringes, cookers, cotton, and rinsewater) in the past 30 days.

Participants participating in the structured interviews were offered a saliva test to detect HIV antibody. There were no refusals to testing. Omni-SAL saliva tests (assembled for SDS International Ltd. by Westley Coe (Cambridge) Ltd., CB4 10F, UK.) were used to collect saliva samples and SalivaCard HIV Trinity Biotech rapid tests were used to detect HIV-1 and HIV-2 (overall sensitivity 98.9%, overall specificity 98.8%). Samples tested indeterminate or positive were retested using Vironostika HIV Uniform Ag/Ab ELISA (Organon Teknika) tests (sensitivity 100%, specificity 99%). HIV saliva tests were not verified.

Measures--Ethnographic Interviews

Participants provided their informed consents and participated in semi-structured in-depth interviews (N=29) (Gyarmathy & Neaigus 2005; Gyarmathy et al. 2006). Interview questions aimed to assess participants' drug use history, their drug use risk behaviors and their attitudes towards HIV and hepatitis. All interviews were digitally voice recorded and then transcribed. Data were analyzed using a priori questions of interest (Kelly et al. 2004; Gyarmathy & Neaigus 2005). Data summaries identifying key themes were then created, and direct quotes and, if alone-standing quotes were unclear, paraphrases were used to illustrate the main topics. The report was then reviewed by the Principal Investigator of the ethnographic section of the study. All names in this report have been changed to protect the identity of the respondents.

Statistical Analysis

Data was entered using SPSS and all data management and analysis was performed in SAS v9. First, chi-square analyses were used to determine the univariate associations between injecting equipment sharing and attitude variables, other risk/protective variables and control variables. Related p-values and odds ratios (OR) with corresponding 95% confidence intervals (95% CI) are reported. Variables that had p-values less than 0.20 on the univariate analyses were then entered into logistic regression models, using backward elimination to create the final model (Hosmer & Lemeshow 1989). Adjusted odds ratios (aOR) with their corresponding 95% CI are reported.

RESULTS

The mean age of structured interview (SI) participants was 22.6 years (SD=4.2) and 23.6 years (SD=3.6) of those ethnographic interviews (EI) participants (Table 2). About a quarter of both groups were female, and 10% of SI and 31% of EEI participants were homeless. The majority injected heroin (about half of SI and about three quarters of EI participants) and many injected amphetamines (about half of SI and about a quarter of EI participants). Other drugs injected were cocaine, heroin and cocaine combined, street methadone, and other drugs (such as heroin mixed with amphetamines). About a quarter of SI respondents had sex partners who were IDUs.

Of the SI participants, about a quarter had participated in treatment programs, and 56% had been tested for HIV ever. Of those who had been in treatment, 63% had been tested for HIV, and of those who had never been treated, 54% (not significant; data not shown).

HIV Infection

Of the 121 participants who were tested for HIV, one person tested positive. However, this positive HIV saliva test result was not verified. He was a 20-year-old, single male, living in the central city area of Pest. He started high school, but never finished, and he reported that he was “between jobs”. His sources of income were family members, selling stolen goods and selling drugs. He had injected heroin and amphetamines in the past 30 days. He was unable to recall how many times in the past thirty days he used syringes after others or if others used after him, or if he used sterile works at all. He reported using one syringe up to five times. He had one female partner in the past 30 days and did not use condoms at all. He considered himself heterosexual. This was the first time he ever got tested for HIV.

Injecting Equipment Sharing

Ethnographic interviews showed that many IDUs were aware of the necessity of using sterile syringes. EI participants reported that most of the time they were indeed using sterile syringes, which they purchased in the pharmacy or obtained at the needle exchange place. However, many times they “shoot after each other”, meaning one person injects with the syringe that another person had just injected with, especially after good friends whom they know well, or sex partners. Some also reported that they used injecting equipment after their dealer had used them to inject drugs.

“I always shoot using my own syringes. And I shoot with them only once. ... Although I have shot after my dealer who may have been sick.” (Kati, 18 year-old female). “I always use my own syringe. But I sometimes shoot after good friends” (Lajos, 21 year-old male).

The main reason for sharing syringes was reported as being too impatient to obtain sterile syringes while the drug was available for use. In addition, many reported that they shared syringes because they did not carry their own syringes, which was explained by fear of getting arrested.

“I used to carry my own syringes, but the cops kept arresting me, so I stopped.” (Béla, 22-year-old male)

Ethnographic interviews showed that IDUs are unsure whether sharing other equipment, especially filters, may carry the risk of infection. Respondents reported keeping and reusing filters as sort of a backup drug supply for times where they could not or did not want to buy drugs

“I asked this guy for his filter. I figured it was soaked with heroin, so I could use it real well the next day” (Kinga, 25 year-old female).

Correlates of Injecting Equipment Sharing

Injecting equipment sharing was reported by 68% of SI respondents (Table 2). In univariate analysis, statistically significant ($p<0.05$) correlates of injecting equipment sharing were perceived susceptibility to HIV/AIDS (60% of those who shared vs. 28% of those who did not share), perceived barriers to obtain sterile needles (54% vs. 33%), motivation to comply with peer pressure to use dirty injecting equipment (59% vs. 31%), and being homeless (15% vs. 3%) (Table 3). Having high self-efficacy for sterile equipment use was protective (42% vs. 69%). Statistically significant ($p<0.05$) independent correlates in multivariate analysis were perceived susceptibility to HIV/AIDS (aOR=3.7, 95%CI=1.5-9.0), self-efficacy for sterile equipment use (protective, aOR=0.19, 95%CI=0.07-0.49), motivation to comply with peer pressure to use dirty injecting equipment (aOR=7.3, 95%CI=2.7, 19.4), and having a criminal record (aOR=4.1, 95%CI=1.2, 14.5).

DISCUSSION

In our study we investigated the perception of HIV risk and the correlation of risk perception to injecting equipment sharing among street recruited injecting users in Budapest, Hungary. Our findings showed that perceived susceptibility to HIV/AIDS, motivation to comply with peer pressure to use dirty injecting equipment and having a criminal record were associated with equipment sharing, and self-efficacy for sterile equipment use was protective.

Among IDUs, the major risk factors leading to HIV, HBV and HCV infections are the sharing of syringes and other injecting equipment, such as cookers, filters, or the drug solution. Our ethnographic finding that used filters are retained and reused, even multiple times, as a backup for obtaining drugs is a concern in and of itself (Gyarmathy et al. 2006; Huo et al. 2005; Millson et al. 2003). Moreover, reusing filters seemed like an accepted behavior and participants may not have realized that there was an infection risk from this practice. Not carrying syringes was reported to be a main reason for the situation where sharing may occur. Other studies found that females were more likely to carry syringes (Montgomery et al. 2002), but we were unable to determine gender differences from our ethnographic data. Furthermore, although carrying syringes is not a crime in Hungary (Topolánszky 2002), police may consider syringes as a marker for possession and use of drugs, which is a crime. As a result, similar to drug users in Russia (Rhodes et al. 2003), drug users in Hungary may not carry syringes out of fear of being arrested. Our finding that those with a criminal record were more likely to share injecting equipment, may also corroborate this. Those who were arrested in the past may fear arrest even more than those who have never been arrested, and thus will be less likely to carry syringes. As a result, IDUs with a criminal record will be more likely to share injecting equipment.

Our finding that over half of IDUs shared injecting equipment, is alarming. The high levels of injecting equipment sharing is, however, consistent with data from other studies conducted in the Central and Eastern European region in the late 1990s: in Estonia 22.4% of treated IDUs shared injection equipment in the previous month, 34% in lifetime; in the Czech Republic 35 to 51% of current IDUs shared needle or syringe in the previous 1-3 months (European Monitoring Centre for Drugs and Drug Addiction 2002). In 1996 in Prague 280 out of 611 IDUs (46%) shared injection equipment in the preceding 6 months (Mikl et al. 2001). In Warsaw 31.3% of users shared needle in the previous 30 days between 1995 and 1999, while in 2000 the figure was 16.9% (European Monitoring Centre for Drugs and Drug Addiction 2002). Studies from the late 1990s found that in Saint Petersburg 41% of IDUs, and in Moscow, between 40-75% were sharing needles (Somlai et al. 2002; Reilley et al. 2000; Gore-Felton et al. 2003). A study among IDUs in Hungary found that 25% of participants reported receptive syringe sharing and 18% distributive syringe sharing, and rates of sharing cookers and cotton were 55% (Gyarmathy & Neaigus 2006). Our finding that much of needle sharing may have been due to IDUs' fear from the police highlights the need to improve accessibility to needle

exchange programs and to address the attitude of police towards carrying syringes. According to Hungarian law, suspicion of a crime (e.g. syringe holding) is enough to initiate legal action; thus, a change in police attitude may be difficult.

We found that about a quarter of IDUs in our sample had sex partners who were IDUs. We expected that having an IDU sex partner would be associated with sharing both syringes and other injecting equipment (Evans et al. 2003; Strathdee et al. 1997); however, while in univariate analysis we found marginal association, we did not find any association in multivariate analysis. We suspect that motivation to comply with peer pressure to use dirty injecting equipment and lower self-efficacy for sterile equipment use are probably the underlying reasons why IDUs share injecting equipment, especially with their IDU sex partners. Furthermore, IDUs that share needles may have very close relationships regardless of whether or not they are sex partners (Neaigus et al. 1995).

There have been mixed results concerning whether attitudes related to the Health Belief Model are associated with HIV preventive behavior (Fisher & Fisher 2000; Hingson et al. 1990; Basen-Enquist & Parecel 1992; Brown et al. 1992; DiClemente et al. 1992). We found a reverse association between syringe or other equipment sharing and perceived susceptibility, a protective association with self-efficacy, and no association with other constructs of the Health Belief Model. High perceived susceptibility may indeed be an indication of risk perception--those who share syringes and other equipment may be aware of their high risk behaviors, and thus perceive themselves as being at higher risk for HIV infection, even though the prevalence of HIV among Hungarian drug users is relatively low. Like other studies, we also found that drug users with higher self-efficacy were less likely to share injecting equipment (Falck et al. 1995). This finding is promising in light of individual-based counseling and prevention activities. In addition, our finding that motivation to comply with peer pressure to use dirty injecting equipment was associated with the sharing of both syringes and other injecting equipment, suggests that network-based peer interventions to change social influence through changing peer norms may also be very appropriate in this population (Neaigus 1998; Gyarmathy et al. 2006; Latkin et al. 2003).

Several limitations of this study should be recognized. This report combines data from two studies: one was a structured survey study and the other was an ethnographic study conducted four years later. While the recruiting took place in the same neighborhoods, during the time that elapsed between the two studies there may have been changes in the risk factors of IDUs in Budapest. Indeed, the two groups appear to differ on important covariates of HIV risk such as homelessness (31% of the ethnographic sample, but only 11% of the quantitative sample) and drug preference (with more amphetamine, but less heroin use in the structured interview survey sample, and more heroin and less amphetamine use in the ethnographic sample). However, in terms of HIV risk behaviors, the results of the ethnographic study were consistent with the results of the structured survey. The question may be raised about how representative our study sample is of the drug using population in Budapest, Hungary. Research among drug using populations, especially in out-of-treatment settings, is relatively new in Hungary, and in Central and Eastern Europe. Thus, drug users may be suspicious, and afraid of being reported to the police or of being stigmatized (Elekes 1997). While we were able to use the social networks of our interviewers to recruit injecting drug users for the structured survey questionnaire, this may have introduced some element of bias. The ethnographic sample was recruited based on methods used among hidden populations of drug users that have been used in other countries (Sifaneck & Kaplan 1995; Sifaneck & Neaigus 2001). Both individual-based (targeted outreach recruiting) and chain-referral recruiting methods (such as participant-driven and snow ball sampling techniques) that were used in the ethnographic portion of the study need to be used in future studies in the Hungarian and the Central and Eastern European context

to reduce selection bias. Furthermore, intense field-work by well-trained ethnographers and outreach specialists that have privileged access to the population needs to be implemented.

Informed consent and human subjects issues are an important aspect of research conducted among disadvantaged populations. At the time of the structured survey study, Institutional Review Boards (IRBs) were not yet established in Hungary (Gyarmathy et al. 2003). However, by the time the ethnographic survey study was conducted, an IRB was established and all human subjects issues, including informed consents protocols, were implemented.

Our results show high levels of injecting risk behaviors among Hungarian IDUs. This implies that the introduction of HIV infection into the IDU community may lead to an explosive epidemic, similar to the HIV epidemics among IDUs in Eastern Europe (Hamers & Downs 2003; Kelly & Amirkhanian 2003). Although our findings confirm that prevalence of HIV infection among drug users may currently be low in Hungary (European Centre for the Epidemiological Monitoring of AIDS 2005), low accessibility to HIV testing as well as preand post-test counseling in drug treatment facilities in Hungary may increase the potential risk of a hidden epidemic in the near future (Gyarmathy et al. 2004; Gyarmathy et al. 2006). Furthermore, there is a great need to provide free and confidential HIV/HBV/HCV testing and counseling for injecting drug users in Hungary and in other Central and Eastern European countries and for targeted harm-reduction and HIV prevention interventions aimed at preventing sharing syringes and sharing and reusing other equipment, especially filters.

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Table 1
Risk-related attitudes factors (structured survey participants)

<i>Characteristics</i>	<i>factor load</i>
Perceived benefits of using sterile injecting equipment/no IDU	0.86429
not using dirty needles decreases the chances of HIV	0.82583
using sterile needles decreases the chances of HIV	0.75534
stopping injecting decreases the chances of HIV	
Perceived susceptibility to HIV/AIDS	0.87127
I am at risk for HIV	0.81587
due to my injecting drug use I may get HIV	0.73989
I will get HIV not matter what I do	
Motivation to comply with peer norms	0.86756
when I shoot with others I feel I need to share	0.76369
I strive to do what my friends want me to do	0.69433
if my friend wanted me to use his needle, I would not be able to resist	
Self efficacy for sterile equipment use	0.91279
I can avoid to share cookers and cotton	0.85252
I can avoid to share needles	
Perceived severity of HIV/AIDS	0.82998
if I had AIDS I would lose my friends	0.77592
AIDS is the most dangerous illness that I know	0.70016
it is worse to have AIDS than to be a junkie	

Table 2

Characteristics of participating injecting drug users

Characteristics	Structured survey N (%)	Ethnographic interviews N (%)
Total	121 (100)	29 (100)
Age - mean (SD)	22.6 (4.2)	23.6 (3.6)
Gender		
male	90 (75.0)	20 (69.0)
female	30 (25.0)	8 (27.6)
Homeless	13 (10.7)	9 (31.0)
Employment - at least part time	42 (34.7)	N/A
Criminal record	22 (18.2)	N/A
Treatment	32 (26.4)	N/A
HIV tested before	68 (56.2)	N/A
Drugs injected in the past 30 days		
cocaine	13 (10.7)	3 (10.3)
heroin	63 (52.1)	23 (79.3)
cocaine mixed with heroin	7 (5.8)	N/A
street methadone	4 (3.3)	2 (6.9)
other opiates	11 (9.1)	1 (3.4)
amphetamines	62 (51.2)	10 (34.5)
prescription medications	N/A	5 (17.2)
other drugs	2 (1.7)	5 (17.2)
IDU sex partner	28 (23.1)	N/A
Injecting equipment sharing (syringe, cooker, filter, rinsewater)	82 (67.8)	N/A
N/A = data not collected		

Table 3
Correlation of risk perceptions and attitudes with injecting equipment sharing

Characteristic	Total N=121	Did not share [^] N=46	Shared [^] N=75	OR (95%CI)	aOR (95%CI)
<i>Attitude scales - "high":</i>					
Perceived susceptibility to HIV/AIDS	60 (49.6)	11 (28.2)	49 (59.8)	4.7(2.1, 10) **	3.7(1.5,9.0)
Perceived severity of HIV/AIDS	61 (50.4)	22 (56.4)	39 (47.6)	0.8(0.4,1.7)	-
Perceived benefits of using sterile injecting equipment	62 (51.2)	18 (46.2)	44 (53.7)	1.0(0.5,2.0)	-
Perceived barriers to obtain sterile needles	57 (47.1)	13 (33.3)	44 (53.7)	2.4(1.1,5.0) **	-
Self efficacy for sterile equipment use	61 (50.4)	27 (69.2)	34 (41.5)	0.3(0.1,0.6) **	0.19(0.07,0.49)
Perceived peer norms for sterile equipment use	81 (66.9)	27 (69.2)	54 (65.9)	0.7(0.3,1.6)	-
Motivation to comply with peer pressure to use dirty injecting equipment	60 (49.6)	12 (30.8)	48 (58.5)	4.7(2.1, 10) **	7.3(2.7, 19.4)
External locus of control	28 (23.1)	4 (10.3)	24 (29.3)	2.5(1.0,6.4) *	-
<i>Other risk/protective variables - "yes":</i>					
Strang-scale (high)	42 (34.7%)	13 (33.3)	29 (35.4)	1.4(0.6,2.9)	-
IDU sex partner	28 (23.1%)	5 (12.8)	23 (28.0)	2.5(1.0,6.4) *	-
Homeless	13 (10.7%)	1 (2.6)	12 (14.6)	9.6(1.2, 76) **	-
Employment - at least part time	42 (34.7%)	14 (35.9)	28 (34.1)	1.0(0.5,2.1)	-
Criminal record	22 (18.2%)	6 (15.4)	16 (19.5)	2.0 (0.7, 5.7) *	4.1 (1.2, 14.5)
HIV tested before	68 (56.2%)	20 (51.3)	48 (58.5)	0.9(0.5,1.9)	-
<i>Control variables:</i>					
Age - mean (SD)	22.6 (4.2)	23.5 (3.9)	22.1 (4.2)	0.9(0.9,1.0) *	-
Gender - female	30 (25.0%)	8 (21.1)	22 (26.8)	1.0(0.4,2.3)	-

*
p < 0.20

**
p < 0.05

[^]
= column percents