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Gender differences between predictors of HIV status among PWID in Ukraine

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ABSTRACT

Background: The HIV epidemic in Ukraine is among the largest in Europe. While traditionally the epidemic has spread through injection risk behavior, sexual transmission is becoming more common. Previous research has found that women in Ukraine have higher rates of HIV and engage in more HIV risk behavior than men. This study extended that work by identifying risk factors that *differentially* predict men and women's HIV status among people who inject drugs (PWID) in Ukraine.
Methods: From July 2010 to July 2013, 2480 sexually active PWID with unknown HIV status were recruited from three cities in Ukraine through street outreach. The average age was 31 years old.
Results: Women, who made up twenty-eight percent of the sample, had higher safe sex self-efficacy ($p < .01$) and HIV knowledge ($p < .001$) than men, but scored higher on both the risky injection ($p < .001$) and risky sex ($p < .001$) composite scores than men. Risky sex behaviors were associated with women's HIV status more than men's. We also report results identifying predictors of risky injection and sex behaviors.
Conclusions: Gender-specific interventions could address problem of HIV risk among women who inject drugs in a country with a growing HIV epidemic. Our findings suggest specific ways in which intervention efforts might focus on groups and individuals who are at the highest risk of contracting HIV (or who are already HIV positive) to halt the spread of HIV in Ukraine.

1. Introduction

The HIV epidemic in Ukraine remains a growing problem and is among the largest in all of Europe. While much of the epidemic has proliferated through injection risk behavior, sexual transmission is becoming more widespread (UNAIDS, 2010; Pylypchuk and Marston, 2008). The number of people who inject drugs (PWID) is estimated at 290,000 and HIV prevalence among PWID is estimated at 21.5% (Degenhardt et al., 2013). The intersecting epidemics of injection drug use and HIV have been growing in Ukraine since researchers identified the problem in the mid-90's (Kruglov et al., 2008; Booth et al., 2004). Due to concurrent pressing political, economic and social issues stemming from the break up of the former Soviet Union, the public health of PWID was not a priority (Cohen, 2010; Hurley, 2010). Since then, research has been concentrated in this region to help stem the tide of HIV transmission for PWID (Booth et al., 2010, 2009, 2006a,b, 2004; Kruglov et al., 2008; Taran et al., 2011; Kyrychenko and Polonets, 2005; Booth, 2009). The HIV epidemic in Ukraine has been characterized by high rates of transmission among PWID, with other risk groups such as men who have sex with men (MSM) and female sex workers (FSWs) increasingly represented (Kruglov et al., 2008; UNAIDS, 2010; Baral et al., 2012). It is also very common for people to not know their HIV status in this region, with one study showing that up to 87% of PWID did not know their HIV status prior to the research (Booth et al., 2006b). HIV continues to be a major problem among this vulnerable population, in a region still struggling with profound political change and as such, prevention is of utmost importance.

HIV gender disparities abound among PWID in many regions, including Ukraine (Des Jarlais et al., 2012, 2013). Women who inject drugs are at increased risk for HIV but also experience higher stigma

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and subsequent reduced participation in programs that may prevent HIV. Also, women drug users may participate in sex work to fund their drug habits and also be at increased risk for violence and abuse by male sex partners. Women also report less condom use and more injection risk behavior, and in many international studies, transmission of HIV among women is associated with sexual factors such as sex work, crack use and sex with a person who injects drugs (Des Jarlais et al., 2012). As is common elsewhere, and especially in low-middle income countries (LMICs), women who inject drugs in Ukraine are at increased risk for HIV infection due to macro and micro level factors (El-Bassel et al., 2012; Platt et al., 2005; Booth et al., 2007; Strathdee et al., 2013; Browne and Wechsberg, 2010; Meyer et al., 2011; Rhodes et al., 2005). Structural issues of gender inequality, stigma, indifference of officials to drug use problems, and violence against women (and PWID in general) from law enforcement abound in Ukraine (Booth et al., 2013, 2007; Burruano et al., 2007). Power differences between men and women, and violence against women can also play an important role in safe sex negotiation (Bandali, 2011; Meyer et al., 2011; Wechsberg et al., 2013). Microlevel factors that contribute to HIV are intimate partner violence (IPV), poor economic conditions, involvement in the sex trade and relationship dynamics specific to the Ukrainian culture (Burruano et al., 2007; Platt et al., 2005; Booth et al., 2013). Due to these myriad, multilevel factors that contribute to the risk environment in this setting, many researchers are calling for comprehensive prevention approaches that take these multiple contexts into account (Auerbach et al., 2011).

The risk environment profoundly influences HIV transmission, particularly in the case of Ukraine and Eastern Europe in general (Rhodes and Simic, 2005; Strathdee et al., 2010). The environment takes into account the many factors that are outside of the individual's control, such as political, economic and social factors that create conditions for high risk behavior. Laws and policies set the stage for the risk environment and may promote health (for example, by funding harm reduction and health education programs) or harm (for example through laws that promote stigma and discourage health promotion activities (Baral et al., 2013; Strathdee et al., 2010; Poundstone et al., 2004). The strength or weakness of the economy of a region also plays an important role in determining the health of the community, due to factors such as employment and standard of living. At the community level, social norms may promote health behaviors or worsen them through stigma and other cultural or religious beliefs (Baral et al., 2013; Poundstone et al., 2004). Therefore, consideration of the totality of the risk environment is tantamount to understanding what drives the HIV epidemic in each diverse region.

In Ukraine, exogenous social, economic and political factors have provided a perfect risk environment for the HIV epidemic to grow. Economic constraints and difficulties since the breakup of the former Soviet Union have spawned illegal economies where drug markets flourish. Increased poverty and unemployment have led to the development of drug and sex markets (Rhodes and Simic, 2005; Thorne et al., 2010; Strathdee et al., 2010). Furthermore, a weakened public health infrastructure and reduced focus on health as a priority may have led to an increase in infectious diseases including HIV and sexually transmitted infections (STIs; Thorne et al., 2010). On a social level, instability, relocation and a lack of national pride may have led to community fragmentation which precipitated the growing drug trade. Also, in a civil society that has weak social ties, drug use is common and may precipitate risk taking behavior. Political instability may also lead to these feelings of weakened ability to avoid risk and increase vulnerability to engage in illegal activities such as drug use. In a depressed economy and unstable social and political environment, drug use may provide a welcome escape or pleasure (Rhodes and Simic, 2005). The conceptual framework of risk environment in Ukraine is described by multilevel factors (economic, social and political) that variably influence the micro (cost of living, employment, social norms, brothels and places where drugs are used) and macro (trade routes, social stability and nationalism, informal economies, laws and drug policies, police practices, corruption) environments, leading to an exploding drug scene and resulting HIV epidemic (Strathdee et al., 2010; Rhodes and Simic, 2005). For example, both structural factors stemming from the economic, social and political climate, as well as generalized stigma against, drug users, people with HIV and women in general, all play a role in the HIV epidemic. Also, individual level factors like injection risks and safe sex negotiation are important contributors to the problem. The research here focuses on those individual risk factors, specifically injection and sex risk behavior.

Sex risk behaviors are increasingly important as the epidemic shifts in Ukraine (UNAIDS, 2010). Women injectors in this region report engaging in high risk sex behaviors including unprotected sex and sex with multiple partners, which are common among PWID and associated with HIV (Vasquez et al., 2013; Booth et al., 2007; Celentano et al., 2008; Strathdee et al., 2001). For women in general, sex risk is known to be an independent predictor of HIV serology (Strathdee and Sherman, 2003; Kral et al., 2001). In earlier studies from Ukraine, being female or having sex with a person who is HIV-positive were found to be predictors of HIV positivity (Booth et al., 2006b, 2007; Taran et al., 2011). Another troubling finding is that HIV infection is high among FSWs and condom use is particularly low (Busza et al., 2011; Kyrychenko and Polonets, 2005). Having sex with an injector is positively associated with increased injection risk behaviors, and both of these sets of risk factors are more common among women injectors in the region (Booth, 1995; Booth et al., 2007).

While much research has shown that women have higher rates of HIV and report more HIV risk behaviors in Ukraine than men, important questions remain about the nature of the association between HIV status and various risk factors for men and women. Possibly, the increased rates of HIV in women are solely a result of increased risk behaviors by women in this region. Another interesting possibility, however, is that certain risk factors are particularly problematic for women. That is, certain risk factors may *disproportionately* impact women's likelihood of becoming HIV-positive. The objective of the current study is to extend earlier work in Ukraine by examining whether certain risk behaviors may *differentially* associate with men and women's HIV status. A secondary objective is to explore such factors as outcomes with the goal of identifying other variables that may predict these unique, gender-dependent risk behaviors.

2. Methods

Between July 2010 and June 2013, 2480 sexually active drug injectors were recruited and interviewed in three Ukrainian cities (Odessa, Nikolayev and Donetsk). Participants were tested for HIV but only those who were unaware of their HIV status were included in the current analysis. The interview was administered using an audio computer administered self-interview (ACASI) and included an adapted version of the Risk Behavior Assessment (RBA), the HIV Knowledge Questionnaire and a Self-Efficacy measure. Ukrainian NGO staff was trained in the research protocol and conducted the interviews. Drug users were recruited through street outreach by NGO outreach workers, all of whom were former injectors, over a 35-month period. The outreach conducted in this study adapts the central features of the community outreach model (Hughes, 1977; Wiebel, 1988) to engage PWID in interventions. Areas were targeted for recruitment based on NGO staff knowledge about where PWID congregate. Recruitment was spread throughout the city to obtain as generalizable a sample as possible. Eligibility criteria included: 18 years or older; self-reported drug injection in past 30 days; and ability to provide informed consent. Recent drug injection was verified through visual inspection for venipuncture. Additionally, participants agreed to be interviewed for approximately 1 h and to be tested for HIV (receipt of test results was encouraged but not required). Interviewers made the final determination of eligibility. Because this study was conducted to examine the role of drug-injecting networks, participants were recruited in network waves. That is, "indexes" were required to bring two members of their injecting network, who also met eligibility criteria, for study participation. Injecting networks