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Sexual Networks and Housing Stability

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ABSTRACT *Unstable housing is related to a range of health problems including substance abuse, poor mental health, and HIV. Little is known about how sexual partners' attributes influence access to resources such as housing. The purpose of the present study was to examine the relationship between sexual network characteristics and improvements in housing situation among a sample of drug users using a longitudinal design. Size of one's sex network was not associated with housing change. However, having a main partner and having a sex partner who lent money was associated with moving from a homeless state at baseline to being housed at follow-up. Also, having a sex partner who was a drug user was associated with decrease in the odds of improving one's housing situation.*

KEYWORDS *Housing, Sex, Social networks, HIV*

INTRODUCTION

In the USA, there are over 670,000 homeless individuals and approximately 9,600 living in Maryland.[12] There are inconsistent definitions of housing instability and homelessness. Some researchers have defined it as "literally homeless" (i.e., living on the street or outdoors) while others have focused on living in temporary housing situations such as a shelter or moving residences frequently.[6,7,9,11]

Unstable housing is related to a range of health problems including substance use, poor mental health, and HIV.[6,17,24] Housing instability has also been linked to the increase of HIV-risk behaviors[8] and decreased medication adherence.[14] Unstably housed or homeless persons have been shown to have HIV/AIDS infection rates that are three to nine times higher than individuals with a stable housing situation.[2,5,25]

Transitions between housing situations can have an effect on an individual's drug use, which can contribute to HIV infection risk. This relationship has been demonstrated both as individuals transition from homelessness or transient housing to more stable forms of housing, as well as when individuals transition from housing stability to transiency or homelessness. Aidala et al. reported that as an individual secures housing and transitions from homelessness to stability, as compared to individuals whose housing status did not change, their frequency of drug use as well

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as engaging in risky drug behaviors (i.e., sharing needles and poly-drug use) declines.[1] Furthermore, Coady et al. report that as housing stability decreases, risky injection practices (e.g., sharing of syringes and going to a shooting gallery) increase among injection drug users.[4]

Additional evidence exists to support the link between sexual behaviors and housing stability. Kidder et al. found that homeless persons are more likely to report having a greater number of sex partners and are more likely to have had unprotected sex with a partner of unknown HIV status within the past 12 months than persons who are stably housed.[15] Aidala et al. reported a dramatic increase in the odds of exchanging sex for drugs, money, or a place to stay between baseline and follow-up for individuals whose housing situations deteriorated as compared to those who experienced no housing change.[1] Additionally, individuals whose housing situation improved were less than half as likely as those who did not experience a change in housing status to have had unprotected sex at last intercourse.

Social networks have been defined as the individuals with whom a person has social interactions.[19] Klovdahl has argued that there are consequences that arise due to an individual's social network that often extend beyond the consequences that would result from the individual's behavior alone.[16] One potential consequence is housing stability. Social network members provide social influence, engagement, social support, and access to intangible and tangible resources which may impact one's housing status.[3] Hwang et al. found that social support, specifically financial and emotional support, was associated with better physical and mental health in a sample of homeless individuals.[13]

Subgroups of social networks include sexual and drug risk networks, which include individuals with whom risk behaviors are practiced, including sex and drug partners.[19] The focus of this paper is on sexual networks. Sexual network metrics include but are not limited to the number, characteristics, and functions (such as providing emotional or financial support) of people one has sex with. Characteristics of sex partners, such as if they provide financial support or if they inject drugs, have been shown to be associated with HIV-risk behaviors including decreased condom use and sharing of needles.[20,21,23]

Little is known about how sexual partners' attributes influence access to resources such as housing. It is likely that there are beneficial as well as deleterious aspects of these relationships and their impact on housing. Some sex partners, such as people who have full-time jobs, may establish a stable environment, whereas others, such as drug users, may result in instability. The dissolving of a relationship may result in change in residence or loss of financial resources, which may affect housing. On the other hand, the formation of new partnerships may create access to shared resources, which may mean additional tangible and intangible resources. For example, new relationships may result in cohabitation and mean improvement in one's housing situation. While many researchers have reported how sex partner characteristics, such as being an injectors or HIV seropositive, are a risk factor for HIV, sex partners also have the potential to be protective in some situations such as housing.

There are several gaps in existing research on housing among disadvantaged populations, including drug users. Researchers tend to focus on the cross-sectional associations between HIV risk behavior and housing stability. Further, characteristics of one's sex partners are not considered, rather just a specific risk behavior such as number of partners or sex exchange. Additionally, there is a scarcity of research on factors associated with improvement in housing stability. As a result, the goal of the present study was to examine the relationship between sexual network

characteristics and improvements in housing situation among a sample of drug users using a longitudinal design.

METHODS

The study was conducted in Baltimore, MD, USA. Data for the current study was collected for the STEP into Action program. The STEP program was an HIV-prevention intervention for injection drug users and their social network members. The STEP study included two types of participants—index participants and social network members. Index participants were recruited through targeted street outreach based on geocoded drug arrests data and ethnographic observations, posted advertisements, and word-of-mouth. Index participants self-reported injection of cocaine, heroin, or speedball in the last three months and were willing to refer at least one drug or sexual network member into the study.

After the baseline visit, index participants were encouraged to recruit their social network members into the study. Eligibility criteria for network members included: heroin or cocaine use in the past six months, sharing injection paraphernalia with index participant, sex with the index participant, or drug use with the index participant.

Index and network participants completed the same interview. Interviews were administered face-to-face by trained interviewers at a community-based research clinic. Audio-Computer-Assisted-Self-Interview software was used to gather information on drug and sex risk behaviors. All participants were paid $35 for completion of each assessment.

Study protocols were reviewed by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board. Baseline data were collected March 2004–March 2006 and follow-up data were collected November 2004–September 2007. (For more details on the STEP intervention, see. Tobin et al.)[22]

Measures

Social network characteristics and other covariates were reported at the baseline visit. Data on housing was collected at baseline and follow-up visits.

Housing. "No longer homeless" was constructed by examining self-reported data collected at baseline, six, and 12 month interviews. At all assessments, participants were asked, "In the past 6 months, have you been homeless?" Participants who reported being homeless at baseline but "not homeless" at both follow-ups were classified as "No longer homeless." If a participant was missing a response at both visits or housed at one visit and missing a response at the other visit, then the housing status was considered unknown and they were not included in the analyses. Respondents may still be unstably housed even if they are not homeless at two consecutive visits; nevertheless, we will use the term "No longer homeless" to indicate an outcome in which those that were homeless at baseline but reported "not homeless" at visit 2 and 3. Events were characterized in this manner to capture transient housing, rather than modeling homelessness as an event at one time point.

Sexual Network Characteristics. Data on sexual networks were collected at baseline. Participants were asked to provide the first name and last initial of the people they had sex with in the prior 90 days. Specific information regarding each of the respondent's sex partners was collected using the Personal Network Inventory, which has been shown to have good concurrent and predictive validity and internal

consistency.[18] Participants were asked a series of questions about each sexual partner on the list generated regarding the sexual network member's demographic characteristics, drug use, and HIV status; and roles played, such as providing social support or lending money. Items that were included for this study are:

- *Sexual network size*: total number of people participant had sex with in the past 90 days.
- *A main sex partner:* currently had a main sex partner that the participant considered a boyfriend/girlfriend or spouse.
- *Sex partner that was a drug user*: had sex with someone who used heroin or cocaine in the past 6 months.
- *Sex partner who was in drug treatment*: had sex with someone who was currently in drug treatment.
- *Sex partner who provided emotional support*: had sex with someone who participant talked to about things that were personal or private.
- *Conflictual sex partner*: had sex with someone who participant argued or fought with regularly.
- *Sex partner who provided financial support*: had sex with someone who lent money to participant.
- *Sex partner who was employed:* had sex with someone who worked full-time (e.g., had nine-to-five job).

Analyses

The present study was restricted to index and social network participants who reported using heroin or cocaine in the past six months. While an eligibility criterion for index participants in the parent STEP study was injection drug use, not all social network members were injectors; network member may have snorted/sniffed or smoked heroin or cocaine.

The current sample includes participants who self-reported being homeless at baseline and completed baseline-, 6-, and 12-month interviews. At baseline, 345 individuals reported being homeless. Of these individuals, 70% ($n=240$) completed at least one of the follow-up visits. Comparisons of sex network characteristics between homeless individuals who completed a follow-up assessment and those lost to attrition revealed no differences. Three individuals were excluded from the current study due to missing data. Thus, the final dataset includes 237 participants.

Bivariate analyses were conducted using t tests, Wilcoxon rank sum tests, and chi-square tests. Multivariate logistic regression was used to identify sexual network characteristics at baseline predicting housing improvement. Network variables that were significant at the bivariate level were retained in the multivariate model. All models were adjusted for age, gender, and participation in the intervention. While the intervention did not address housing directly or promote housing changes, participation may have led participants to make changes in their life, which indirectly affect housing. Since the study sample included index participants and their social network members, general estimating equation methods were utilized to account for the correlation between responses provided by participants belonging to the same social network.

RESULTS

Among 237 participants who were homeless at baseline, 153 (65%) remained homeless while 86 (35%) were no longer homeless at follow-up. As shown in Table 1, there were no differences in individual-level sociodemographic factors between participants who were no longer homeless at follow-up and individuals who remained homeless.

Table 1 also describes the sexual network characteristics of the sample at baseline. Individuals who were no longer homeless had fewer sex partners (1.14 vs. 1.41); however, they were more likely to have a main partner (60.7% vs. 41.2%) and receive financial support (39.2% vs. 26.8%). Participants who were no longer homeless were less likely to argue or fight with a sex partners (14.3% vs. 26.1%), and have a sex partner who used drugs (46.4% vs. 61.4%). There were no differences in having a sex partner who was in drug treatment, employed, or provided emotional support.

Table 2 displays the results of the multivariate model of predictors of becoming housed, after adjusting for age, gender, and participation in the intervention. Individuals who were no longer homeless were twice as likely to have a main partner [AOR, 2.22; 95% CI, 1.26–4.65] and get financial support from a sex partner [AOR, 2.23; 95% CI, 1.09–4.55]. In addition, individuals who had a drug-using sex partner were less likely to no longer be homeless [AOR, 0.43; 95% CI, 0.22–0.68].

DISCUSSION

In this study of heroin and cocaine users in Baltimore, MD, we found no differences in individual-level characteristics between homeless individuals who were no longer homeless at follow-up and individuals who remained homeless over a 12-month

TABLE 1 Sociodemographic and sexual network characteristics at baseline, Baltimore, MD

	Homeless at follow-up	
Characteristic (*n*, %)	No (*n*=84)	Yes (*n*=153)
Individual characteristics		
Age (mean, SD)	44.3 (7.26)	42.7 (8.14)
Male***	45 (53.6)	99 (64.7)
African American	68 (81.0)	116 (75.8)
High school diploma or higher	38 (45.2)	71 (46.4)
Income in past 30 days $500 or more	33 (39.3)	55 (35.9)
Employed at least part-time in past 6 months	7 (8.3)	14 (9.2)
HIV positive (self-reported)	12 (14.3)	19 (12.4)
Sexual network characteristics		
Sexual network size (mean, SD)**	1.14 (0.92)	1.41 (1.29)
Had a main sex partner*	51 (60.7)	63 (41.2)
Had sex partner who was employed	37 (44.0)	51 (33.3)
Had sex partner that was a drug user**	39 (46.4)	94 (61.4)
Had sex partner who was in drug treatment	8 (9.5)	19 (12.4)
Had sex partner who provided emotional support	30 (35.7)	49 (32.0)
Had conflictual sex partner**	12 (14.3)	40 (26.1)
Had sex partner who provided financial support**	33 (39.2)	41 (26.8)

*$p<0.01$, **$p<0.05$, ***$p<0.10$

TABLE 2 Sex network characteristics predicting *no longer homeless* ($n=237$), Baltimore, MD

	Adjusted odds ratio (95% CI)
Had a main partner	2.42 (1.26, 4.65)*
Total number of sex partners	0.82 (0.61, 1.09)
Conflictual sex partner	0.53 (0.25, 1.13)***
Sex partner provided financial support	2.23 (1.09, 4.55)**
Had sex partner who is a drug user	0.43 (0.22, 0.86)**

Models adjusted for age, gender, and intervention effect
*$p<0.01$, **$p<0.05$, ***$p<0.10$

period. However, our study found that characteristics of one's sex network were associated with a change in housing status. Specifically, having a main partner and having a sex partner who lent money were associated with moving from a homeless state at baseline to not being homeless at follow-up. Also, having a sex partner who was a drug user decreased the odds of improving one's housing situation.

Size of one's sex network was not associated with housing change. Thus, examining the size of the sexual network would have failed to provide valuable information on the dynamics of sexual networks and housing. These results suggest that it is critical to assess specific attributes of sexual partners in order to gain a better understanding of their impact on behaviors. One possible explanation for lack of a connection between size of sexual network and housing is that our sample was comprised of individuals with few sex partners (average was less than two partners). More research is needed among a sample of high-risk individuals.

Being in a relationship with a main sexual partner may be an opportunity for shared resources. Main partners may provide consistent social support as well as the means and motivation to improve one's housing situation. Since main partners may contribute to household income, having a main partner may improve someone's economic situation and increase one's stability.

In urban areas where poverty is rampant, there may be a limited number of social network members, including family and friends, who can provide resources due to their own struggles.[10] Thus, individuals may seek out sex partners who can provide financial support. Having a sex partner who provided financial support was associated with no longer being homeless at follow-up. By having network members who loan money, people may begin to gain financial stability which leads them to improve their housing status. In addition, having the resources to provide for another person may be indicative of one's own housing status and stability; thus participants may have moved in with their sex partner who lent them money.

Having a sex partner who used heroin or cocaine decreased the odds of improving one's housing status. Being in a relationship with another drug user often results in an unstable environment. Fostering one's drug use may be the priority and that is where financial resources flow. In addition, there may be no motivation to improve one's housing status in partnerships where both people use drugs. For partnerships composed of a drug user and non-user, there is reason to improve such as getting clean or one's partner taking care of oneself.

This study has several limitations that should be noted. All participants were self-selected volunteers and the generalizability may be limited. The participants that enrolled in the study may have been motivated to make changes in their behaviors and lifestyles including obtaining housing. In Baltimore, networks tend to be stable.

Our findings would not generalize to geographic regions where homeless individuals may belong to more transient populations and hence have different social network structures. Another limitation includes the exclusive use of baseline characteristics as predictors. It is possible that changes in network characteristics or one's lifestyle are what predict housing changes. Further research should examine the relationship between housing transitions and network turnover. Finally, it would be useful to have more information about the sexual partners, such as their income and housing situation. These specific qualities of sex partners may help explain why a person is no longer homeless.

The strengths of the current analysis include the use of longitudinal design to determine the housing situation of the sample at more than one time point. Temporality of the exposure (sexual network characteristics) and outcome (housing) were maintained in the analysis.

Our study has shown that characteristics of sex partners must be considered when examining influences on housing. Interventions designed to decrease homelessness and housing instability should consider the influence of one's sex partners. Also, service providers should encourage homeless individuals to seek partner or rebuild the social networks with individuals who represent stability and offer resources. In addition, providers should inquire about the characteristics of sexual relationships when helping individuals improve their housing status.

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