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Unsafe Sexual Behavior Among HIV-Infected Patients in Croatia, 2006: Prevalence and Associated Factors

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Abstract

Information about risky sexual behavior among people living with HIV/AIDS is important to prevent the spread of the disease. Using an anonymous, self-administrated questionnaire, we surveyed 185 HIV-infected patients about risk behaviors at the University Hospital for Infectious Diseases in Croatia. Unprotected anal or vaginal sex in the preceding 6 months with partners of uninfected/unknown HIV status was reported by 20% of men who have sex with men (MSM), about half of whom reported multiple casual partners of unknown HIV status; 6% of heterosexual men; and 3% of women. Heterosexual patients were potentially more likely to expose regular partners to HIV but reported no risk behaviors with casual, non-concordant partners. MSM reported more risk behaviors, which were strongly associated with having ≥ 2 sexual partners in the last 6 months and both insertive and receptive anal sex. Educational interventions in Croatia should target MSM to prevent high rates of HIV transmission

Keywords

Men who have sex with men; Risk factors; Condom use; Croatia; HIV

Introduction

Until recently, the focus of HIV prevention efforts worldwide was largely on people uninfected with HIV. Many HIV-infected patients, however, primarily in countries with high- and upper-middle incomes, now live longer and healthier lives due to widespread availability of antiretroviral therapy (ART). Thus, it has become increasingly important to gather information about factors associated with high-risk sexual behavior among persons with HIV infection and to develop interventions to prevent the spread of HIV to their uninfected partners. Several studies have shown that HIV-infected persons who become aware of their infection tend to reduce or at least to temporarily refrain from activities that would cause risk to others (Cleary et al. 1991; Higgins et al. 1991; Weinhardt et al. 1999). Later reports suggest that such behavioral changes are not maintained in a substantial proportion of HIV-infected persons (Crepaz and Marks 2002; Stall et al. 2000). Also, some sexually transmitted infections (STIs)

other than HIV have been noted increasingly among HIV-infected persons (Collis and Celum 2001; Scheer et al. 2001). Not only are such infections markers of unsafe sexual activity, but they also contribute to an increased potential for HIV transmission due to the synergistic effect of ulcerative STIs on HIV infectivity (Cohen 1998; Fleming and Wasserheit 1999).

Furthermore, studies suggest that patients' optimism about the effectiveness of ART may contribute to relaxed attitudes toward risky sex practices (Dilley et al. 1997; Dilley et al. 2003; Kelly et al. 1998; Kravcik et al. 1998; Van de Ven et al. 2000; Van de Ven et al. 2002). In addition, it is noteworthy that HIV-infected patients who receive ART and who engage in HIV transmission risk behaviors may harbor and spread drug-resistant HIV, which adds considerably to the public health threat (Kozal et al. 2004).

Croatia has a low-level epidemic and a centralized system of care for HIV/AIDS patients (Begovac et al. 2006); all known patients are treated at the University Hospital for Infectious Diseases in Zagreb (UHID). ART has been provided free of charge through the National Health Insurance System since April 1998. The number of patients treated at UHID has increased from about 50 in 1997 to over 400 in 2007.

There are no data about the sexual behavior of HIV-infected patients under medical care in Croatia, and except for one small study on Romanian adolescents (Johnson and Buzducea 2007), there are no other data from southeastern Europe. To fill this gap, we report prevalence estimates of risky sexual behavior in Croatian HIV-infected patients and factors associated with these behaviors.

Methods

Participants and Recruitment

The study was conducted among HIV-infected patients aged ≥ 18 years and under medical treatment at the UHID in Croatia from November 2005 to September 2006, regardless of AIDS diagnosis or ART. Participants had to be aware of their HIV status for at least 6 months at the time of enrollment and to provide a sexual history for the prior 6 months. Exclusion criteria were severe mental impairment or medical reasons that might influence participants' ability to complete the survey. We enrolled all eligible patients consecutively as they reported for their regular scheduled examinations.

Procedures

Prior to the regular medical appointment, the attending physician or nurse practitioner asked patients to participate in the study, assured them that refusal would not influence their medical treatment, guaranteed their anonymity, explained the study and its possible benefits for participants and others, and obtained signed informed consent. In a separate room, patients received verbal and written instruction about how to complete a self-administered paper questionnaire. To assure anonymity, the questionnaires were not dated or coded, and each completed form was sealed in an unmarked envelope and placed in a sealed box. Twenty sealed envelopes containing blank paper were placed in the box before the beginning of the study to provide an added sense of anonymity for first respondents. The UHID Ethics Committee and the Committee on Human Research of the University of California, San Francisco, approved the study and all procedures.

Measures

Demographic and Health Status Characteristics—Background and demographic items included age, gender, education, marital status, living alone or with someone, living abroad, size of town of current and previous occupancy, employment status, and income. We

did not ask about ethnicity because the Croatian population is fairly uniform ethnically. We assessed health status by self-report of general health and recent health problems.

Substance Use—We ascertained use of legal (alcohol) and illegal (any drug, not specified) substances before sex in the last 6 months along with ever having injected drugs or shared injection equipment.

Sexual Behavior—We assessed sexual behavior among men who have sex with men (MSM) and men who have sex only with women (MSW). MSM reported number of male partners in the last 10 years, type of sexual acts, age of first sex with a man, and sexual activities in the last 6 months, including number and type of partners (men and women, main and casual) and use of condoms for anal and/or vaginal sex. We considered all answers other than 100% use of condoms in the last 6 months as risky sexual behavior in our analysis. We assessed participants' knowledge of the HIV status of their main and casual partners. We asked MSW about number of partners in the last 10 years and about sexual activities in the last 6 months, and women were questioned in the same manner using a separate women's questionnaire.

HIV Status and Knowledge and Sexual Activity—We asked participants how they thought they became infected with HIV, how long they had known their HIV status, and whether they were on ART and for how long. We assessed knowledge about HIV transmission by asking participants whether infection could occur through unprotected anal, vaginal, and oral sex. They were asked whether they felt uncomfortable discussing sex with an attending physician and if they would like to discuss sex more often with their physician in the future.

Statistical Analysis

We calculated frequencies for categorical variables and medians with interquartile ranges or means with standard deviations for interval variables. We analyzed frequencies in 2×2 tables using the Fisher exact test. Groups with interval variables not normally distributed were compared using the Wilcoxon-Mann-Whitney U-test.

Results

Demographic and Health Status Characteristics

A total of 212 patients were approached for participation in the study; 19 (9%) declined to participate. Four additional participants were excluded because they turned in a blank questionnaire, and four other men were excluded from the sexual behavior analysis because of lacking or inconsistent data about their sexual behavior. The final sample included 150 (81%) men and 35 (19%) women. The majority of men in our study was younger than 44 years, considered their health to be good to excellent, and reported no serious health problems in the past month (Table 1). Most (61%) had finished high school. The rate of unemployment among male participants was 19%, similar to the Croatian average of 17%. Just over 40% were married and about one third were currently living alone. Almost 20% of male participants lived in smaller towns with populations of <10,000.

The percentage of women (19%; $n = 35$) in our study was similar to the percentage of women obtaining HIV/AIDS care at UHID (20%). As with the men, the majority of women was younger than 44 years and considered themselves predominantly in good health; however, their education rate was slightly lower than the men's, and their unemployment rate was higher. Only 17% of the women had never been married, which correlates with our findings that most contracted HIV infection from their regular partners, often migrant workers or merchant seamen.

Substance Use Before Sex in the Last 6 Months

Alcohol use before sex in the prior 6 months was reported by 36 (23%) men, but only 6 (16%) reported it >50% of the time. Six (17%) women reported alcohol use before sex, and none reported it >50% of the time. Thirty percent of men reported illegal drugs before sex, but only 3 (2%) reported it >50% of the time; no women reported this behavior.

HIV Status and Knowledge and Sexual Activity

The 154 male participants knew their HIV-infected status for an average of 6 years. Of the 145 men who responded, 64 (42%) believed that they became HIV infected from having sex with men, 46 (30%) from having sex with women, 7 (5%) from injection drug use, 8 (5%) from blood transfusion and 20 (13%) reported not knowing how they had become infected. About 9% were not sure if HIV could be transmitted through anal or vaginal sex, and 25% were not sure if HIV could be transmitted by oral sex. About half of participants said they would like to discuss sex with a physician in the future. The 35 women knew their HIV status longer (for about 7 years). More women (77%) than men thought that they had been infected from having sex, and more women (51%) were not sure if oral sex was a route of HIV transmission. Their knowledge of other HIV transmission risks was about the same as that of the men. Similar to the men, 40% of the women wanted to discuss sex with a physician in the future.

Men Who Have Sex With Men

Eighty-three (55%) men reported having had sex with a man in the preceding 6 months. Eighteen (22%) reported up to 50 partners in the past 10 years, and 11 (13%) reported up to 100. Twenty (24%) men reported having had unsafe sex in the prior 6 months (Table 3), and 17 (20%) reported having had unsafe sex with an uninfected partner or a partner of unknown HIV status in the prior 6 months. Fifteen (18%) men reported unsafe sex with a main partner; seven of these partners were known to be HIV infected. Twelve (14%) men reported having had unsafe sex with a casual partner during this period. Additionally, of the five MSM who reported having had sex a female partner in the prior 6 months, three reported inconsistent use of condoms; one of the female partners was reported to be HIV infected. Altogether, unsafe sex with an HIV non-concordant partner (main or casual) was found in 17 (20%) of MSM. On bivariate analysis (Table 2), MSM who reported unprotected anal sex in the preceding 6 months, compared with those who did not, had significantly more partners ($P = 0.004$), both insertive and receptive anal intercourse ($P = 0.006$), and greater income ($P = 0.032$).

Men Who Have Sex Only With Women

Sixty-seven (45%) men had no history of sex with another man. They reported a mean of 16 female partners in the previous 10 years. Twenty-six (39%) reported having had sex in the prior 6 months, and six (23%) reported having had unsafe sex (Table 3) during this time. Four (15%) men reported unsafe sex with an uninfected partner or a partner of unknown HIV status; all of these were spouses or main partners. Five reported unsafe sex with a main partner; one was known to be HIV infected. Only one man reported unsafe sex with a casual partner; she was known to be HIV infected. Twenty-four (36%) men reported having a main sex partner.

Women

Of the 35 women, 17 (49%) reported having had sex in the last 6 months. Six (35%) reported inconsistent condom use during vaginal intercourse; all 6 reported having had unsafe sex with her main partner, and 2 reported also having had unsafe sex with a casual partner (Table 3). Only one (3%) woman reported having had unsafe sex with a partner of uninfected or unknown HIV status; this man was a main partner. The remaining five of the women reported having main partners or casual partners. Among the five women who reported having had sex with

casual partners in the prior 6 months, inconsistent condom use was reported with only two partners, both of whom were HIV infected.

Discussion

We surveyed HIV-infected patients under care in Croatia and found that 20% of MSM, 6% of MSW, and 3% of women reported having engaged in non-concordant, unprotected anal and/or vaginal sex in the preceding 6 months. Heterosexual patients of both sexes were more likely than MSM to expose their main partners to HIV and to report no casual non-concordant, unprotected sex in that period, a finding not reported in similar studies (Golden et al. 2007; Morin et al. 2007). There also was evidence of sero-sorting among MSW and women with casual partners.

Alternately, and comparable to findings in larger studies, MSM reported different patterns of risky sexual behavior than MSW and women. There was a lower percentage of risky behavior among Croatian MSM than among MSM in other settings, who engaged more often in casual sex and in casual sex with partners of unknown HIV status (Chen et al. 2006; Golden et al. 2007; Morin et al. 2007). The absolute number of MSM who reported inconsistent or no use of condoms in the last 6 months with casual partners of unknown HIV status was low. Some, however, reported as many as 10–15 partners in that period, indicating patterns of sexual behavior that could lead to a significant number of new HIV infections among MSM. We did not ascertain if the casual partners were informed about the patients' HIV status. How often patients with HIV infection misreported their HIV status or how often their partners accepted having unprotected sex with an HIV-infected partner is unknown and merits further study.

We found that having had two or more partners in the preceding 6 months and practicing both insertive and receptive anal sex were significantly associated with inconsistent condom use compared with the consistent condom use we found in patients who had fewer partners and either insertive or receptive anal sex exclusively. Individuals who have both types of anal sex might find it more difficult to comply with safe sex practices because, for example, they may use condoms while performing insertive anal sex but may not wish to ask their partner to do likewise. Higher income and being on ART for a shorter time had a somewhat less pronounced but still significant association with risky sexual behavior among MSM. These results could be due to optimism among patients who had recently started ART, and riskier sexual behavior may be more common among patients with more money, as this may afford them greater opportunities to find or attract partners. We did not examine the factor of commercial sex, because in Croatia, sex work and purchasing sex among MSM are uncommon (Stulhofer et al. 2008). We found no strong association between risky behavior and alcohol and/or illegal drug use before sex, which contrasts with findings from other reports (Cook et al. 2006). Misconceptions about HIV transmission also were reported; almost 10% of men were not sure whether anal or vaginal sex could transmit HIV.

Our findings are limited by the cross-sectional nature of the study and that it was based on a convenience sample. A longitudinal design might better describe factors associated with risky sexual behavior. Recall bias was another issue of concern because we asked participants to remember events over 6 months, but other studies, similar in design to ours, also used a period of 6 months for history of sexual behavior (Morin et al. 2007; Wolf et al. 2003). In addition, our findings are based on self-report of sexual behaviors that are stigmatized in Croatia (i.e., being both HIV infected and sexually active), possibly resulting in misinformation being given by HIV-infected persons. Our use of anonymous self-reporting, however, should have minimized this potential bias. On the other hand, self-reporting of sexual behaviors may have resulted in errors that could have been avoided by face-to-face interviews. Our sample size was small and from a setting with a low-level HIV epidemic. We surveyed almost 50% of the

HIV-infected population in Croatia, however, and had a low refusal rate and wide inclusion criteria, which allowed us to generalize our findings to the entire HIV-infected population of about 400 persons under medical care in Croatia. Our findings were similar to behavioral data reported from recent studies in other settings (Golden et al. 2007; Morin et al. 2007), which showed that MSM were more likely to report risky sexual behavior than were MSW or women. Such studies have led to the development of national behavioral surveillance systems for HIV/AIDS patients (Malitz and Eldred 2007).

We believe that rates of unsafe sex with uninfected partners and partners of unknown HIV status are an urgent public health priority to limit future spread of HIV. Additional studies to increase our understanding of risk behaviors among HIV-infected patients and how to intervene effectively, especially among MSM, are needed. Croatia, which has the advantages of a centralized health system and a low-level epidemic, has the unique opportunity to use the experience and findings from years of behavioral studies conducted elsewhere to understand and target risk behaviors among people with HIV/AIDS. The findings from our study should be the beginning of a comprehensive approach to understand the dynamics of HIV spread in Croatia and to design effective programs to limit its transmission.

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Table 1
Demographic characteristics of 189 survey respondents

Characteristic	Men number (%) <i>n</i> = 154	Women number (%) <i>n</i> = 35
Subjective health status		
Excellent	25 (16)	7 (20)
Very good	59 (38)	11 (31)
Good	32 (21)	7 (20)
Satisfactory	27 (18)	8 (23)
Bad	7 (5)	1 (3)
Do not know	3 (2)	1 (3)
Serious health problems in the past month		
Yes	14 (9)	1 (3)
No	136 (88)	34 (97)
Do not know	4 (3)	0 (0)
Age (years)		
< 35	46 (30)	10 (29)
36–44	48 (31)	19 (54)
45–54	38 (25)	5 (14)
≥55	22 (14)	1 (3)
Completed educational level		
None	1 (1)	0 (0)
Elementary school	8 (5)	4 (11)
High school	94 (61)	16 (46)
College/university	51 (33)	15 (43)
Current job status		
Full-time job	73 (47)	13 (37)
Part-time job	18 (12)	8 (23)
Unemployed	29 (19)	8 (23)
Retired	34 (22)	6 (17)
Income per month		
None	17 (11)	3 (9)
0–400 USD	39 (19)	11 (31)
401–1100 USD	64 (42)	20 (57)
> 1101 USD	33 (21)	1 (3)
Marital status		
Married	44 (29)	15 (43)
Single	87 (56)	6 (17)
Divorced	21 (14)	8 (23)
Widowed	2 (1)	6 (17)
Size of town of residence		
> 100,000	87 (56)	15 (43)
50,001–100,000	17 (11)	6 (17)
10,001–50,000	17 (11)	4 (11)
2,001–10,000	13 (8)	3 (9)

Characteristic	Men number (%) <i>n</i> = 154	Women number (%) <i>n</i> = 35
≤2,000	18 (12)	7 (20)

Some percentages do not add up to 100 due to missing values

Table 2

Factors associated with non-concordant risky sexual behavior among HIV-infected MSM in the preceding 6 months

Associated factor	Risky sexual behavior with non-concordant partner (<i>n</i> = 17) Number (%) or (Interquartile Range)	No risky behavior or HIV-infected partner* (<i>n</i> = 66)
Age < 35 years	7 (41)	26/66 (33)
University or college education	9 (53)	27/66 (41)
Permanent employment	13 (76)	37/66 (56)
Income > \$400/month	16 (94)	44/65 (68)**
Alcohol use before sex in last 6 months		
Never	8 (47)	38/51 (75)
Sometimes	8 (47)	11/51 (22)
Often	1 (6)	2/51 (4)
Age of first sex with men, years	19 (17.0–22.5)	23 (19.0–29.0)
Anal sex practices		
Both insertive and receptive	16 (94)	37/65 (56)***
Exclusively insertive or receptive	1 (6)	16/65 (26)
None	0	12/65 (18)
Had ≥ 2 partners in last 6 months	12 (75)	19/66 (29)***
Time since HIV diagnosis, years	2.5 (1.6–3.3)	4 (1.8–6.3) ^a
Currently on ART	12 (75)	44/65 (68)
Time on ART, years	1.8 (1.1–2.0) ^b	4 (1.7–6.0) ^c **
Want to discuss sex with attending physician	11 (69)	34/66 (52)

ART = antiretroviral therapy

* Denominators vary; actual denominators are shown in cells or as footnotes

** $P < 0.05$,*** $P < 0.01$ ^a $n = 64$,^b $n = 12$,^c $n = 42$

Table 3
Sexual risk behavior among the 185 HIV-infected participants in the preceding 6 months

Risk Behavior	Men who have sex with men <i>n</i> = 83	Men who have sex only with women <i>n</i> = 67	Women <i>n</i> = 35
Number (%)			
Total number of patients who reported unsafe sex	20 (24)	6 (9)	6 (17)
Unsafe sex with non-concordant partner	17 (20)	4 (6)	1 (3)
Unsafe sex with main partner	15 (18)*	5 (7)	6 (17)
Unsafe sex with casual partner	12 (14)	1 (1)	2 (6)
Unsafe sex with HIV + main partner	7 (8)	1 (1)	5 (14)
Unsafe sex with HIV + casual partner	1 (1)	1 (1)	2 (6)

Unsafe sex was defined as inconsistent or no condom use in the preceding 6 months

* One man reported having both a main male and a main female partner