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Perceived Likelihood of HIV and Sexually Transmitted Infection Acquisition Among Men Who Have Sex With Men

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Keywords

HIV prevention; MSM; risk perceptions; sexually transmitted infections

Men who have sex with men (MSM) continue to be affected by HIV, particularly in the United States where 61% of estimated new infections in 2009 were attributed to this population (Prejean et al., 2011). To account for this trend, researchers have pointed to several individual-level factors associated with sexual risk taking among these men including: optimistic attitudes (or fewer concerns about transmission) resulting from advances in treatment (Crepaz, Hart, & Marks, 2004; Kalichman et al., 2007; Rowniak, 2009), higher (Molitor, Facer, & Ruiz, 1999) or lower perceived risk of infection (MacKellar et al., 2007; Mayer et al., 2012), fatalistic attitudes about remaining HIV-negative (Yi, Sandfort, & Shidlo, 2010), and safer sex fatigue in HIV-negative men (Ostrow et al., 2008; Rowniak, 2009).

With few exceptions, much of this research has focused on how MSM perceive their risk of acquiring or transmitting HIV with less attention paid to other sexually transmitted infections (STI). Nevertheless, rates of STIs in the United States have also increased among this population (Centers for Disease Control and Prevention, 2011), coinciding with a rise in sexual risk-taking (Klausner & Wong, 2003). Holt, Bernard, and Race (2010) found that MSM consider STIs to be less important than HIV. Conversely, van der Snoek and colleagues (2006) reported no differences in perceived susceptibility to HIV or STIs. Two additional studies noted that some men with low perceived STI risk reported behaviors that placed them at a high risk for HIV/STI acquisition or transmission (Mimiaga, Goldhammer, Belanoff, Tetu, & Mayer, 2007; Taylor et al., 2011).

The issue of when MSM anticipate acquiring HIV/STIs is less explored in the literature, with researchers typically assessing only general or lifetime perceived risk. Knowing if these men perceive risks in the near future and/or in their lifetimes can guide sexual health education and risk reduction counseling in primary care settings. The current study attempted to clarify perceptions that MSM have about their risks of becoming infected with HIV and other STIs, specifically during three time periods (i.e., the next 6 months, the next year, and lifetime), as well as to examine potential associations with high-risk sexual behaviors.

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Method

The data presented in this paper are drawn from a cross-sectional study of 204 MSM who completed an Internet survey from May to September 2008 regarding their: (a) sexual venue attendance (bathhouse, sex club, bar, video/buddy booth, public bathroom, public park, or gym/health club) in the previous month; (b) high-risk sexual behaviors during venue attendance (oral-receptive sex with ejaculation in the mouth, rimming/oral-anal contact, and anal sex without a condom); (c) demographics (age, HIV status); (d) perceived likelihood of becoming infected with HIV; and (e) perceived likelihood of becoming infected with an STI. For the last two items, men were specifically asked, How likely are you to become infected with HIV during: the next 6 months, the next year, and your lifetime? and How likely are you to become infected with an STI (Sexually Transmitted Infection) other than HIV during: the next 6 months, the next year, and your lifetime? Using an ordinal scale, response choices were defined as: 1 = *very unlikely*, to 10 = *very likely*. Participants who indicated that they were HIV-infected received only those questions pertaining to the perceived likelihood of becoming infected with an STI. Men were eligible for the study if they actively engaged in sexual behavior with other men and were at least 18 years of age.

Procedure

The study relied on a multi-pronged approach to Internet-based recruitment occurring in two phases: (a) strategic opportunistic sampling (Harding & Peel, 2007), whereby research study solicitations containing a survey link were e-mailed directly to LGBT listservs; and (b) advertisements posted to online bulletin boards frequented by MSM (Craigslist and Backpage). Specifically, the author posted study advertisements in both personals and volunteer categories in urban centers with high percentages of gay and bisexual men (e.g., New York City metropolitan area including parts of New Jersey and Connecticut; Los Angeles; San Francisco). Venue-based recruitment efforts were attempted, but proved to be unsuccessful. A full description of sampling procedures has been provided elsewhere (Downing, 2012). Recruitment solicitations indicated that there was a chance to win a \$50 prize and instructed potential participants to e-mail the study e-mail address requesting a link to the Internet survey.

After accessing the survey, participants were prompted to read a consent page and click their agreement. This page informed participants that the survey would take approximately 20 minutes to complete. At the end of the survey, individuals were given the option to provide an e-mail address for entry into a random drawing for one of two \$50 electronic gift certificates. The institutional review board affiliated with the author's university approved the study protocol.

Data Analysis

Data were analyzed using StatPlus (Version 2009). Kruskal-Wallis ANOVA tests were used to examine differences in perceived likelihood of becoming infected with HIV or an STI by participant age. Friedman ANOVA tests were used to examine changes in perceived likelihood of HIV infection or STI across the three projected time periods. Post-hoc analyses were conducted using Wilcoxon matched pairs tests. Wilcoxon matched pairs tests were also used to compare participants' perceived likelihood of HIV infection with their perceived likelihood of becoming infected with an STI during each time period. Mann-Whitney *U* tests were conducted to compare differences in perceived likelihood of HIV infection or STI by venue attendance (*yes/no*) and engagement in risky sexual behaviors (oral-receptive sex with ejaculation in the mouth, rimming, anal sex without a condom) during recent venue attendance. A *p*-value of .05 or less was considered to indicate statistical significance.

Results

A total of 204 surveys were completed and subjected to data analysis. Participants ($n = 191$) reported their ages as follows: 18 – 24 (10.5%), 25 – 29 (9%), 30 – 40 (31%), 41 – 60 (43.5%), and older than 60 (6%). The perceived likelihood of becoming infected with HIV or an STI did not differ by participant age for any of the three time periods. For HIV status, most of the participants reported that they were not infected with HIV (85%); a small percentage indicated that they were infected with HIV (6%) or that they did not know their status (9%). Descriptive data for high-risk sexual behaviors were as follows: anal sex without a condom ($n = 33$, $Mdn = 4$, $IQR = 2 - 8.5$); oral-receptive sex with ejaculation in the mouth ($n = 60$, $Mdn = 4$, $IQR = 2 - 9$); and rimming ($n = 41$, $Mdn = 2$, $IQR = 1.25 - 7.5$).

Although participants rated their likelihood of becoming infected with HIV as *low* for each of the three time periods, these ratings significantly increased with projected time: 6 months ($Mdn = 1$, $IQR = 0$), 1 year ($Mdn = 1$, $IQR = 1 - 2$), lifetime ($Mdn = 1$, $IQR = 1 - 3$), $\chi^2 (2, n = 176) = 36.54$, $p < .001$. Similarly, the perceived likelihood of becoming infected with an STI other than HIV significantly increased with projected time: 6 months ($Mdn = 1$, $IQR = 1 - 3$), 1 year ($Mdn = 2$, $IQR = 1 - 3$), lifetime ($Mdn = 3$, $IQR = 1 - 5$), $\chi^2 (2, n = 184) = 43.08$, $p < .001$. Wilcoxon matched pairs tests revealed that participants' perceived likelihood of becoming infected with HIV was significantly lower than their perceived likelihood of becoming infected with an STI for each of the three time periods: 6 months ($z = 3.79$, $p < .001$), 1 year ($z = 4.51$, $p < .001$), lifetime ($z = 4.65$, $p < .001$).

More than two thirds of participants ($n = 139$, 68%) attended at least one sex venue in the month prior to assessment. However, there were no significant differences in the perceived likelihood of becoming infected with HIV or an STI for any of the three time periods between venue attendees and non-attendees. Further, there were no significant differences in the perceived likelihood of becoming infected with HIV or an STI for any of the three time periods between men who reported engaging in high-risk behaviors (oral-receptive sex with ejaculation in the mouth, rimming, anal sex without a condom) at a sex venue in the previous month and those who did not (including non-venue attendees). However, several marginally significant differences were noted. Men who reported engaging in oral-receptive sex with ejaculation in the mouth had a higher perceived likelihood of becoming infected with HIV in the next year ($p = .065$) and in their lifetimes ($p = .072$). Similarly, men who reported anal sex without a condom had a higher perceived likelihood of becoming infected with HIV in their lifetimes ($p = .06$). Controlling for HIV-infected status did not alter the outcomes for perceived likelihood of becoming infected with an STI other than HIV during any of the three time periods when comparing men who reported engaging in high-risk behaviors with those who did not.

Discussion

Unlike past research examining lifetime (MacKellar et al., 2007) or general risk perceptions that MSM have for acquiring HIV or an STI (Mayer et al., 2012; Mimiaga et al., 2007; Molitor et al., 1999), the current study assessed and compared perceived likelihood of infection during three projected time periods (the next 6 months, the next year, and lifetime). Findings demonstrated that MSM perceived a relatively low chance of acquiring HIV or an STI in the near future and in their lifetimes. Although these men indicated they were unlikely to become infected with HIV during each of the time periods, their perceptions of this outcome increased significantly with projected time. A similar result was noted for the perceived likelihood of acquiring an STI other than HIV. Contrary to previous work that found no differences in perceived susceptibility to HIV and STIs (van der Snoek et al., 2006), perceptions about future STI acquisition were significantly higher than those for HIV

at each of the three time periods. The reasons behind these perceptions were not established in the current study, and therefore remain an important issue to consider in future research.

Historically, perceptions of HIV risk have factored prominently in prevention campaigns aimed at raising awareness of transmission routes and educating people about safer sexual behaviors. Although there were some early successes in risk reduction prior to the advent of antiretroviral therapy (Becker & Joseph, 1988), personal appraisal of HIV risk has been inconsistently associated with sexual behavior. Views about HIV have since shifted from that of an incurable and fatal disease to a chronic illness (Morin et al., 2003; Siegel & Lekas, 2002). This reduced threat may be partly responsible for increased sexual risk-taking and HIV infections (Crepaz et al., 2004; Jaffe, Valdiserri, & De Cock, 2007; Kalichman et al., 2007; Rowniak, 2009). The men in this study perceived a low likelihood of becoming infected at all three projected time periods despite some evidence of recent unsafe sex and, therefore, may have been less concerned about what it meant to acquire and cope with HIV. Additional investigation is needed to address the potential meanings that uninfected (and infected-unaware) men have for an HIV diagnosis 3 decades into this epidemic. Further, researchers might consider how the threat of HIV today compares to that of a viral or bacterial STI.

Limitations

Several study limitations should be noted. First, the data rely on self-report thus creating the potential for recall bias. However, the survey assessed venue attendance and sexual behaviors using a 1-month interval rather than a longer period (e.g., 3 months, 12 months) in order to minimize any effects from underreporting or inaccuracy (Fenton, Johnson, McManus, & Erens, 2001). Second, participants were not asked about the reasons for their perceptions of future risk. This information could be useful for tailoring education and prevention efforts for MSM. Lastly, the survey only assessed recent sexual behaviors occurring at sex venues. Therefore, any associations of behavior with HIV/STI risk perceptions may not be generalizable to the broader MSM population.

Implications

The results of this investigation have implications for health care providers and HIV/STI prevention counselors working with MSM. First, participants who reported high-risk behaviors during recent sex venue attendance had a marginally higher perceived likelihood of becoming infected with HIV in the next year or in their lifetimes. This would suggest that men do understand how certain behaviors can increase transmission risk, but this may also indicate a sense of inevitability or fatalism that should not be ignored (see Yi et al., 2010 for a discussion of disengagement coping and sexual risk-taking). On the other hand, men perceived their chances of acquiring HIV during any of the three time periods to be significantly lower than that of an STI. In addition to testing for HIV and STIs, health care providers and prevention counselors should assess their clients' perceptions and attitudes regarding HIV and STI risk as well as any use of specific behavioral strategies intended, perhaps because of inaccurate or equivocal information, to reduce their likelihood of acquisition or transmission (e.g., engaging in unprotected oral sex as a "safe" alternative to unprotected anal sex [Gerbert, Herzig, Volberding, & Stansell, 1999]; serosorting [Rowniak, 2009]).

Prevention strategies that focus on STIs other than HIV and the sexual behaviors that place individuals at risk for acquisition and transmission are needed to augment routine screenings. This is particularly critical for MSM who remain unaware of: (a) specific bacterial and viral STIs, including human papillomavirus – considered one of the most common STIs and a risk factor for anal and oral cancer in men (Dietz & Nyberg, 2011;

Klausner & Wong, 2003); (b) the mechanisms by which they are transmitted; and (c) the increased risk for HIV associated with having an STI. By establishing this dialogue, health care providers and counselors can begin to address any inconsistencies or misperceptions, provide up-to-date sexual health information, and work with their clients to develop a personal risk reduction plan.

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