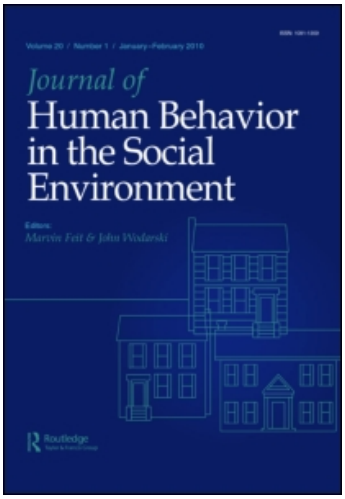

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The Relationship Among Population Size, Requests for Bareback Sex, and HIV Serostatus in Men Who Have Sex With Men Using the Internet to Meet Sexual Partners

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The Relationship Among Population Size, Requests for Bareback Sex, and HIV Serostatus in Men Who Have Sex With Men Using the Internet to Meet Sexual Partners

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Recent research has indicated the use of the Internet to meet sexual partners among men who have sex with men (MSM) is increasing. This medium also serves as a major source for social and sexual networking among MSM who live in more rural areas. In addition, data suggest the use of the Internet to initiate sexual relationships among this population may increase the risk of transmission of sexually transmitted infections, including HIV. The purpose of this study was to examine differences between self-reported HIV serostatus and requests for condomless bareback (BB) sex among a sample of Florida MSM (n = 483) using a popular Internet sexual networking site to meet sexual partners. Specifically, these variables were assessed in relation to population size among the site's seven geographic regions within the state. Findings indicated an overall statistically significant relationship among requests for BB sex and self-reported HIV serostatus. However, there was not a significant relationship among these variables and geographic region. Thus, although previous data have emphasized the importance of different HIV prevention strategies among rural versus urban MSM, there may not be major differences in HIV serostatus and requests for unsafe sexual practices among these men who use the Internet to meet sexual partners in comparison to MSM in more populated areas.

KEYWORDS AIDS, bareback sex, condom, gay, HIV, homosexual, internet, men who have sex with men, WWW

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INTRODUCTION: THE USE OF THE INTERNET TO INITIATE BAREBACK SEXUAL RELATIONSHIPS

The use of sexual networking sites on the Internet to initiate sexual relationships among men who have sex with men (MSM) is an emerging and increasing phenomenon. Ten percent of heterosexual men use the Internet to find sexual partners; however, 43% of MSM do so (Bolding, Davis, Sherr, Hart, and Elford, 2006). In addition to higher frequency of use, research also suggests MSM who use the Internet to meet sexual partners have high numbers of sex partners. In a study conducted by Ogilvie et. al (2008), MSM who used the Internet to initiate sexual relationships had on average more than 10 sexual partners in the past year.

These finding have sociologic implications and indicate a possibly changing manner in which gay and bisexual men form friendships and romantic/sexual relationships and is of particular concern to public health officials and health care professionals; MSM continue to represent the largest proportion of new HIV diagnoses (Centers for Disease Control [CDC], 2005). Recent epidemiologic data have also shown an increasing incidence of sexually transmitted infections (STIs) among MSM. Cities with large populations of MSM, such as San Francisco, have shown a rise in the rates of infection with human immunodeficiency virus (HIV), syphilis, and rectal chlamydia (San Francisco Department of Public Health, 2007).

These data strongly suggest MSM do not consistently practice safer sex, including strict use of condoms during anal intercourse, which carries the most significant risk for HIV transmission (Wolitski, 2005) among all sexual activities. Researchers have postulated several etiologic factors for the increasing incidence of condomless bareback (BB) sex. The misperception that HIV is a non-terminal illness that can be chronically managed with antiretroviral medication, more complex sexual decision making, substance use, and safer sex fatigue have all been indicated as partial causative factors (Carballo-Dieguez & Bauermeister, 2004; Wolitski). Also implicated is the increasing use of the Internet to initiate sexual relationships (Blackwell, 2008; Davis, Hart, Bolding, Sherr, & Elford, 2006; Engler, Frigault, Leobon, & Levy, 2005; Halkitis, Wilton, & Drescher, 2005; Liau, Millett, & Marks, 2006; Shernoff, 2006; Wolitiski). MSM who use the Internet to initiate sexual relationships are more likely to engage in unsafe sexual practices (Benotsch, Kalichman, & Cage, 2002; Hospers, Harterink, van den Hoek, & Veenstra, 2002; Liau et al.).

In a study conducted by Hospers et al. (2006), 30% of the MSM who engaged in sexual activity with other MSM met through the Internet reported inconsistent safer sexual behaviors. Another study showed 43% of MSM who engaged in BB sex with men they met via the Internet did so without knowledge of that individual's HIV serostatus (Halkitis & Parsons, 2003). This does not suggest intentional spread of HIV, however. One study found the

widespread intentional transmission of HIV among HIV-positive individuals to HIV-negative partners is essentially nonexistent (Tewksbury, 2003). The findings from the few studies assessing the risks among MSM using the Internet to initiate sexual activity highlight the need for critical inquiries that examine specific sexual behaviors and the possible role these behaviors can play in the transmission of STIs, especially HIV. In addition, prior inquiries have suggested a greater use of the Internet to meet sexual partners among MSM residing in less populated areas.

THE EFFECT OF POPULATION SIZE, UNSAFE SEX PRACTICES, AND THE USE OF THE INTERNET TO MEET SEXUAL PARTNERS AMONG MSM

There have been very few research studies that have compared sexual practices among MSM who reside in more-populated geographic areas with those who reside in less-populated areas. However, the scant research that has been conducted indicates definite risks for MSM regardless of the population size and density of the location in which they live. However, population size is thought to be a major contributor to high-risk sexual behaviors among MSM for many reasons.

A study conducted by Williams, Bowen, and Horvath (2005) found many compounding factors among MSM in less-populated areas that directly impact sexual decision making and may play an important role in how these MSM protect themselves from HIV and other STIs. Specifically, their participants had the perception the environments in which they lived were socially hostile toward gay men and lesbians and, to cope with that reality, these men adopted strategies to assimilate into the predominant heterosexual culture of their community and to look for sex partners. The use of the Internet to initiate sexual relationships was of particular importance to these men as well.

A comparison analysis between HIV risk factors among MSM in rural versus urban areas found the use of the Internet to meet sexual partners to have a significant relationship with high-risk sexual behaviors (Horvath, Bowen, & Willimans, 2006). Online environments and bars were the most popular venues for rural MSM to meet sexual partners; however, when differences in how these men met their sex partners were evaluated as they related to sexual practices, the highest-risk behaviors were associated with the use of the Internet to meet sexual partners and venues in which immediate sexual encounters typically occur (Horvath et al., 2006).

The work of Satinsky et al. (2008) found sexual compulsivity as a significant predictor of higher numbers of visits to environments that are more sexualized for meeting sex partners among rural MSM. This can increase the opportunity for higher-risk sexual behaviors with a greater number of partners.

Thus, research has suggested HIV prevention methods in rural areas should be comprehensive and target the many manners in which MSM initiate sexual relationships, including the Internet (Rosser & Horvath, 2008; Satinsky et al.; Bowen, Horvath, & Williams, 2007; Horvath et al., 2006; Williams et al., 2005).

In addition to targeting the various methods MSM use to initiate sexual relationships, studies have also shown other factors to be of importance in HIV prevention among rural MSM. A comprehensive analysis of HIV prevention methods targeted at MSM in less-populated areas found higher rates of success in areas with less-religious and evangelical Protestant adherents and more gay community infrastructure (Rosser & Horvath, 2008). Greater success was also found in those areas wherein a greater proportion of funds were allocated to community-based organizations and specific MSM-focused prevention programming (Rosser & Horvath). The actual prevalence of HIV within a particular area and "ruralness" of the area were not significant (Rosser & Horvath, p. 169).

It is important to also highlight the patterns of HIV infection are changing within less-populated environments. A Florida-based study conducted by Ellerbrock et al. (2004) found major differences in transmission risk among the same less-populated regions of Florida in epidemiologic data obtained in 1986 compared to 1998–2000. Though history of being a male and having sex with another male was a significant risk in 1986, it was not significant in the 1998–2000 data. The newer data highlighted the significance of history of having an STI, number of sex partners, and exchanging money for drugs as being significant predictors for HIV infection among persons living in less-populated areas (Ellerbrock et al.). Consequently, there is a need for research comparing specific risk behaviors among MSM in more-populated areas with less-populated ones.

METHODS

Purpose of Study

The purpose of this study was to determine whether an association exists between a request for BB sex and self-reported HIV serostatus among MSM in more-populated areas versus less-populated areas within the state of Florida using a popular Internet sexual networking site. Specifically, the association between requests for BB sex was assessed in relation to each of three individual profile response classifications: (1) HIV-negative serostatus, (2) HIV-positive serostatus, and (3) unknown/non-disclosed HIV serostatus. In addition, the association between these three serostatus classifications and requests for BB sex was assessed among geographic regions with varying population size to determine whether a significant relationship exists between HIV serostatus, requests for BB sex, and geographic region.

Sample and Protection of Human Subjects

The study was approved by the Institutional Review Board of the University of Central Florida. No personal identifying information was collected, and at no time did interaction occur with the individuals using the site. All subjects were coded with a unique identifier.

Sampling for this study occurred over a period of approximately 30 days. Subjects were from seven geographical locations in Florida and accessed a popular Internet sexual networking site. Each region was sampled until either every profile meeting inclusion criteria was sampled or a particular region reached a sample size of approximately 100. Only profiles of MSM who were actually online during data collection were included; couples seeking sexual relationships were excluded. Data related to HIV serostatus, requests for BB sex, and geographic region location were collected from the user profiles. Profile user names were recorded to ensure profiles were not double-sampled owing to time elapsed between data collection periods.

Data Analysis

Profile data were coded and input into a database using the Statistical Program for the Social Sciences (SPSS) 16.0. Demographic data were analyzed with descriptive statistics. To assess the relationship between requests for BB sex and HIV, requests for BB sex and geographic location, and HIV serostatus and geographic location, Pearson Chi-square analyses were conducted.

RESULTS

Findings

The final sample consisted of 483 MSM. The typical subject was a white male, 31 to 40 years of age, who reported being HIV-negative and did not request BB sex; only 11 individuals (2.3%) requested BB sex. Approximately 68% of the sample reported a negative HIV serostatus and 5.6% reported a positive HIV serostatus; 26.1% of the sample either didn't know their HIV serostatus or did not disclose it.

Eleven individuals requested BB sex. Those HIV-negative requested BB sex only 0.6% of the time compared to 11.1% of those HIV-positive and 4.8% of those with unknown or undisclosed status. Findings were significantly different ($Chi^2 = 17.104$, $df = 2$, $p = <.01$). Profiles from Orlando, Miami, Tampa, and Ft. Lauderdale comprised approximately 21% of the total sample, respectively; Jacksonville, the Florida Panhandle, and Florida Keys comprised approximately 4% to 6% of the sample, respectively.

Chi-square analysis did not indicate a statistically significant relationship between requests for BB sex and geographic region ($Chi^2 = 2.593$, $df = 6$,

$p = .856$). In addition, there were no statistically significant relationships among either of the three HIV serostatus classifications and geographic region ($Chi^2 = 20.397$, $df = 18$, $p = .311$).

DISCUSSION AND CLINICAL IMPLICATIONS

Sample Characteristics

United States Census Bureau (2009) data indicate higher populations of persons residing in the more urban areas of Jacksonville (805,605), Orlando (800,424), Tampa (583,230), and Miami (409,719) compared to Florida's Panhandle (279,237), Ft. Lauderdale (183,306), and the Florida Keys (183,306). However, U. S. Census data do not collect information regarding sexual orientation; thus, only limited data are available for sample and population comparisons. Although not necessarily indicative of total percentage of MSM population, data suggest the percent of same-sex couples is highest in Key West (6.54%), Fort Lauderdale (5.15%), Tampa (4.22%), Orlando (2.92%), Miami (2.02%), and Jacksonville (1.13%), respectively (Gay Demographics, 2009). Data were not calculated for the Florida Panhandle, but 1.36% of the population of Tallahassee consisted of same-sex partners. This indicates the number of MSM sampled for this study were mostly higher in areas with overall larger populations but not necessarily higher same-sex couple populations.

Earlier inquiries suggest some MSM using the Internet to meet sexual partners do not disclose their HIV serostatus or report their HIV serostatus as unknown. However, the findings from this study indicate a higher overall percentage of this than prior ones. Tewksbury (2003) found 10% of his sample either did not disclose HIV serostatus or reported their HIV serostatus as unknown. In contrast, this analysis suggests a much greater number of MSM as either not reporting their HIV status or indicating unknown serostatus (0.4% and 24.8%, respectively). This could indicate a regional variance from the study's scope consisting of MSM only in Florida. Or, this could also suggest MSM who use the Internet to initiate sexual relationships fear disenfranchising potential sexual partners by disclosing their HIV-serostatus. Dawson, Ross, Henry, and Freeman, (2005) propose MSM who use the Internet to initiate sexual relationships may find it socially and legally safer not to disclose their HIV serostatus than to state their serostatus or identify a preference for a partner with a particular HIV serostatus.

MSM continue to comprise the highest-risk group for HIV acquisition and transmission (CDC, 2005). It is necessary for MSM to undergo routine screening for HIV (CDC, 2007a). In addition, clinicians should encourage MSM to disclose their HIV serostatus to potential sexual partners. Up to 10% of the U. S. population identifies their sexual orientation as one other than heterosexual (Seidel, Ball, Dains, & Benedict, 2006). Therefore, clinicians

should be nonjudgmental in their approach to history taking and reassure clients of the confidentiality of the provider-client relationship.

If a male client reports sexual relationships with other men, the provider should determine the date and results of his last HIV screening. If the patient has not had an HIV screening in the previous 12 months, he should be referred to a screening center. Cities with large populations of MSM often offer free HIV screenings and even point-of-service tests that can be interpreted in as little as 15 to 20 minutes (CDC, 2007a). In more-rural locales, county health departments are excellent clinical resources to assist in identifying such locations. In addition, providers should ascertain whether their MSM clients use Internet sexual networking sites to find partners and whether they disclose their HIV serostatus to partners met online and their consistent use of safer sex practices, particularly the regular use of condoms during anal intercourse.

The Relationship Between BB Sex and HIV Serostatus

The findings of this study indicate a statistically significant relationship between HIV serostatus and requests for BB sex. Although the requests were few, most of the requests came from HIV-positive or unknown/undisclosed–HIV-status individuals. Data indicate MSM who know they are HIV-positive are more likely to engage in safer sex practices to protect their sexual partners (CDC, 2007a). The findings of this study are consistent with some earlier inquires that have suggested HIV-positive men may misrepresent their HIV serostatus or participate in higher-risk behaviors when using the Internet to initiate sexual relationships (Laumann & Youm, 1999; Ross, Rosser, Coleman, & Mazin, 2006).

Because there were statistically significant differences among those HIV-negative and those of either HIV-positive, unknown, or undisclosed HIV serostatus, higher-risk activity might be occurring among MSM who are HIV-positive or of unknown/undisclosed HIV serostatus. This also proposes the possibility of a higher likelihood of HIV serodiscordance among MSM using the Internet to initiate sexual relationships.

Previous inquires support that Caucasian MSM who are HIV-positive are more likely to seek out partners who are serocordant whereas African-Americans are less likely to do so (Laumann & Youm, 1999). Ethnicity was examined within this study, but the number of requests for BB sex was too small to make any statistically sound conclusions. Though activities of low-risk partner to low-risk partner carry the least chance of HIV transmission, sexual activity between a high-risk and a high-risk partner is not necessarily safer (Halkitis & Parsons, 2003). There is a possible false belief that unprotected anal intercourse between two HIV-positive men is not a risky behavior. However, disease progression can be greatly enhanced with the introduction of more HIV particles from an infected partner (raising an

individual's HIV viral load), and the opportunities for the introduction of drug-resistant mosaic HIV strains is a significant reality (Ramos et al., 1999).

Health and social work professionals should educate HIV-positive patients about safer sex practices and emphasize the consistent use of condoms during anal intercourse, even when their partner is also infected. Patients should be taught the pathophysiology of HIV replication and should be given information about the role unsafe sexual behaviors might play in the development of resistant strains of HIV. Patients should be aware that exposures to other individuals' HIV viral particles through semen could potentially augment their viral load and speed their disease process and/or progression to AIDS.

Clinicians should encourage all MSM to request safe sex practices and to be open in their discussions with potential partners about the importance of the use of condoms during anal receptive intercourse. Because HIV antibodies can take up to 6 months to react with standard HIV-screening tests (CDC, 2007b), clients should be aware that HIV serostatus is not an absolute certainty and that reporting of a negative HIV serostatus within an Internet profile doesn't necessarily mean an individual is HIV-negative. Clinicians should provide positive reinforcement to clients who report safer sex practices and who request safer sex practices from potential partners.

The Relationship Between Geographic Location, BB Sex, and HIV Serostatus

Data from this study did not support a statistically significant association between geographic location, requests for BB sex, or HIV serostatus among the MSM within the sample. Though no other studies could be found that have also assessed the relationship between these variables, it is significant to emphasize that prior works have stressed the need to provide unique HIV and STI prevention programs for MSM within less-populated areas (Rosser & Horvath, 2008; Satinsky et al., 2008; Bowen et al., 2007; Horvath et al., 2006; Williams et al., 2005).

Although social differences exist among MSM in more-populated areas compared to those in less-populated areas, this study did not indicate a statistical difference in requests for BB sex between MSM in more-populated areas with those MSM in less-populated areas. Thus, though resources and social networking capabilities might be more limited in less-populated areas, perhaps unsafe sexual practices may not be as different as some studies suggest, at least within MSM who use the Internet to initiate sexual relationships.

The findings from this study do not support statistically significant differences in self-reported HIV serostatus among MSM in more-populated areas with those in less-populated areas. This could indicate that, at least among MSM who use the Internet to initiate sexual relationships, HIV serostatus doesn't have much relationship to population size and that perhaps the

sexual activities that take place among these persons plays a much more significant role in HIV transmission than the overall size of the population in which they reside. This might also support that being MSM in a rural environment might not be as significant of a risk factor for HIV infection as it once was, as suggested by Ellerbrock et al. (2004).

Implications for Public Health

There are numerous public health strategies that might promote safer sex practices among MSM who use the Internet to initiate sexual relationships. In response to an outbreak of syphilis among MSM using the Internet to meet sexual partners in San Francisco in 2002, the Department of Public Health implemented a strategy to introduce prevention strategies in online environments. Public health officials identified the three most frequented Internet sexual networking sites and paid for banners and advertisements and site-specific warnings to inform users of the outbreak. A Web site was also created that included interactive chats with health professionals. Users could inquire completely anonymously, and providers could provide information on a wide range of sexually related topics, including sexually transmitted infections and preventive behaviors (Klausner, Levine, & Kent, 2004).

Users could also request a completely anonymous syphilis screening slip (coded with a unique identification number) that could be printed privately and brought to a participating clinic for screening. The results could then be posted online using just user identification numbers. Appropriate information regarding treatment and follow-up are also provided online. Though HIV is still considered a notifiable disease, how the disease is reported varies by location and by state health department (CDC, 2009). Therefore, it is possible that public health professionals could vary approaches such as the one employed in San Francisco to combat its syphilis outbreak. Research has also suggested using online approaches such as this one to reach more rural MSM who use the Internet to meet sexual partners (Bowen et al., 2007).

SUMMARY, LIMITATIONS, AND CONCLUSION

The use of Internet sexual networking sites is becoming a more widespread means for MSM to initiate sexual relationships. These sites provide fast and anonymous access to the initiation of sexual relationships, which research suggests can impact sexual decision making.

Clinicians and social work professionals should consider the possible use of Internet sexual networking sites when discussing safer sex practices with their MSM clients. MSM clients should be encouraged to be routinely screened for HIV and understand the importance of disclosing their HIV serostatus to potential sexual partners, including those met online.

HIV-positive MSM should be educated about the disease process and the risks associated with both serodiscordant and serocordant sexual relationships, including the risk of increasing HIV viral load and introduction of drug-resistant HIV mosaic strains. Specific public health strategies, including the use of banners and other advertisements on Internet sexual networking sites, the creation of educational Web sites encouraging dialogue among MSM and health professionals regarding STI transmission and risk, and means for Internet-mediated anonymous HIV screening were discussed.

Though population size did not have a statistically significant relationship with requests for BB sex and/or HIV serostatus, it is nonetheless very important for clinicians and social work professionals to consider some of the important social differences and resources available to MSM in less-populated areas compared to those in more-populated areas. Data from this study also support multiple factors beyond population size that place MSM using the Internet to initiate sexual relationships in both more-rural and more-urban settings at high risk for HIV and STI transmission and infection.

It is imperative to consider that not all information provided in an Internet profile is necessarily factual and accurate. Requesting certain sexual activities in an Internet-based profile does not necessarily support that such activities will occur during an actual sexual encounter. In addition, just because a certain sexual activity is not listed within a profile doesn't necessarily indicate a lower likelihood of its occurring during an actual sexual encounter.

Perhaps the most significant study limitation is the generalizability of results. This study consisted only of MSM using Internet sexual networking sites within the state of Florida. Although generalized population differences did not support statistical differences in self-reported HIV serostatus and requests for BB sex among the MSM within the sample, population data indicating sexual orientation are extremely limited. Future research should approach this issue from a more national perspective and determine the etiology of requesting unsafe sexual behaviors among MSM using the Internet to initiate sexual relationships. Nationwide data collection tools, such as those used by the U. S. Census Bureau, should also ascertain sexual orientation to better equip public health and social service providers with the necessary information to implement targeted prevention and health promotion strategies.

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