BAREBACKING AMONG MSM INTERNET USERS

by

RIGMOR BERG CARNEIRO

(Under the Direction of Mark G. Wilson)

ABSTRACT

Three decades into the HIV/AIDS epidemic, there is a resurgence of HIV among men who have sex with men (MSM). This trend is mirrored by an increase in sexual risk behaviors, such as "barebacking." The term generally refers to intentional unprotected anal intercourse with men of unknown or seropositive antibodystatus. Unfortunately, barebacking is an understudied and largely ignored HIV risk behavior among MSM. This study heeds researchers' call to examine the phenomenon by providing an indicator of the extent of barebacking among MSM Internet users, determining sociodemographic characteristics of men engaging in barebacking, and identifying psychosocial and behavioral factors associated with barebacking.

To this end, MSM Internet users were recruited online and completed a web-based survey (N = 240). Findings show that 40% of MSM in this geographically diverse sample reported engaging in the behavior. Results of univariate and multivariate analyses show that a complex combination of factors underlies barebacking. Psychosocial characteristics of MSM—low perception of benefits to avoid HIV risk behavior, high perception of barriers to avoid HIV risk, low self-efficacy for limiting HIV risk, and high sexual sensation seeking—are significantly related to barebacking. Compared to non-barebackers, men who engage in

bareback sex are also more likely to practice unprotected anal intercourse, be drunk on alcohol in sexual contexts, and use the Internet to meet sex partners. Additionally, cultural elements that exist outside of the individual influence MSM's barebacking behavior. Compared to non-barebackers, men who bareback report a low perception of safer sex social norms.

Findings in this study show there is not one salient operative dynamic that explains barebacking. Rather, factors associated with barebacking form a "sex-centric" confluence of psychosocial, experiential, as well as structural and technological influences that exist outside of the individual. These factors suggest opportunities for reducing the rate of HIV transmission among MSM, and men who bareback in particular, through proactive and ecological intervention approaches that encourage community empowerment and collective responsibilities for safer sex.

INDEX WORDS: HIV, AIDS, MSM, barebacking, Internet, sexual behavior, risk factors

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CHAPTER 1

INTRODUCTION

Statement of the Problem

Human Immunodeficiency Virus (HIV) is the most serious disease epidemic in modern times. In its third decade after the identification of Acquired Immunodeficiency Syndrome (AIDS) there is still no vaccine or cure available. In the United States, despite widespread efforts to slow the spread of HIV, the precursor to AIDS, more than 40,000 new infections of HIV occur every year. From 2001 to 2004, the incidence rate was highest among non-Hispanic blacks, and the majority of the cases (68%) were among women who were exposed through heterosexual contact (Centers for Disease Control and Prevention [CDC], 2005a). Nevertheless, while the profile of the HIV epidemic has changed greatly since the early 1980s, men who have sex with men (MSM) remain disproportionately affected by HIV/AIDS. Although only 5%-7% of men in the U.S. identify themselves as MSM (Binson et al., 1995), this group constitutes the largest percentage of persons with AIDS in the U.S., accounting for 60% of all cases (CDC, 2005b).

After a drop in HIV rates among the MSM population in the late 1980s and 1990s, three decades into the epidemic there is a resurgence of HIV among MSM. From 1999 to 2001 the rate of new HIV infections among this population increased by 14% (CDC, 2003), and despite recent advancements in treating HIV, there is a corresponding increase in AIDS cases among MSM (CDC, 2005b). Data from recent studies suggest that risky sexual behaviors among MSM—particularly unprotected anal intercourse (UAI)—are increasing

throughout the U.S., along with syphilis, gonorrhea, chlamydia, and HIV infections (Carballo-Diéguez, 2001; Chen, Weide, & McFarland, 2003; Koblin et al., 2003; Suarez & Miller, 2001; Wolitski, Valdiserri, Denning, & Levine, 2001). According to a recent study (Liebert, 2002), some MSM are in fact "actively seeking out partners who will have unprotected sex with them" (p. 306) resulting in an increase in HIV infections. The practice of actively seeking out men for purposeful unprotected anal sex is generally referred to as "barebacking."

Barebacking

The word barebacking comes from equestrian, where riding bareback is "wild, dangerous, and fun" (Blechner, 2002, p. 31). In a sexual discourse, bareback sex among MSM therefore carries connotations of both something risky and exhilarating. The term barebacking—sometimes labeled raw sex, riding raw, or skin-on-skin—generally refers to an HIV risk behavior among MSM involving intentional UAI with men of unknown or seropositive antibodystatus (Goodroad, Kirksey, & Butensky, 2000; Halkitis, Parsons, & Wilton, 2003; Suarez & Miller, 2001; Yep, Lovaas, & Pagonis, 2002). The term emerged within the gay community and early research suggested gay men understood it as intentional, unprotected anal sex (Halkitis et al., 2003; Halkitis & Parsons, 2003). According to one informant: "It means someone who has unprotected sex intentionally. The intention defines a barebacker" (Carballo-Diéguez, 2001, p. 229). Thus, while the sexual behavior is the same physically, in the research literature barebacking has been differentiated from UAI on the basis of intentionality. Researchers have been relatively consistent in their use of the term barebacking, referring to it as intentional or premeditated unprotected anal sex among men, typically in HIV risk contexts.

Definitions used illustrate researchers' cognizance of the health implications involved according to characteristics of the men engaging in the behavior. Barebacking among MSM carries the highest risk of new HIV infections when the insertive partner is HIV-positive (seropositive) and the receptive partner is HIV-negative (seronegative). It is most safe, i.e. the risk of STI and HIV transmission is low, when both men know they are HIV-negative and they are monogamous with each other (Blechner, 2002). Moreover, according to Blechner, seronegative men in a monogamous relationship do not refer to their condomless anal sex as barebacking, precisely because the sex per se is not unsafe. The term safety, as it is used in barebacking contexts, refers to health, more specifically the relative possibility of sexually transmitted infections, the most serious of which is HIV. This issue will be discussed after the difference between UAI and barebacking has been presented.

Barebacking versus UAI

Most of the researchers who have investigated barebacking have made an effort to distinguish bareback sex from UAI. In their perspective, unsafe sexual acts have traditionally been attributed to temporal relapses, inability to consistently engage in safe sex, "slip-ups", poor planning, "accidents" often attributable to use of drugs or alcohol, spontaneous decisions about condom use, or condom failure (Carballo-Diéguez & Bauermeister, 2004; Goodroad et al., 2000; Halkitis et al., 2003; Halkitis & Parsons, 2003; Mansergh et al., 2002). Moreover, health professionals have traditionally understood UAI as taking place in the context of negotiated safety, i.e. within a monogamous relationship in which the partners tested frequently to verify HIV-concordance, or where there existed a verbal agreement in a context of a trust-worthy and communicative relationship (Carballo-Diéguez, 2001; Mansergh et al., 2002). Thus, as Halkitis and Parsons (2003) point out, the underlying

assumption of unsafe sex throughout the HIV epidemic was that most MSM did not purposely seek unprotected sex. With barebacking, a paradigm shift may be impending.

For most researchers, it appears that the key difference between UAI and barebacking is intent. While the sexual behavior is the same on a physical level, barebacking does not occur in the context of negotiated safety or as an accident or occasional relapse, but instead represents a premeditated and deliberate decision to forgo safe sex in HIV risk contexts. Mansergh and colleagues (2002) write: "The individual consciously seeks unprotected anal sex" (p. 654). Also other researchers, and self-professed barebackers, emphasize the intentionality and premeditated aspect of barebacking (Carballo-Diéguez, 2001; Halkitis & Parsons, 2003; Suarez & Miller, 2001; Wilton, Halkitis, English, & Roberson, 2005). "As such," writes Wolitski (2005), "the emergence of barebacking does not merely indicate that a greater number of men are having a harder time maintaining safer sex practices. Rather, it reflects the fact that a growing number of MSM have consistently rejected condom-protected sex in some, or all, circumstances" (p. 12).

Thus, barebacking has been differentiated from UAI in that it is intentional or premeditated unprotected anal sex. But, as the following quotes by barebackers show, barebacking may be more complex and tap into more primal motivations as well: "Barebacking is a result of something connected with understanding the gay self " and "They want the thrill of skin on skin and defy the whole thing of sex with condoms" (Carballo-Diéguez, 2001, p. 229). Crossley (2002; 2004) and Forstein (2002) have suggested that barebacking is in fact an unconscious representation of a "psychological protest" and an act of rebellion against dominant heterosexual norms and mores. Barebacking may be a recondite form of an unconscious "backlash" against a homophobic and safe-sex-policed

society. It would be difficult, however, to tap into these influences with any established methodologies.

Lately, researchers have also acknowledged that the meaning of the term barebacking is neither static over time nor consistently defined by all MSM. A recent study of 195 MSM in New York City familiar with the term barebacking found that the majority of the men (73.8%) defined barebacking simply as condomless anal intercourse, also when the unprotected sex is unintended and irrespective of partner. Further, HIV-negative MSM tended to define barebacking as unprotected sex between seronegative MSM, while HIV-positive MSM typically defined bareback sex as unprotected sex between men of either serostatus (Halkitis, Wilton, & Galatowitsch, 2005). Some of these researchers have subsequently suggested that barebacking behavior and barebacking identity are separate constructs. Their results from the Seropositive Urban Men's Intervention Trial (SUMIT) study, which sampled men from San Francisco and New York City, show that 27.2% of MSM responded affirmatively when asked "Do you think of yourself as a barebacker?" (Halkitis, Wilton, Wolitski et al., 2005, p. S28). Because the researchers assume, probably incorrectly, that the respondents understand the question refers to identity, and that they attach the same meaning to the term, it is uncertain whether separate constructs exist. This is an important focus for future qualitative research.

One preliminary conclusion regarding the meaning of the term barebacking and the difference between barebacking and UAI is that the term has evolved over time among MSM, from referring to purposeful intentional anal sex to simply stand for unprotected sex among men and that different segments of the MSM community ascribe different conceptual understandings to the term. For the purposes of this study, barebacking was understood as

intentional anal intercourse between men outside a primary relationship. This meaning aligned with previous definitions used in research about barebacking.

Health Implications

While there are four possible transmission routes for the HIV virus, unprotected sex is the most common route of transmission. In 2004, 80% of all HIV/AIDS cases was contracted through unprotected sex (CDC, 2005b). Although the HIV virus can be contracted via unprotected oral sex and unprotected vaginal intercourse, among MSM the principal risk practice for HIV infection is unprotected anal intercourse (Vittinghoff et al., 1999).

Unprotected anal sex, including barebacking, therefore, among serodisconcordant partners may lead to new HIV infections. Furthermore, HIV-positive partners risk re-infection, possibly with a more potent or virulent strain of the HIV virus (Pomerantz, 1999; Ramos et al., 1999). There is also the possibility of other STIs, such as gonorrhea and syphilis. Both types of infections have increased in recent years among MSM (CDC, 2004). Barebacking among MSM does not limit the STI and HIV risk to the MSM community, however. Subgroups in the MSM community are composed of men who have sex with men and women (MSM/W). One example is African-American men on the "down-low" (Boykin, 2005). Because of frequent unprotected sexual intercourse between MSM/W and heterosexual women the possibility of a "cross-over" HIV risk between MSM and the larger community exists (Bull, McFarlane, Lloyd, & Rietmeijer, 2004).

Purpose of the Study

This study was conducted to further the knowledge about barebacking among MSM. The purpose of the study was three-fold: (1) to identify psychosocial and behavioral factors associated with barebacking, (2) to determine sociodemographic characteristics of men

engaging in barebacking, and (3) to provide an indicator of the extent of barebacking among MSM Internet users.

Need for the Study

In a global sense, the prevalence of HIV coupled with the seriousness of the disease necessitates HIV research. The present study is important because it addresses a disease that annually kills six million people (World Health Organization [WHO], 2004), half a million in the U.S. alone (CDC, 2005b). The WHO considers HIV, the causal agent of AIDS, the fastest growing threat for national and regional security as well as a threat to human development (WHO, 2004). This study also responds to an important Healthy People 2010 national health objective, which is to reduce the number of new AIDS cases among adolescent and adult men who have sex with men (U.S. Department of Public Health and Human Services, 2004).

In a more specific sense, sexual risk practices among MSM that transmit HIV are only beginning to be understood. While the literature on risk factors associated with HIV transmissions among MSM is quite rich, barebacking, on the other hand, is a nascent area of study. About twenty peer reviewed articles have commented on the practice, but only half of these are data-based studies. Thus, not only is it important to gain more information about the practice in general, the vast knowledge gaps in the literature concerning the theoretical and practical aspects of barebacking are obvious. For example, while there is a scarcity of conceptually driven studies on unsafe sexual behavior among MSM in general, there are no theory-based research studies of barebacking in particular. This is unfortunate, because theories can be helpful in developing more useful conceptual frameworks for behaviors the health profession knows little about. Theories can facilitate educators and prevention professionals' understanding, as well as provide reference points which may guide practice.

Gaps in the literature also include: the cognitive and affective processes that take place toward barebacking; risk factors associated with the behavior; the role barebacking plays in their lives; and the potential conflicts barebacking stirs not only within themselves, but also within gay communities. Most importantly, researchers have made few attempts to examine the extent to which sociodemographic characteristics and psychosocial factors, such as age, education, and beliefs about HIV are associated with barebacking. Such information would be important both for understanding those who engage in it and for segmentation into interventions. Furthermore, such variables have implications for interventions by potentially informing educators about the social context in which barebacking is more likely to happen.

In addition to filling gaps in the literature, clarifications of current observations of barebacking need to be established. One clarification regards construct definition. The meaning of the term barebacking has changed over time. Up until a few years ago, it seemed researchers and barebackers were in agreement regarding the difference in internal agency between UAI and bareback sex. This distinction has become nebulous as MSM more and more define barebacking simply as condomless anal sex (Halkitis, Wilton, & Galatowitsch, 2005; Wilton et al., 2005). In short, differences between UAI and barebacking are increasingly dissembling. It would be shortsighted to constrain the discussion in this monolithic mold. Rather, health promotion professionals need to know more about the varying degrees of similarities and differences of these behaviors on multiple levels. A related point would be to establish whether current self-identified barebackers are the same men who have engaged in UAI throughout the epidemic, or whether this group is composed of men who engage in unprotected sex for the first time, as discussed by Suarez and Miller (2001). While it is possible that the majority of unprotected anal sex among MSM, at least

outside monogamous relationships, can be categorized as barebacking, this remains unclear. In order to evaluate the relative proportion of "unintentional" UAI and "intentional" barebacking a researcher would have to include these as two different variables in the same study, which thus far has been largely overlooked. By including both (unintentional) UAI and (intentional) bareback sex in one research project, it would be possible to get a better sense of the comparative consistency of these behaviors by MSM.

Another clarification needed is the extent of barebacking. This discussion must be prefaced with a disclaimer: Caution should be exercised in interpreting prevalence estimates among MSM, or a subset thereof, because random probability samples of MSM do not exist due to the stigmatized nature of the population. But, six data-based (non-probability) studies have attempted to estimate prevalence of barebacking among their samples. They report highly divergent results. Self-report measures indicate that between 10% (Mansergh et al., 2002) and 84% (Halkitis & Parsons, 2003) of MSM in these samples engaged in barebacking. Although finding exact prevalence rates is impossible, further studies can help indicate the degree to which this behavior is becoming an ubiquitous public health problem throughout the United States.

Thus far, it has been argued that huge knowledge gaps regarding barebacking exist in the literature and that clarifications of presented results need to be examined. Efforts are also needed to validate extant information about barebacking.

As of today, there is some evidence that the majority of men who engage in bareback sex is HIV-positive and may live in urban epicenters with large segments of gay and bisexual persons (Halkitis et al., 2003; Halkitis, Wilton, & Galatowitsch, 2005; Mansergh et al., 2002). Reports also indicate barebackers are risk-takers and may be attracted to this HIV risk

behavior due to its association with risk and "taboo" performances (Mansergh et al., 2002). Such results should be expanded on and replicated. Sexual sensation seeking, for example, might be a factor that could further help explain the association between risk-taking and barebacking. Since the beginning of the HIV epidemic, alcohol and drug use has been a reliable predictor of unprotected sexual behaviors among MSM (Ekstrand, Stall, Paul, Osmond, & Coates, 1999; Koblin et al., 2003; Siegel, Mesagno, Chen, & Christ, 1989; Stall, McKusic, Wiley, Coates, & Ostrow, 1986; Strathdee et al., 1998). It seems intoxication is also associated with barebacking (Halkitis et al., 2003; Halkitis, Wilton, Wolitski et al., 2005; Mansergh et al., 2002), but more research is needed. If alcohol and other drug use is a mediator of barebacking, it points to a potential area of intervention.

Clearly, given the scarcity of the literature on barebacking, it would be difficult for one study to answer all outstanding questions. Nevertheless, the present study will fill knowledge gaps, clarify current observations regarding the behavior, and possibly validate extant information about barebacking. Although these reasons are inherently valid, they also serve a utility purpose beyond contributing to the knowledge base on barebacking.

First, the results of the study can be used to describe the men who engage in barebacking, thus researchers may develop a better understanding of the individuals and the variables associated with barebacking. Second, such descriptions can be used to inform the development of prevention programs specific to barebackers' characteristics. As explained by Kotler and colleagues (2002), the key to influencing an audience is knowledge about the people program developers are trying to reach. Social marketing is a customer-driven process, thus all aspects of a prevention program must be developed with the wants, needs, and characteristics of the target audience as the central focus. In other words, careful

profiling of the target audience is paramount to developing strategies that optimize chances of influencing the target population, that ensure that scarce resources are strategically directed, and that produce a greater result for each dollar spent. There is a critical need not only to sustain, but to increase public health efforts to slow the spread of HIV among men who have sex with men. Well-designed and directed HIV prevention and intervention efforts can go a long way in reducing the rate of transmission among this group.

Hypotheses

The main purpose of the study was to establish the relative contributions of several criterion variables on the grouping variable barebacking to identify factors related to barebacking. To this effect, several hypotheses were tested.

Main Hypotheses

The study was designed to test the following null hypotheses:

H1: There is no relationship between barebacking and Health Belief constructs.

H2: There is no relationship between barebacking and self-efficacy for limiting HIV risk behavior.

H3: There is no relationship between barebacking and safer sex social norm perception.

H4: There is no relationship between barebacking and sexual sensation seeking.

Subhypotheses

Three sub-hypotheses were tested:

H5: There is no relationship between barebacking and UAI.

H6: There is no relationship between barebacking and meeting men online for offline sex.

H7: There is no significant relationship between barebacking and substance abuse.

Delimitations

The study was delimited to English speaking men who self-identified as an MSM (having [had] sex with a man), who resided in the U.S., and who were at least 18 years of age. The study was further delimited to men who had access to the Internet and who used the Internet to meet other men.

Definition of Terms

For consistency of interpretation the following terms are defined:

- AIDS: Acquired Immunodeficiency Syndrome.
- Antibodystatus: Presence or absence of (HIV) antibodies in the blood serum.
- Barebacking: Intentional anal sex without a condom with a non-primary male partner (primary partner is defined as "someone who you live with or have seen a lot and to whom you feel a special emotional commitment." Adapted from Mansergh et al., [2002]).
- Etic perspective: the researcher is non-native to the community being investigated, thus the researcher looks at and describes circumstances from an "outsider" point of view (Shank, 2002).
- HAART: Highly Active Antiretroviral Therapy.
- HIV: Human Immunodeficiency Virus.
- IRC: Internet Relay Chat room.
- MI: Motivational Interviewing.
- MSM: Men who have sex with men.
- MSM/W: Men who have sex with men and women.
- Seroconcordant: Having the same HIV-status, e.g. two men who are both HIV-positive.
- Seroconversion: Becoming HIV-positive / being infected with HIV.

- Serodisconcordant: Having different HIV-status, e.g. one man being HIV-positive and one man being HIV-negative.
- Seronegative: Antibodies cannot be detected, i.e. the person is HIV-negative.
- Seropositive: Antibodies are present, i.e. the person is HIV-positive.
- Serosorting: Cognitively arranging and choosing between potential bareback partners according to their HIV status to reduce HIV transmission risk (adapted from Suarez & Miller, [2001]).
- STI: Sexually Transmitted Infection.
- UAI: Unprotected Anal Intercourse.

CHAPTER 2

REVIEW OF THE RELATED LITERATURE

In this chapter, literature related to barebacking among MSM is presented. The chapter covers the extent of the behavior and variables associated with bareback sex, including (a) sociodemographic factors, (b) behavioral factors, and (c) psychosocial factors, as well as (d) reasons cited for the behavior. Since a main focus in the present study was characteristics associated with men who bareback, research pertaining to this area is emphasized.

Prevalence of Barebacking

The practice of bareback sex among MSM is most likely not a new phenomenon. Self-professed barebackers suggest the barebacking behavior started in the mid 1990s (Carballo-Diéguez, 2001). Thus, O'Hara may have been one of the first to write about barebacking in his 1997 publication *Autopornography*. Nevertheless, a decade later it appears barebacking is becoming a popular trend among MSM. Although reliable numbers are very hard to come by because of the few empirical studies that exist on barebacking and the different methodologies and definitions of barebacking used among researchers, six studies report prevalence of barebacking among their samples of MSM, thus indicating the extent of and potential trends regarding barebacking (Table 1).

Table 1: Research reporting extent of barebacking

Study	Time data collected	Participants	Engaged in bareback sex
Halkitis, Wilton, Wolitski et al., 2005.	~2000	980 HIV+ gay and bisexual men who resided in New York City or San Francisco.	26.9%
Mansergh et al., 2002.	2000-2001	554 MSM recruited from the San Francisco Bay area.	10.0%
Halkitis et al., 2003.	2001	448 gay and bisexual men recruited from New York City.	45.5%
Halkitis & Parsons, 2003.	2002	112 HIV+ gay men who seek sexual partners on the Internet.	83.9%
Halkitis, Wilton, & Galatowitsch, 2005.	2004	217 gay and bisexual men recruited from the New York metropolitan area.	31.3%
Bimbi & Parsons, 2005.	2004	50 male sex workers recruited from America Online profiles.	19.6%

First, baseline data from the SUMIT study, conducted around 2000 in New York City and San Francisco, suggests that 26.9% of the sample, all HIV-positive gay and bisexual men, reported engaging in bareback sex (Halkitis, Wilton, Wolitski et al., 2005). Next, a 2002 study of MSM who lived in San Francisco found that 10% (n = 10) of their sample engaged in barebacking (Mansergh et al., 2002). In New York City this number was higher. In the first New Your City based barebacking study, 45.5% (n = 204) of MSM said they engaged in barebacking (Halkitis et al., 2003). Unfortunately, the researchers did not define the term barebacking and participants who were aware of the term used their own definition for it. Data from the second study, conducted a few years later, showed that the number had decreased slightly, to 31.3% (n = 68) (Halkitis, Wilton, & Galatowitsch, 2005). The first national sample, selected through Internet approaches, revealed that 83.9% (n = 94) of study participants engaged in bareback sex (Halkitis & Parsons, 2003). Among male sex workers with America Online profiles 19.6% (n = 9) reported bareback sex with casual partners or clients (Bimbi & Parsons, 2005). Briefly, it should be mentioned that a study of males placing posts on the website *Barebackcity.com* suggested that a 23% chance of HIV

transmission was likely among men living in Dallas, Texas (Dawson, Ross, Henry, & Freeman, 2005).

At least three interpretations may be possible. First, popularity and prevalence of bareback sex may be increasing over time. Second, prevalence of barebacking may vary among geographically separate MSM communities. It is possible that barebacking among MSM in San Francisco, for example, is more widespread, at least in comparison to New York City. Halkitis, Wilton, Wolitski and colleagues (2005) found that MSM from San Francisco were more likely than MSM from New York City to engage in barebacking. Third, men who use the Internet may be more likely to engage in bareback sex as compared to other MSM. There is some research supporting this position. Eighty-five percent of MSM in one study reported that they sought sex partners online at least once a week, and websites devoted to bareback sex were commonly accessed sites (Bull et al., 2004). Moreover, men meeting sexual partners via the Internet generally report higher rates of sexual risk behavior and a higher number of partners (Benotch, Kalichman, & Cage, 2002; McFarlane, Bull, & Rietmeijer, 2000).

In sum, these studies may offer some indication of the prevalence of barebacking among MSM, but the sampling bias inherent in the studies limits firm conclusions. The fact that the studies reporting the extent of bareback sex base their rate on dissimilar timeframes, ranging from two years to two months, is also problematic. Because of the lack of empirical investigations and their differences in methodology, prevalence estimates of barebacking remains speculative. What is clear, however, is that the possibility of HIV transmission is present in any instance of barebacking, thus, from a public health perspective, even a prevalence of 10% among a sample of MSM in San Francisco is disconcerting.

Sociodemographic Characteristics of MSM who Bareback

Although the scarcity of studies on barebacking impedes firm conclusions—to date, only about 20 peer-reviewed articles have been published on barebacking in the United States—the parallelism of several research results offers some insight into who engages in barebacking (Table 2).

Table 2: Sociodemographic variables investigated in relation to barebacking

Studies	**Sociodemographic variables**	**Findings**
Halkitis & Parsons, 2003; Halkitis et al., 2003; Halkitis, Wilton, Wolitski et al., 2005; Mansergh et al., 2002.	Age, race/ethnicity	Age related to bareback identity (Halkitis, Wilton, Wolitski et al., 2005), otherwise no relationship with barebacking.
Mansergh et al., 2002.	Education, income, sexual orientation	No relationship with barebacking.
Halkitis & Parsons, 2003; Mansergh et al., 2002.	Health history	Men who reported barebacking had higher rates of STIs (Mansergh et al., 2003).
Halkitis & Parsons, 2003; Halkitis et al., 2003; Halkitis, Wilton, & Galatowitsch. 2005; Mansergh et al., 2002; Wilton et al., 2005.	HIV-status	These 5 studies found that HIV-positive MSM were more likely to report bareback sex than HIV-negative MSM.

Five separate studies concluded that HIV-positive men were more likely to engage in barebacking than seronegative men. Furthermore, HIV-positive men were more likely to engage in bareback sex with seroconcordant men than HIV-negative men or men of unknown HIV-status (Bimbi & Parsons, 2005; Halkitis & Parsons, 2003; Halkitis et al., 2003; Halkitis, Wilton, & Galatowitsch, 2005; Mansergh et al., 2002; Wilton et al., 2005). But also a large minority of seronegative men reported bareback sex.

Nevertheless, a sizeable proportion of those who engaged in bareback sex, did so with men of serodisconcordant or unknown serostatus. Among Mansergh and colleagues' (2002) sample, 38% of HIV-positive participants reported that their receptive bareback partners

were HIV-negative/unknown partners. According to Halkitis and Parsons' (2003) findings, 49% of those who reported barebacking engaged in both seroconcordant and serodisconcordant bareback sex. Lastly, Mansergh and colleagues found that men who had higher rates of STIs were more likely to bareback, but none of the studies found other sociodemographic differences between MSM who engaged in bareback sex and men who did not. Other differences aside, when barebacking was measured as an identity construct rather than a behavioral construct, researchers found that seropositive MSM who were White and younger were more likely to identify as a barebacker. Men who identified as a barebacker were also more likely to report having missed at least one dose of their Highly Active Antiretroviral Therapy (HAART) medication and they were less likely to be concerned about getting a STI (Halkitis, Wilton, Wolitski et al., 2005).

In sum, high rates of STIs and being HIV-positive were positively related to barebacking. It seems that barebackers take some harm reduction measures through what is referred to as *serosorting*, i.e., selecting bareback partners according to whether they are seroconcordant (Suarez & Miller, 2001). Thus, the likelihood of HIV re-infections among HIV-positive men, more so than new infections among HIV-negative men, appears to exist among MSM in these samples.

Behavioral Factors Associated with Barebacking

Only a few behavioral factors have been examined in relation to barebacking: sexual behaviors, use of alcohol and drugs, and attendance at bareback parties (Table 3).

Table 3: Behavioral variables investigated in relation to barebacking

Studies	Behavioral variables	Findings
Halkitis & Parsons, 2003; Halkitis et al., 2003; Halkitis, Wilton, Wolitski et al., 2005; Mansergh et al., 2002.	Sexual behavior	53% engage in any unprotected sex (Mansergh et al., 2002), men who identified as a barebacker were more likely to engage in unprotected sex (Halkitis, Wilton, Wolitski et al., 2005).
Halkitis, Wilton, Wolitski et al., 2005; Mansergh et al., 2002.	Use of alcohol and other drugs	Substance abuse was related to barebacking behavior and identity.
Halkitis et al., 2003.	Attending bareback parties	28.9% had attended a bareback party.

Mansergh and colleagues (2002) found that barebackers as compared to non-barebackers self-reported higher prevalence of any unprotected sex with men of unknown or serodisconcordant HIV-status in the previous three months. A limitation of this study is that barebacking is reported for the past two years while UAI is reported for the past three months. The correlation between bareback sex and UAI is therefore questionable. The authors also report that barebackers (again using a 2-year timeframe) reported higher use of crystal methamphetamine in the past three months than all other men in the study. This finding is mirrored by results from Halkitis et al.'s study (2003), which showed that men who engaged in bareback sex were more likely to use club drugs as compared to non-barebackers. Lastly, the authors found that HIV-positive men were more likely to attend bareback parties (a party in which it is understood that all anal sex is without condoms) that they learned about over the Internet than HIV-negative men.

These findings are consistent with reports from men identifying as a barebacker. Not surprisingly, Halkitis, Wilton, Wolitski and colleagues (2005) found that gay and bisexual men who identified as a barebacker were more likely to report unprotected anal sex compared to non-barebackers. They were also more likely to report using substances, injecting drugs, and combining drugs with sex.

Thus, preliminary findings suggest that barebacking is not an isolated risk behavior; rather, engaging in multiple HIV risk behaviors, such as any unprotected anal sex, and substance abuse are corollary markers of HIV risk among barebackers.

Psychosocial Factors Associated with Barebacking

The variables most frequently included in the barebacking literature are attitudes and perceptions of men who self-report engaging in bareback sex (Table 4). Specifically, reasons associated with the behavior have been subject to frequent inquiry and will be discussed in detail in this section.

Table 4: Psychosocial variables investigated in relation to barebacking

Studies	**Psychosocial variables**	**Findings**
Halkitis & Parsons, 2003; Halkitis, Wilton, Wolitski et al., 2005.	Sexual adventurism & sexual compulsivity	Sexual adventurism trait and sexual compulsivity was associated with barebacking.
Halkitis & Parsons, 2003.	AIDS related internalized homophobia	No relationship with barebacking.
Halkitis & Parsons, 2003; Halkitis, Green & Wilton, 2004.	Sex as definition of masculinity	Barebacking was viewed as a definition of masculinity.
Mansergh et al., 2002.	Willingness to use future microbicide	75% of barebackers were willing to use future microbicide that is only 50% effective in preventing HIV.
Halkitis et al., 2003.	Agreement about association between barebacking and Internet	Participants believed that Internet facilitated barebacking.
Halkitis et al., 2003; Wilton et al., 2005.	Perceived benefits of barebacking	Participants stated that there are benefits to barebacking, such as increased intimacy and hotter sex.
Halkitis, Wilton, Wolitski, et al., 2005.	Perceived responsibility for safer sex	Men identifying as barebackers expressed lower levels of perceived responsibility for safer sex
Halkitis, Wilton, Wolitski et al., 2005.	Psychological factors	Depression, anxiety, hostility, loneliness no relationship with barebacking identity.
Carballo-Diéguez, 2001; Carballo-Diéguez & Bauermeister, 2004; Halkitis et al., 2003; Mansergh et al., 2002.	Reasons for barebacking	Participants cited a variety of reasons for engaging in barebacking. See below and Table 5.
Carballo-Diéguez & Bauermeister, 2004.	Reasons against barebacking	Respondents stated that barebacking is dangerous and HIV is a serious disease.

Research shows that beliefs and perceptions held by participants reveal associations between attitudes held by MSM and barebacking. Men who identified as a barebacker expressed lower levels of perceived responsibility for safer sex and scored higher on sexual compulsivity (Halkitis, Wilton, Wolitski et al., 2005). Similarly, several studies concluded that sexual adventurism and sex as a definition of masculinity were associated with bareback sex (Halkitis et al., 2004; Halkitis & Parsons, 2003). Furthermore, results from Mansergh et al.'s (2002) study show that 75% of barebackers were willing to use a future microbicide that is only 50% effective in preventing HIV transmission. Some implied reasons for engaging in bareback sex emerged through Halkitis and colleagues' (2003) personally developed 14-item Benefits of Barebacking scale. The four items with highest score were:

- barebacking is sexier than sex with condoms
- barebacking increases intimacy between men
- barebacking makes sex more romantic
- barebacking is "hotter" than sex with condoms.

Five of the items from the scale were examined separately as they failed to load consistently in factor analysis, and instead presented by the authors as potential explanations for why the barebacking phenomenon had emerged. They report that 70% of the participants acknowledged that men are more likely to have bareback sex under the influence of club drugs (methamphetamine, methylenedioxymethamphetamine, γ-hydroxybutyrate), almost half of the sample (49%) believed that bareback sex had emerged as a result of "boring" safer sex campaigns, 48% agreed that barebacking was a result of advances in HIV treatments, and 46% attributed barebacking to fatigue about the AIDS epidemic. Lastly, their preliminary findings suggested that the Internet facilitates bareback sex, because it is anonymous and

makes it easy to locate and meet other barebackers. This finding is supported by other researchers (Benotsch et al., 2002; McFarlane et al., 2000). Other reasons for barebacking, more explicitly derived from study questions, are discussed in the next section.

Reasons for Engaging in Barebacking

All barebackers have one thing in common; they all show a willingness to engage in a sexual behavior which carries a likelihood of transmitting the HIV virus. This raises the question *why*. Reasons for barebacking were explicitly asked in several of the few studies examining barebacking. Although there is a complex interplay of a variety of reasons for barebacking, identified reasons can be loosely grouped as intrapersonal, interpersonal, and societal (Table 5).

Table 5: Reasons identified for engaging in barebacking

Intrapersonal	**Interpersonal**	**Societal**
-Low perception of HIV risk & HIV severity -Fatalism -Sexual pleasure -Dislike of condoms -Expression of personal choice/sexual freedom -Risk attraction	-Create intimacy/ connection with partner - Partner 'fit'	-Social norms -Collective AIDS fatigue and safer sex burnout -Internet

Intrapersonal

It is probably safe to say that most MSM who bareback are well-informed about HIV and familiar with the inherent health risk of barebacking— "Having raw sex is asking for trouble" one interviewee acknowledged (Carballo-Diéguez, 2001, p. 231). Yet, research reveals that men who engage in bareback sex generally reported low perceptions of the seriousness of HIV. "The likelihood of surviving HIV seems to be high," one man reasoned (Carballo-Diéguez, p. 232). Due to advances in AIDS medication and treatments, they were

not fearful of contracting HIV (Carballo-Diéguez; Carballo-Diéguez & Bauermeister, 2004; Halkitis et al., 2003; Suarez & Miller, 2001). One informant said: "People have a false sense of security with all the medications that are around" (Carballo-Diéguez, p. 229). Men who barebacked stated that improved treatments, such as HAART, and knowing fewer individuals are developing AIDS had led them to have more unprotected sex (Mansergh et al., 2002). Similarly, self-professed barebackers expressed a sense of fatalism about HIV: "The probability is that if you have sex for a long period of time you are going to get infected anyhow, so you may as well enjoy sex as much as you want at least for a while, and hope that things are going to get better in the healthcare aspect" (Carballo-Diéguez, p. 232).

Sexual pleasure was the most frequently cited reason for engaging in bareback sex in a sample of men from San Francisco (Mansergh et al., 2002). This sentiment was echoed in several other studies. Carballo-Diéguez and Bauermeister (2004) found that men emphasized the physical pleasure inherent in bareback sex referring to the skin-on-skin feeling. In Cheuvront's (2002) experience, barebackers chose to suspend physical health in pursuit of desire. An informant in a qualitative study said: "It's the desire for pleasure. We want pure pleasure when it comes to sex" (Carballo-Diéguez, 2001, p. 230). Another man expressed the quality of bareback sex compared to condom-protected sex: "It really is about the quality of sex you want to have with the guy that you are with; you don't want anything interfering on that quality" (Carballo-Diéguez, p. 228). Thus, men's dislike of condoms was another reason why bareback sex was chosen over condom protected sex (Carballo-Diéguez & Bauermeister; Mansergh et al., 2002).

Early qualitative studies also found that men viewed barebacking as a personal responsibility, and it was seen as analogous to freedom (Carballo-Diéguez & Bauermeister,

2004): “Barebacking with a person feels as if you take your own responsibility for what you want to do. You have not capitulated to what society told you you should do, you are doing what you want to do because it feels good to you and the other person” (Carballo-Diéguez, 2001, p. 230). In contrast, recent quantitative research found that men who identified as barebackers were less likely to report personal responsibility for safer sex and instead perceived that responsibility to rest with their sexual partners (Halkitis, Wilton, Wolitski et al., 2005). Finally, in the intrapersonal domain, bareback sex was also a means to do something risqué or taboo, i.e. the risk involved was a turn-on for some men (Halkitis & Parsons, 2003; Mansergh et al., 2002). Some support for this was also found in a qualitative study: “It is exhilarating, it is the forbidden thing, it is what you are not supposed to do, it’s getting away with murder” (Carballo-Diéguez, p. 229).

Interpersonal

Men who engaged in bareback sex reported that they did it in order to create intimacy with their partner. Barebacking created a feeling of being emotionally closer to or connecting more with their partner (Mansergh et al., 2002). Thus, barebacking met important relational needs. Additionally, partner “fit”—in particular partner characteristics, serostatus, and viral load—affected the decision making process (Suarez & Miller, 2001). It has already been mentioned that HIV-positive men compared to HIV-negative men are more likely to seek out and engage in bareback sex and often use serosorting as a harm reduction strategy.

Societal / Cultural

According to barebackers, the cultural climate in which gay men live has changed (Carballo-Diéguez, 2001). MSM described barebacking as not merely a sexual, but also a

cultural phenomenon, where a lack of social responsibility was growing: "Gay culture used to be more passionate and socially active. That group is gone" (Carballo-Diéguez, p. 230). Additionally, according to barebackers, the social climate was marked by a general sense of barebacking normalcy and fatigue with the AIDS epidemic and condoms (Carballo-Diéguez; Carballo-Diéguez & Bauermeister, 2004; Halkitis et al., 2003). Qualitative interviews revealed: "People are tired of the epidemic. They can [only] take so much" (Carballo-Diéguez, p. 229). Simultaneously, anti-HIV messages and an erotization of HIV are found in gay discourse. As a result, according to Suarez and Miller (2001), gay men are experiencing a sense of burnout of safe sex. Lastly, preliminary findings by Halkitis and Parsons (2003) indicate that the Internet facilitates bareback sex by providing easy access to other barebackers.

Reasons against Barebacking

Thus far, a multitude of reasons for barebacking emerges from the literature. In contrast, reasons against barebacking have only been explored in one study. In analyzing messages posted on an Internet message board regarding barebacking, Carballo-Diéguez and Bauermeister (2004) grouped the arguments used against barebacking into five categories:

- barebacking is dangerous
- condoms should be used
- there is a need for personal and social responsibility
- there is a need to be sensitized to the burden of the HIV disease
- harm reduction could be an alternative.

The chosen categories notwithstanding, is appears only two actual arguments are voiced by the respondents: (1) barebacking is a dangerous behavior because the likelihood of HIV

transmission is high; (2) HIV is a serious disease that harmfully affects individuals and the larger social structure. In other words, the respondents expressed concern about barebacking due to the potential health risks inherent in the behavior. In that sense, these men's perspective mirrors the operative element driving the current research.

Summary of Reasons for Engaging in Barebacking

In summary, research has identified a number of preliminary reasons— implied and explicitly expressed—for men's engagement in bareback sex. Among other reasons, barebacking is associated with sexual pleasure, burnout of safer sex, sexual adventurism, barebacking normalcy in gay culture, the Internet, and it is a means to affirm their masculinity. Indirectly and overtly stated motivations for barebacking illustrate how the behavior represents multiple and layered meanings in these men's lives.

Factors Associated with UAI among MSM

A large body of literature, from the early 1980s until today, describes characteristics of MSM who engage in UAI and factors associated with this behavior. While a complete overview of these findings, which are mainly based on cross-sectional correlation studies, is beyond the scope of this review, some recurrent features will be presented to suggest similarities between men who engage in UAI and men who bareback.

Studied have found that men who engage in UAI typically report more alcohol and drug use (Ekstrand et al., 1999; Kalichman, Kelly, & Rompa, 1997; Kelly et al., 1995; Koblin et al., 2003; Strathdee et al., 1998). Research has found that MSM express difficulty controlling sexual risk taking (Ekstrand et al., 1999) and impulsive decision making and sensation seeking (Dudley, Rotosky, Korfage, & Zimmerman, 2004). These factors are suggestive of sexual addiction. Men who self-report UAI also report lower perceived social

and peer norms favoring safe sex (Kelly et al., 1992; Kelly et al., 1995; McCusick, Coates, Morin, Pollack, & Hoff, 1990); and fatalism (Kalichman et al., 1997). Additionally, MSM who engage in unprotected anal sex with casual male partners generally have lower education, higher depression score, less social support, and are more likely to report nonconsensual sex compared to men who do not engage in UAI with casual partners (Strathdee et al., 1998). Lastly, MSM who have UAI with anonymous partners report lower self-efficacy regarding condom use (Semple, Patterson, & Grant, 2004) and HIV-positive MSM who have unprotected anal sex with other HIV-positive men also report lower income, negative attitude about condoms, lack of risk avoidance strategies, as well as drug use (Reilly & Woo, 2001).

Thus, certain similarities, and dissimilarities, between men who engage in UAI and men who practice bareback sex can be observed. Both groups, assuming two separate groups exist, appear to report higher drug use, higher prevalence of any unprotected sex, higher general sexual risk profile, and both groups score higher on fatalism and sensation seeking as opposed to MSM who report neither UAI nor barebacking. In the present study, these factors provided guidance in selection of study variables.

Critique of Methodology of Studies Reviewed

Although more than 20 peer-reviewed articles now have been published on barebacking, only a dozen data-based studies are reviewed here because, while they are interesting, the reviews and analytic essays that exist on barebacking are limitedly informative, particularly with respect to prevention. (Two qualitative studies, one from Australia and one from Canada, will not be reviewed because of the likely difference between American MSM and same-sex-attracted men living in other countries). Therefore,

not only does this review rely on a small number of studies, these studies furthermore suffer from methodological limitations. A short discussion of these constraints follows.

Qualitative Research

The first data-based article about barebacking was a qualitative, depth-interview study by Carballo-Diéguez (2001) that explored men's reasons for barebacking. This study set the stage for academic inquiry into the phenomenon of barebacking. Carballo-Diéguez and a colleague a few years later published another qualitative study (Carballo-Diéguez & Bauermeister, 2004). Both studies contribute substantive information about barebacking, but fail to follow established principles of qualitative research reporting. First, no information is provided about the authors' theoretical framework. However, the fact that they emphasize that barebacking is culturally derived and historically situated suggests that the authors might work from an interpretivist or even postmoderninst approach. Second, neither their positionality nor subjectivity statements are included in either article. Third, the authors only vaguely describe their data collection and data analysis strategies. The first study appears to be based on semi-structured, in-depth interviews because the author reveals that he posed "roughly similar questions" to each informant (Carballo-Diéguez, p. 226). The second study used the software QSR NUD-IST to analyze online texts posted by men. No software can do the analysis for the researcher, including QSR NUD-IST which is a code-based theory-building program. Thus, which analysis strategy the authors used to interpret the data is left unstated.

Briefly, a third study, conducted to examine HIV transmission risk among men from Dallas who frequented the website *Barebackcity.com* (Dawson et al., 2005), was labeled ethnographic, yet, no data of a qualitative nature was collected. In stark contrast to

ethnographic tradition (Patton, 2002), the authors neither attempted to understand the culture of these men, nor evidenced any effort to interpret and apply findings from a cultural perspective.

Quantitative Research

As of today, five purely quantitative studies have investigated barebacking. The first study, by Mansergh and colleagues (2002), offers strong arguments in favor of barebacking as a distinct sexual phenomenon placing men at risk for HIV. Methodologically, however, the study suffers from relatively high refusal rate (38%) and attrition rate (32%). One of the recruitment techniques was snowball sampling, which is generally agreed to be the most biased sampling strategy available. Moreover, the authors used highly divergent reference points for their sexual behavioral questions, ranging from the past two years to the past three months, yet ran inferential test on these variables without appropriate adjustments or justifications.

With their 2003 study, Halkitis and Parsons initiated a stream of research about barebacking. Their first study addresses barebacking among HIV-positive gay men who seek sexual partners on the Internet. The researchers recruited men online through passive postings on four websites (listserv accounts and Internet Relay Chat rooms [IRC]) and through active sampling via one IRC. Despite targeting an important subset of MSM, because the sampling frame is a poor representation of the frame population it seems undercoverage is likely. The authors also fail to mention, first, how the chatters were sampled—i.e. whether it was randomly, systematically, etc.—and, second, response rate. The sample may be additionally biased because the survey was not confidential, given that the authors sent participants an electronic file of the survey via e-mail. For the purposes of their

study the researchers developed two important scales, the Sexual Adventurism Scale (SADV) and Sex as Definition of Masculinity Scale (MAS). Both scales showed high inter-item homogeneity, $\alpha = .92$ and $\alpha = .75$. Unfortunately, the scales have not been subjected to validity testing and the authors neglect to address the statistical tests used in the study.

Halkitis, Parsons, and Wilton (2003) used a brief street-intercept survey method to assess barebacking among MSM in New York City. Yet, it is unusual that the volunteers are asked to provide tacit consent, not active consent for study participation. As in the previous study Halkitis authored, these researchers developed a scale, the Perceived Benefits of Barebacking Scale, which evidenced high inter-item homogeneity ($\alpha = .90$). But the researchers neglect to address the issue of validity testing. Another similarity is the lack of reference to statistical techniques used in the study. Finally, it is quite possible that the results regarding barebacking behavior are skewed because the researchers did not provide a definition of barebacking to the respondents, thus they may have interpreted the term differently.

The researcher Parry Halkitis, New York University, was the first author for two additional studies about barebacking. Through a brief intercept survey distributed to gay and bisexual men at convenient locations in the New York Metropolitan area, the researchers sought to learn respondents' understanding of barebacking. This breakthrough study (Halkitis, Wilton, & Galatowitsch, 2005) unfortunately makes no reference to study entry criteria, refusal rate, number of questions asked, statistical analyses conducted, or number of tests performed. Also the second study (Halkitis, Wilton, Wolitski et al., 2005) is sparse in detail. Baseline data from the SUMIT study were analyzed. This study convincingly argued for a distinction between barebacking behavior and identity. A limitation is that the authors

defined men as having a barebacking identity based on their affirmative response to one question: Do you think of yourself as a barebacker? This question was based on the premise that participants attached the same meaning to barebacking and understood that the question referred to identity. It essentially invited participants freely to interpret the term themselves. Moreover, MSM from various venues, including public and commercial sex environments, were invited to partake in the study. In regard to external reliability, answers provided by participants from commercial sex environments are likely to skew the data. Briefly, a great number of statistical tests are reported, possibly inflating the risk of committing a Type I error, but no adjustment in alpha level is indicated.

Mixed-methods Research

In 2005, two mixed-methods studies, consisting of both qualitative and quantitative data, were published in the book *Barebacking: Psychosocial and Public Health Approaches* (Halkitis, Wilton, & Drescher, 2005 [all articles were co-published simultaneously as *Journal of Gay & Lesbian Psychotherapy, vol 9, number 3/4, 2005*]). Wilton et al.'s (2005) research analyzed data from the longitudinal Club Drug Use and Men's Health: A Community Study assessing unprotected sex and club drug use among Black and Latino MSM living in New York City. This study contributed overdue data about barebacking among ethnic minorities. But, although the researchers state they used a targeted, community-based sampling strategy whereby participants were actively and passively recruited, it is unclear how the recruitment was executed. One of the three types of venues used for recruitment was public and commercial sex environments, suggesting the sample was likely to include sex workers who may have strongly skewed the behavioral data. Related, for unknown reasons, the article's data and discussion lacked any indication of the extent of barebacking among the sample,

only means and standards deviations are provided. The researchers randomly selected 24 interviews for qualitative interpretation and state that thematic coding was used to capture the phenomenological meanings attached to barebacking and drug use. Strangely at odds with this goal, the interviews were semi-structured. Similarly to the qualitative studies discussed above, there is neither information about the authors' theoretical framework nor positionality. Also the second mixed-methods study suffers from flaws, particularly in the qualitative area.

Bimbi and Parsons (2005) present results from 50 interviews of male sex workers recruited from online posts. The purpose of the study was to understand the impact of the Internet and barebacking. Paradoxically, none of the researchers' questions appear to mention the Internet or barebacking. The authors disclose that they conducted semi-structured interviews, but their explanation of data analysis is limited to a brief reference to the software programs SPSS and QSR NUD-IST. As stated earlier, no software can do the analysis for the researcher, whether quantitative or qualitative. Thus, which analysis strategy the authors used to interpret the data, beyond correlation, is unclear. Lastly, also these researchers fail to provide information about their theoretical framework and positionality.

Summary of Methodology of Studies Reviewed

In sum, the studies reviewed here are limited by several methodological shortcomings. The qualitative and mixed-methods studies seem to be authored by researchers inexperienced with qualitative data collection and analysis. As most quantitative research on MSM and sexual behavior, the quantitative studies that exist on barebacking are all cross-sectional and based on convenience samples. Unfortunately, the authors typically fail to report the analysis methods used, conduct a large number of tests, and none of the studies report effect sizes on any of their results.

Chapter Summary

Barebacking is in the early stages of scientific inquiry. Among this limited body of literature, few data-based studies exist, and because of their methodological flaws, conclusions are at best tentative. Yet, some cautious judgments can be offered. As is evident from the above sections, prevalence of barebacking probably differs geographically, and many of the men who engage in bareback sex are already HIV-positive. A major focus of the early data-based studies was reasons associated with and perceived benefits of bareback sex. A commonality for the data-based articles on barebacking was that certain psychological and emotional benefits are associated with barebacking, most notably feelings of sexual gratification, intimacy, and masculinity. Additionally, interpersonal characteristics, such as sexual adventurism, and contextual factors, such as partner fit, seem to be surrogate markers of barebacking. Finally, due to a normalization of barebacking and easy access via the Internet, a risk acculturation of barebacking appears to have developed. In all likelihood, barebacking is the result of a combination of multiple factors that converge to influence an individual's likelihood of taking sexual risks.

In conclusion, there is undoubtedly a large gap in the literature as to variables associated with barebacking and many questions remain. What is clear is that barebacking is not an ephemeral public health issue. Thus, more empirical research is urgently needed. The next section describes methods used in the current research project about bareback sex among MSM Internet users.

CHAPTER 3

METHODS

The main focus of the current study was to examine factors associated with barebacking among MSM Internet users. For clarity, the null hypotheses are restated:

H1: There is no relationship between barebacking and Health Belief constructs.

H2: There is no relationship between barebacking and self-efficacy for limiting HIV risk behavior.

H3: There is no relationship between barebacking and safer sex social norm perception.

H4: There is no relationship between barebacking and sexual sensation seeking.

Additionally, the study was designed to test three subhypotheses:

H5: There is no relationship between barebacking and UAI.

H6: There is no relationship between barebacking and meeting men online for offline sex.

H7: There is no relationship between barebacking and substance abuse.

In this chapter, the conduct of the study is presented, including: (a) study design, (b) conceptual framework, (c) measures, (d) selection of participants, (e) data collection, (f) data management, and (g) data analysis. All procedures were approved by the researcher's Institutional Review Board (Appendix A).

Study Design

This was a cross-sectional, exploratory study. All data were collected between February 2006 and May 2006, specifically, data were collected over a period of eleven weeks. Since the research topic is still in its infancy, data were collected for descriptive

purposes, and the relationship between barebacking and various pertinent variables was investigated. The medium of recruitment and data collection was the Internet. In this study, the advantages of reliance on the Internet were multiple. The following section highlights important advantages of Internet-based strategies for exploring variables associated with barebacking among MSM Internet users.

Internet as Research Tool

Although the preparatory work in an Internet-based study may be relatively comprehensive (Cobanuglu, Warde, & Moreo, 2001), the Internet greatly facilitates time and cost return-on-investment. First, accessibility to the target population, if they have Internet access and skills, is enhanced online. Research shows that a high number of MSM, a traditionally "unrecruitable" population, utilize the Internet (Computer Economics, cited in Chaney & Dew, 2003). Some of these individuals may not self-identify as gay/bisexual, hence, they might be missed with other more traditional data collection strategies. Since recruitment is facilitated on the Internet, extensive samples can be obtained (Mustanski, 2001; Stanton, 1998), thereby enhancing a study's statistical power. The collapsed geographic boundaries found online (Michalak & Szabo, 1998) can result in a more diverse and potentially representative sample (Mustanski, 2001). It follows that the chances of obtaining a large and diverse sample of MSM are enhanced through the Internet.

Surprisingly, communication between a researcher and study participants might be improved online. First, there are fewer time constraints online, because asynchronous communication means that participants can conduct the study on their own computer whenever they desire (response time is at the discretion of the participant). In fact, asynchronous communication provides an opportunity to reflect and edit messages before

sending them. Levinson (as cited in Clarke, n.d.), suggests this results in a closer fit between ideas, intentions, and their expressions in qualitative writing. Second, the graphical user interface of an Internet page allows for extensive manipulation of layout (high quality images, sounds, video, and animated graphics), which can set a certain mood and style of interaction that may increase channels of communication (Dillman, 2000).

The Internet seems an especially good medium for sexuality research: Sex appears to be a topic many Americans are willing to discuss on the Internet (Mills, 1998; Murray & Fisher, 2002). This might be related to the absence of social distance online. The Internet has been referred to as an "equalizer of interactions" (Im & Chee, 2003, p. 9) because there are no visual distractions—such as the person's age, gender, and social status—as in real time face-to-face interactions. In other words, there is no physical interviewer who can affect interview outcomes. This is a benefit for researchers who have an etic research position to overcome, as is the case in the current research.

Another, perhaps related, advantage of Internet-based research as opposed to offline research is respondents' increased honesty and self-disclosure. Several researchers have found that quantitative survey responses provided online are more honest as compared to paper and pencil responses, that there is an increase in self-disclosure reflected in online surveys, and that there is less evidence of social desirability and social anxiety when participants answer online questions (Joinson, 1999; Martin & Nagao, 1989; Servan-Schreiber & Biknik, 1989). Also Richman and colleagues (1998) found that social desirability answers were fewer in computer research than face-to-face, especially when the Internet was used to ask respondents about sensitive information, such as risky sexual behaviors.

Most importantly, by responding online, the participants can be offered increased confidentiality (Michalak & Szabo, 1998). Because there is no paper trail, subjects may participate without being identified; consequently, their fear of being identified may be lower. Online data collection may in fact attract those particularly uninterested in being identified, such as MSM. Nevertheless, a researcher cannot guarantee anonymity with 100% certainty, because persistent hackers may break in, or an official with a court order may be able to discover participants' identity (Biknik, Mah, & Kiesler, 1999).

At this point, it is necessary to mention some drawbacks to Internet-based research. In addition to the fact that technology can fail, limited generalizability and lack of control of the data collection environment pose constraints. Accordingly, the possibility that the sample obtained may be biased exists. Respondents to an Internet-based survey are more likely to be individuals who (1) have access to the Internet, (2) feel comfortable with on-line surveys, and (3) have skills to complete an online survey (Berge & Collins, 1996). Also survey professionals caution that individuals who are not comfortable with technology will not respond (Shannon, Johnson, Searcy, & Lott, 2002). Most recruitment strategies online make response estimates difficult, the survey invitation is likely perceived as impersonal, and finally, the technical expertise required by the researchers is greater than in off-line research (Zhang, 1999).

In this study, the researcher attempted to increase representativeness by defining the target population as a subset of web-users based on specific characteristics. To further reduce bias, the researcher created study awareness and encouraged study participation from different Internet outlets. The researcher proactively invited study participation through five websites with a controlled number of members—which facilitated response rate estimation—

and "flaming" was prevented by simply inviting participation, not spamming or overselling it to potential participants (Kaye & Johnson, 1999). Finally, the researcher not only actively continued to improve own technical abilities with regard to Internet-based research but also worked closely with researchers skilled in online recruitment of hard-to-reach populations as well as an organization that has years of experience with online data collection. Specifically, the researcher contracted with The University of Georgia Survey Research Center (SRC) to develop and manage the study website for the duration of the project. Before describing the data collection process in more detail, the conceptual framework of the study and measures are presented.

Conceptual Framework of the Study

Previous research guided the selection of study constructs. The constructs investigated in the current study were (1) Health Belief Model constructs, including (2) self-efficacy for safe sex; and (3) sexual sensation seeking; and (4) safer sex social norm perception, which is inspired by the Social Network and Social Support Theory. Additionally, the survey included questions about alcohol and other drug use, and other sexual risk behaviors in the past two months. These are factors that past research indicated influence barebacking and therefore expose the men to possible HIV (re)infection.

Constructs

Again, research addressing barebacking is scant, thus few variables associated with barebacking have been investigated. In this study, some variables also used in previous data-based studies regarding barebacking were included. These are described below. Table 6 provides an overview of specific study constructs included in the study.

Table 6: Constructs and definition of constructs

Constructs	Definition of constructs
Health Belief Model Constructs a. Perceived seriousness b. Perceived susceptibility c. Perceived benefits d. Perceived barriers	A person's a. perception of the seriousness of the health threat. b. perception of risk/vulnerability to a health threat. c. efficacy of an action designed to prevent or reduce the threat of illness. d. assessment of the negative consequences that might be associated with the preventive or ameliorative behavior.
Self-efficacy (for safe sex)	A person's confidence in their ability to successfully execute a behavior.
Safer sex social norm perception	Perception of expected pattern of behavior regarding safe sex.
Sexual sensation seeking	Propensity to prefer exciting, optimal, and novel sexual stimulation or arousal.

As mentioned earlier, use of theory in relation to barebacking is completely absent from existing research. This is an unfortunate gap, because theories can increase health professionals' understanding of underlying processes and factors influencing behaviors that are amenable to change. Subsequently, theories can identify appropriate points of intervention. Results from previous research suggest that the Health Belief Model (HBM) and Social Network and Social Support Theory in particular may be useful frameworks for understanding barebacking. Thus, these constructs were included in the study to help fill gaps in the literature on barebacking. An overview of these theories follows.

Health Belief Model

The HBM is a value-expectancy theory that seeks to explain why individuals do or do not engage in various health-related behaviors. The key constructs are perceived severity, perceived susceptibility, perceived benefits, and perceived barriers (Janz, Champion, & Stecher, 2002).

Previous findings suggest that men who engage in bareback sex are not fearful of contracting HIV (Carballo-Diéguez, 2001; Carballo-Diéguez & Bauermeister, 2004; Halkitis et al., 2003; Suarez & Miller, 2001). One interviewee said: "The likelihood of surviving HIV

seems to be high" (Carballo-Diéguez, p. 232). It would be important to ask about perceived seriousness of HIV/AIDS because assuming that barebackers consider AIDS to be an extremely serious disease appears erroneous. Rather, as can be seen from the above quote, barebackers seem to consistently underestimate the seriousness of HIV/AIDS. At the same time, many barebackers expressed a sense of fatalism about HIV, that HIV infection was inevitable for homosexually active men. The sense of fatalism concerning HIV indicates these men consider themselves susceptible to the virus. Nevertheless, it would be informative to look at perceived susceptibility among barebackers because it could help define the population at risk and risk levels.

When perceived susceptibility of HIV is high, which it may be among barebackers, the HBM posits that HIV protective behavior decisions become primarily a result of perceptions of benefits minus perceived barriers to behavior change (Janz et al., 2002). A few studies revealed some perceived benefits of safer sex, such as avoidance of HIV infection, as well as barriers, such as dislike of condoms. More research on perceived benefits and barriers would further help identify underpinnings motivating the behavior.

Self-efficacy

The construct of self-efficacy, a person's confidence in their ability to successfully execute a behavior, was added to the HBM in the late 1980s. Self-efficacy determines what actions people will attempt, the effort they will put forth, and the persistence they show when confronted with setbacks. Self-efficacy is especially important when it comes to modifying long-term behaviors and life-long habits, such as safe sex (Janz et al., 2002). In the present context, unless a barebacker believes that safe sex will prevent HIV, there is little incentive for him to act or persevere in the face of difficulties. Self-efficacy may be especially useful in

explaining why HIV risk behaviors in general, and barebacking in particular, among MSM differ when these men have similar knowledge and skills.

Social Network and Social Support Theory

Previous study participants have indicated the presence of a social norm of bareback sex. Clarification of whether a norm of unsafe sexual behavior in fact exists among MSM in this study was assessed through a safer sex social norm perception scale. Social Network and Social Support Theory do not form a theory per se, rather they are concepts that describe the structures, processes, and functions of social relationship which can influence health outcomes. According to these concepts, social support and social networks serve as protective factors that reduce an individual's susceptibility to illness and disease. Social support and social networks thus work to enhance coping resources, overall well-being, and health (Heaney & Israel, 2002).

The barebacking behavior seems to be based on cultural/community norms that at least mediate individual health decisions in ways health professionals may not fully realize. Halkitis and colleagues (2003) found that MSM described barebacking as not merely a sexual, but also a social and cultural phenomenon among the MSM population. Through focus groups, MSM explained that community norms had shifted so that unsafe sex was now more acceptable, and HIV risk-taking had increased because social support in the community for being safe had decreased (Morin et al., 2003). Since effective provision of support is likely to stem from people who are socially similar, who have similar experiences, needs and values (Heaney & Israel, 2002), a network of barebackers may experience limited antagonism to their behavior, thus reinforcing the unsafe sex social norm perception. This social "norming" of bareback sex may be influenced by the Internet as well.

Due to its anonymity, the Internet is possibly one of few places barebackers can express their desires openly and easily access like-minded individuals. Self-professed barebackers have pointed to the Internet as a facilitator of bareback sex by making it simple to quickly locate and meet other barebackers (Halkitis et al., 2003). Depending on social norms and affirmation/disconfirmation provided by one's social network, support may increase or decrease unsafe behaviors. The geographical proximity of certain gay communities (e.g. the Castro district in San Francisco) and the Internet may together form patterns of social relationships for barebackers that are not provided by traditional social units like family and work groups and which may affirm their HIV risk behaviors. As a consolidated system it may have developed a sense of collective behavior and constitute a starting point or initiator in a causal flow toward barebacking. Research with a social network/social support anchor may go a long way in uncovering the ties and factors that help sustain barebacking as a cultural phenomenon.

Sexual Sensation Seeking

Preliminary findings suggest barebackers are risk-takers and may be attracted to this HIV risk practice because of its association with risk and "taboo" behaviors (Halkitis & Parsons, 2003; Mansergh et al., 2002). Sexual sensation seeking is a characteristic that can corroborate previous findings and further help explain why some men engage in bareback sex.

Behavioral and Sociodemographic Characteristics

For over a quarter of a century, alcohol and drug use has been a consistent predictor of sexual risk behaviors among MSM (Ekstrand et al., 1999; Kalichman et al., 1997; Koblin

et al., 2003; Siegel et al., 1989; Stall et al., 1986; Strathdee et al., 1998). In fact, CDC researchers reveal that using crystal methamphetamine increases the risk of unsafe sex among MSM two-three times, and risk of HIV infection correspondingly by 60% (Cairns, 2005). Three studies indicate that use of various intoxicants is also associated with barebacking (Halkitis et al., 2003; Halkitis, Wilton, Wolitski et al., 2005; Mansergh et al., 2002), but more research is necessary. In the current study, use of alcohol, crystal methamphetamine, and illegal drugs in anticipation of/during sex was assessed for a potential association with bareback sex.

Results from previous research provide conflicting indications of the prevalence of bareback sex among MSM. Here, the extent of barebacking among a sample of MSM Internet users, a behavior that has been identified as an independent risk factor for unsafe sexual behaviors (McFarlane et al., 2000), was established in an effort to gain a better sense of the degree to which the phenomenon is engaged in among MSM. UAI and barebacking were furthermore analyzed as separate constructs to gain a sense of the relative proportion of these two behaviors as well as suggest construct precision as seen by MSM. And lastly, in an attempt to corroborate previous findings and determine the degree to which attending bareback parties is a frequent behavior among MSM, the study included a question about attendance at bareback parties.

In an effort to also validate whether the majority of barebackers are in fact HIV-positive and do engage in serosorting, as research indicates, this study asked about HIV-status of both the respondent and his sexual partners. Additional sociodemographic variables that were included were age, U.S. state of residence, race/ethnicity, size of town where they live, sexual orientation, relationship status, and education.

Measures

Previous research indicates that the constructs selected were important for further understanding of the behavior barebacking. To measure the constructs well, appropriate instruments that have been tested for reliability and validity were selected (Appendix B). Table 7 includes an overview of the constructs, instruments, and instrument properties.

Table 7: Constructs, instruments, and instrument properties

Constructs	**Instruments**	**# of items**	**Reli-ability**	**Indicators**
AIDS health beliefs	AIDS Health Belief Scale (AHBS) (Zagumny & Brady, 1998).	16	.65 to .82	Strongly agree to statements such as "I am afraid that I might contract HIV."
Self-efficacy for limiting HIV risk behavior	Limiting HIV Risk Behaviors Scale (LHRB) (Smith, McGraw, Costa, & McKinlay, 1996).	9	.77	Respond that they are 'sure' or 'very sure' that they can perform activities such as "Talk about safe sex with a partner."
Safer sex social norm perception	Safer sex social norm scale (SSSNS) (Lemp et al., 1994).	6	.84	Strongly agree to statements such as "Most of my friends think you should avoid unsafe sex."
Sexual sensation seeking	Sexual Sensation Seeking Scale (SSSS) (Kalichman et al., 1994).	9	.75	Respond that behaviors such as "I like new and exciting sexual experiences" are 'very much like me.'

Instruments

The survey included seven sections, each focusing on separate research interest areas:

AIDS Health Beliefs

The Health Belief Model is one of the most widely used frameworks for explaining health behaviors and several scales as well as subscales exist to explain HIV risk. However, a serious deficit in HBM research is inconsistent measurement of the model's concepts (Janz et al., 2002). The instrument selected for this study was therefore a well-known and previously tested scale for measuring these constructs. The 16-item AIDS Health Belief Scale (Zagumny

& Brady, 1998) has four subscales, with four items each, which correspond to the components of the Health Belief Model:

1) Perceived seriousness of HIV, e.g. "AIDS causes death."
2) Perceived susceptibility to contracting HIV, e.g. "I am afraid I might contract HIV."
3) Perceived benefits of prevention methods, e.g. "I believe that the chances of contracting AIDS can be significantly reduced by using a condom."
4) Perceived barriers to engage in HIV prevention behaviors, e.g. "It is embarrassing to me to buy condoms."

Each item is scored on a 6-point Likert scale, from 1 = Strongly disagree to 6 = Strongly agree, with no middle point (Scandell & Wlazelek, 2002). The subscale items were summed to yield a belief score, ranging from 4 - 24, for perceived seriousness, susceptibility, benefits, and barriers. Higher scores indicated a greater amount of that belief, which theoretically is associated with lower HIV risk (for consistency, "barrier" items are reversed so a higher score indicates low perception of barriers).

Recent assessments of the psychometric qualities of the AHBS have resulted in mixed findings. Zagumny and Brady (1998) reported the following levels of internal consistency (Cronbachs' alpha): total AHBS score $\alpha = .82$, susceptibility $\alpha = .83$, severity $\alpha = .83$, benefits $\alpha = .93$, and barriers $\alpha = .92$, indicating high reliability for the scale. Scandell and Wlazelek (2002), on the other hand, reported consistently lower levels of inter-item homogeneity, ranging from Cronbachs' alpha $\alpha = .58$ to $\alpha = .69$. The internal consistency for the entire scale was $\alpha = .65$. Additionally, while discriminant and convergent validity scores provided support for the scale, the measure did not predict high-risk sexual behavior. It should be mentioned, however, that the above studies were administered to college student

samples, who reported low levels of high-risk sexual behavior. Prior to this study, no health belief scale for HIV risk behavior had been tested on an exclusively MSM population. Thus, the AHBS appeared to be the best measure to assess HIV health belief constructs among MSM. Because cultural settings influence the relative importance of HBM constructs (Janz et al., 2002), reliability of the measures was re-examined for this population and is reported in the results section.

Self-efficacy for Limiting HIV Risk Behavior

The scale Limiting HIV Risk Behaviors (LHRB) was used to measure self-efficacy for limiting HIV risk (Smith et al., 1996). This 9-item scale included questions like "How sure are you that you could ask a partner about his or her other sexual partners?" The nine items were summed to yield a self-efficacy score, ranging from 9 - 36. A higher score indicated higher self-efficacy for limiting HIV risk behavior. Response options were rated on a Likert scale from 1 = Not sure at all to 4 = Very sure. According to Smith and colleagues, Cronbach's alpha for this scale is $\alpha = .77$. Internal reliability was evaluated for the population in this study and is, like the AHBS reliability, reported in the results section.

Safer Sex Social Norm Perception

The Safer Sex Social Norm Perception scale (SSSNP) used in the nation wide Young Men's Health Survey (Lemp et al., 1994) measured the degree to which the men perceive MSM in their social network endorse and engage in risky sexual behaviors, indicating a safer sex social norm. This 6-item scale includes questions like "Most of my friends think you should avoid unsafe sex." Response options are rated on a Likert scale from 1 = Strongly disagree to 6 = Strongly agree. One of the questions was reverse coded to control for

acquiescence response set. The items were summed to yield a perception score, thus the score range was 6 - 36. A higher score indicated stronger safer sex social norm perception. In previous research, the scale yielded a Cronbach's alpha of $\alpha = .84$ with gay men (Lemp et al.). Reliability was reassessed for the population participating in this study. The results are described in the next chapter.

Sexual Sensation Seeking

A person's propensity to prefer exciting sexual stimulation was measured with the 9–item Sexual Sensation Seeking Scale (SSSS), developed by Kalichman and colleagues (1994). The four response categories ranged from 1 = Not at all like me to 4 = Very much like me. The nine items were summed to yield a propensity score, ranging from 9 - 36, thus a higher score indicated higher propensity for sexual sensation seeking. The scale has yielded Cronbach's alpha of $\alpha = .75$ with gay men (Kalichman et al.). Results of the scale's reliability with the present population are described in the results section.

Use of Alcohol and Drugs in the Last two Months

A two-month time frame was selected for all behavioral questions because recall for this length of time is reported to be reliable (Kauth, St Lawrence, & Kelly, 1991). The survey asked the participants three questions about the frequency of substance abuse in anticipation of or during sex in the last two months. The survey asked frequency of being drunk on alcohol during or in anticipation of or during sex, frequency of being high on crystal methamphetamine in anticipation of or during sex, and frequency of being high on other drugs (cocaine/crack, ecstasy/MDMA, heroin, ketamine, hallucinogens, marijuana, poppers) in anticipation of or during sex.

Sexual Behaviors in the Last two Months

The survey asked the participants about frequency of various sexual behaviors. Participants were asked to fill in the number of times during the last two months they had engaged in the following sexual behaviors:

- barebacking with someone who was HIV-positive/whose HIV-status they didn't know
- barebacking with someone who was HIV-negative
- unprotected (did not use condom) anal sex
- protected (used condom) anal sex
- unprotected sex (did not use condom) with female partners
- attending bareback parties.

Additionally, the survey included two questions about the total number of various partners they had sexual relations with in the past two months: total number of male sex partners who they originally met on the Internet and total number of bareback partners.

Sociodemographics

For purposes of sample description, the survey asked about age, race/ethnicity, U.S. state of residence, size of town/city where they live, sexual orientation, relationship status, HIV-status, and education. No individual identifiable information was asked.

Survey Structure

To assess how men were directed to the study website, the first survey question asked where the men learned about the study. An "Other" category was initially included due to the unlikely event that the survey website was listed by search engines (due to "robots"). This

question allowed assessment of response rate from the active recruitment strategy through personal advertisements. Next, demographics questions were asked, followed by the Likert-scale questions. The last survey screen included the behavioral questions. A definition of barebacking was provided next to the questions referring to barebacking. The survey included a total of 60 questions and took about 12 minutes to complete. An open response format was used for the variables age, alcohol and drug use, and sexual behaviors because research indicates it increases reliability (Catania, Gibson, Chitwood, & Coates, 1990; Kalichman, Greenberg, & Abel, 1997; Kauth et al., 1991).

Selection of Participants

The participants in this study consisted of a sample of English speaking men who (1) self-identified as an MSM, (2) lived in the U.S., (3) were 18 years and older, and (4) used the Internet to meet other MSM. This population was selected because many of these men are at risk for HIV (re)infection and likely to engage in barebacking. Previous research shows that seeking men online for offline real-life sexual encounters is commonplace among MSM. One survey revealed that 97% of MSM had met a sexual partner via the Internet (Benotsch et al., 2002; Bull et al., 2004). The plentiful websites, IRCs, and listserves devoted to the topic attest to the fact that barebacking has become normalized online. Research shows some results of this development: Men who seek partners via the Internet have more STIs, more partners, more UAI, and are less likely to test for HIV but more likely to have sex with an HIV-positive partner (Benotsch et al.; Elford, Bolding, & Sherr, 2001; McFarlane et al., 2000).

To ensure that the participants were adults, only websites that in their description stated that they catered to adult men, i.e. 18 years and older, were selected. Additionally, the

survey information and informed consent section repeatedly instructed potential participants that only men who were 18 years and older should participate in the study. The survey asked the age of the participants as well.

Data Collection

The study adopted a multi-stage process for data collection. The steps are detailed in the following sections.

Web-based Survey Development

In stage one, the researcher collaborated with SRC staff in developing a survey website based on scripts written in Microsoft Word (Appendix C). The website, which was written in hypertext markup language (HTML) by SRC staff, introduced the researcher, explained the purpose of the study and the voluntary nature of participation, and included a consent form and a link that directed potential participants to the instrument page. The purposes of the welcome screen were to motivate participation and to create trust with the target group by establishing authority and credibility as researcher, reiterating the survey purpose first stated in the survey invitation, offering an indirect incentive, guaranteeing confidentiality, and providing access to the researcher via e-mail and telephone. It also established third party guarantee of the survey's authenticity and credibility by stating (1) the University of Georgia's Institutional Review Board (IRB) approval and providing the IRB's telephone number, and (2) contact information for a senior researcher who served as a supervisor for the principal investigator.

As recommended by experts (Daley, McDermott, Brown, & Kittleson, 2003; Dillman, 2000), the researcher and SRC staff developed a simple and user-friendly web-based study instrument that did not require familiarity with survey presentation format.

Instead it was designed with the low end computer user in mind. A simple design with sparse use of graphics—only a few color schemes and neither animations nor complicated skip patterns were designed—saved download time and possibly increased response rate and decreased attrition rate. The instructions asked the respondents to mark their answers by selecting radio buttons or one choice from a drop box. Almost all data collected were in the form of Likert-type questions. Multiple option responses included drop-down menus. For example, the demographic question "U.S. state of residence" included 52 items, thus choices were provided in a drop box. As suggested by Dillman (2000), the respondents were allowed to skip questions before proceeding to subsequent ones. Because there is some evidence that using a single or very few screens, versus multiple screens, for short surveys minimizes response attrition (Schonlau, Fricker, & Elliott, 2002), the instrument contained only four separate screens: the introduction page and three question pages.

The researcher pilot tested the survey website on function, readability, and graphics. The pretests established length of time and ease of completion. The length of completion was approximately 12 minutes. As recommended by several researchers (Kaye & Johnson, 1999; Mustanski, 2001) the website was pre-tested on different computer platforms/operating systems (Windows and Macintosh) and with different web-browsers (Internet Explorer, Mozilla Firefox, Opera, Netscape) to make sure the site was functional on all computers and appeared as identical as possible across a variety of browsers. (The effect of respondents viewing a somewhat different screen is not yet known [Dillman, 2000]). After this initial pretest process, the researcher contacted members from the target population through a local lesbian, gay, bisexual, transgender, and queer support group. The director of the group forwarded the researcher's pilot invitation—which explained the purpose of the study and

provided a link to the survey—and asked the men to assess the survey on appearance, readability, and graphics. Three men responded in writing within the timeframe requested. As a result of the pretests, minor changes on the survey were required. For example, the option "Queer" under the question "Sexual orientation" was included and one of the graphics on the introduction page was replaced with a more affectionate image of two men kissing (Figure 1).

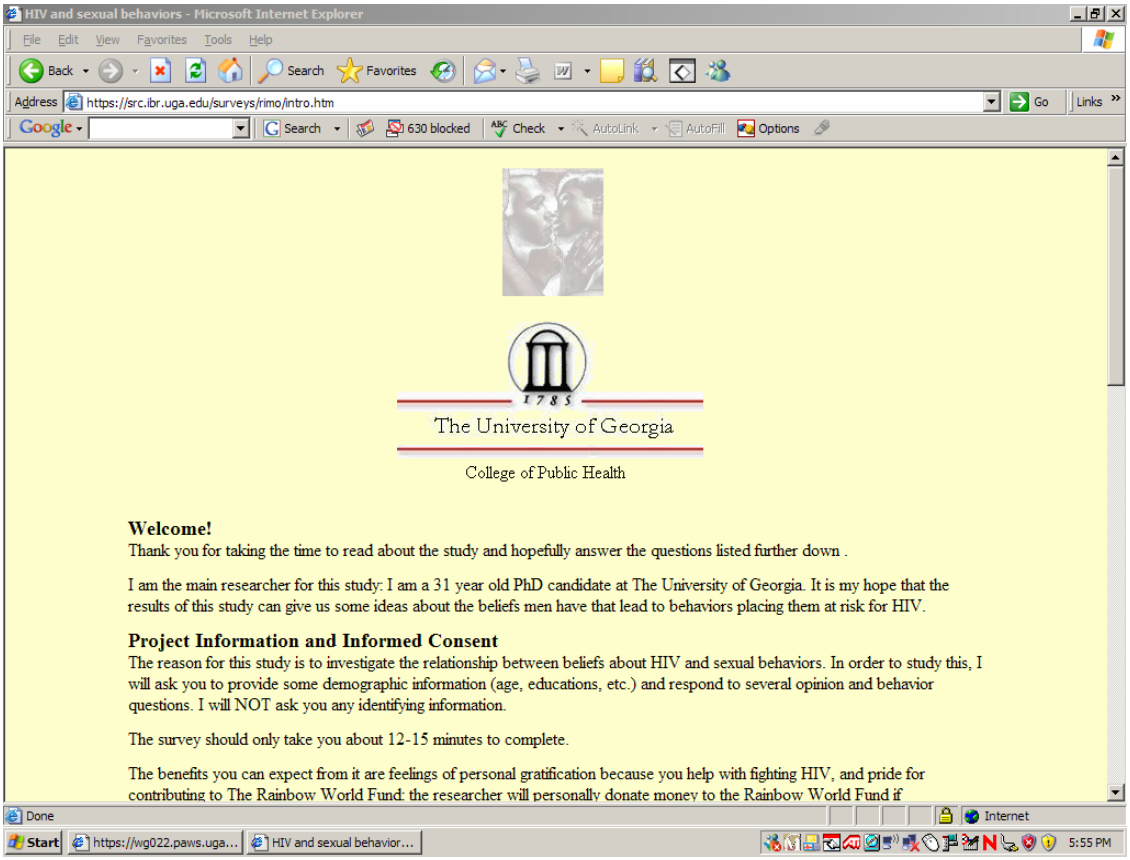

Figure 1: Screenshot of survey welcome screen

The study site was hosted on a SRC server and a university logo appeared on the site to add assurance of study legitimacy. The above design and test steps adhered to the majority of the survey design quality criteria offered by Andrews and colleagues (2003).

Sampling Frame

In phase two of the study, the researcher actively sampled MSM participants via Internet websites. The computerized self-administered survey was hosted (resided) on a survey website managed by the SRC. Potential respondents were asked to visit the survey website by either clicking on a hyperlink provided in the survey invitation or by typing the web-address (URL) directly into the address box in the browser window.

The intended frame population was English-speaking MSM who lived in the U.S., was 18 years and older, had access to and were comfortable with various computer applications, and used the Internet to socialize with other men. Therefore, the researcher used a series of search words—*m4m*, *bisexual*, *gay*, *men for men*, *queer*, *homosexual*, and *MSM*—on various U.S. search engines (Yahoo, Google, MSN search) to identify and compile one list each of U.S.-based, nation wide (non-local) websites from which participants could be recruited: (1) websites with personal advertisements catering to MSM, (2) general websites devoted to male gay and bisexual content, (3) newsgroups discussing gay and bisexual content, and (4) chat forums catering to MSM. Only websites that in their description stated that they catered to adult men, i.e. 18 years and older were included. No websites with an identified geographic location were targeted because the goal was to recruit men from throughout the U.S.

Each list included between five and 50 different websites. While there was no scarcity of U.S.-based, nation wide IRC websites, personal advertisements websites, or general gay/bisexual oriented websites, the researcher was able to identify only five nation wide newsgroups devoted to discussing gay and bisexual issues. Because of the low number of newsgroups identified and the low number of newsgroups users (as low as 10 users), the

researcher opted not to recruit participants through newsgroups. Also the strategy of recruiting men from chat forums catering to MSM was abandoned after initial attempts revealed difficulties obtaining webmaster permission to use the sites selected, non-responses from chatters, and low user volume (repeat visits consistently showed empty chat rooms). Although other researchers have been successful in recruiting MSM survey participants from local chat rooms (see for example Fernández et al., 2004), recruitment through nation wide chat forums appears to present several logistic difficulties and may be perceived as intrusive by men targeted. Lastly, due to non-responses from webmasters asked to establish a link from their page to the survey website and the high cost of purchasing advertisements on national websites, no online advertisements announcing the survey were established. However, postings on bulletin boards and message boards on general websites devoted to male gay and bisexual content were created. In summary, two of the original website lists were used for recruitment purposes: (1) the list with personal advertisement websites catering to MSM, and (2) the list with general websites devoted to male gay and bisexual content.

The researcher selected five sites from each list according to active membership base, i.e., websites that appeared to have a high and active membership base were selected. This criterion was ascertained through viewing publicly posted membership count and running count of visits to the site (typically posted on the homepage). Thus, men who used U.S.-based websites devoted to discussing and bringing MSM together were included in the sampling frame. A host of other methods for publicizing the survey website could have been used, such as search engine, meta tags, or spam e-mail (see for example Epstein & Klinkenberg, 2002), but the two methods outlined here were selected because they ultimately presented the greatest potential of reaching the target group and were simultaneously non-

invasive and ethically sound. In sum, the frame population was English-speaking MSM who lived in the U.S., was 18 years and older, had access to and were comfortable with various computer applications, and, lastly, used online personal advertisements or general gay/bisexually-identified websites to meet other MSM.

Sampling

Each week between February 27, 2006 and May 13, 2006, participants were recruited from five personal advertisement websites and five general websites (10 separate websites) devoted to male gay and bisexual content. The recruitment phase extended over 11 weeks. About ten hours per week, totaling more than 100 hours during the recruitment phase, were spent recruiting participants. An active sampling strategy on the personal advertisement websites and a passive sampling strategy on the general gay/bisexual oriented websites were used. These two recruitment strategies are described next.

Personal Advertisement Websites

Some websites catering to MSM are dedicated to helping men find romantic or sexual partners via personal advertisements. Judging by the number of websites offering personals and the number of active advisements on such websites, this manner of meeting other men is becoming increasingly popular. The five websites selected for this study included between 4,950 and 90,612 advertisements by men seeking to meet other men. The websites allow users to post their photograph and personal profiles that describe themselves and the characteristics they are seeking in a partner, such as being a top (insertive partner) or bottom (receptive partner), and preferred sexual practices.

Personal advertisement websites organize the advertisements in profile lists for each U.S. state. Each member posting an advertisement ("post") is asked to select a handle (online screen name) with which they are identified on the site. This handle is linked to their internal e-mail address, which is provided in order for members to contact each other online without having to reveal external, personal e-mail accounts. Since the advertisements are ordered temporally, that is, users who have accessed their internal e-mail account most recently are listed first in the profile list, the researcher could easily recruit current and recent users of each website. No website members deemed dormant—members who had not accessed their e-mail account in the two months prior to recruitment date—were selected.

The researcher contacted men who had recently accessed their personals account through internal e-mail and requested study participation (Appendix D). The e-mail included the URL to the survey website. The participant was asked to click on the link, or copy and paste it into the address bar of their Internet browser if it was not highlighted, in order to get to the study website. According to Dillman (2000), personalization in study invitation is important for achieving responses, therefore the researcher addressed e-mails to individual participants and did not send them as a mass e-mail. During recruitment, the researcher kept a list of the selected men's handle. This list was used to check that all men who had been selected were in fact contacted and that they were not contacted more than once.

For this study, five personal advertisement websites that appeared to have a high and active membership base were selected. Recruitment was carried out on each website sequentially in order of selection. Number of men contacted and thus days spent recruiting from each website varied according to active membership base and the number of members the site's webmaster granted the researcher permission to contact. For example, one website

granted a limit of 50 contacts per day. On average, 15 days were spent recruiting from each website (range 12 - 30) and an average of 1,304 men were contacted from each website (range 277 - 3,558). In all, 6,520 recruitment e-mails were sent to men having posted a personal advertisement on one of these websites.

Generic Websites Devoted to Gay and Bisexual Content

Thousands of websites exist to provide information, support, and contacts for MSM. The majority of these websites provide free message/bulletin boards for their users. Five such generic, U.S.-based websites were selected for recruitment purposes. Subsequently, during the recruitment phase, the researcher placed a bi-weekly announcement about the survey, including the URL to access the study site (Appendix E) on these websites' message/bulletin board. To ensure that each website was contacted and announcements were regularly placed on message/bulletin boards, the researcher kept a work log of each website and each announcement made. In total, five postings were made on each of the five websites between March 1, 2006 and May 2, 2006.

Activities the Participants Performed

The volunteers who participated in the study were asked to answer 60 survey questions. Once they had received the study invitation—either as a posting on a bulletin board or as an e-mail through their personal advertisement—and read it, target members could ignore the invitation or self-select to take the survey by clicking on the survey URL or alternatively copy it and paste it to the address box of their Internet browser. The URL took them to the study site.

Once on the study site, the instructions asked participants to read about the study and consent to a consent statement. By clicking on the "I agree" box, confirming study consent, the participants were taken to the online survey questions. The survey instructed the men to answer the questions as fully and honestly as possible in a private location without assistance from anyone. The participants were asked not to complete the survey again if they had completed it before (Figure 2).

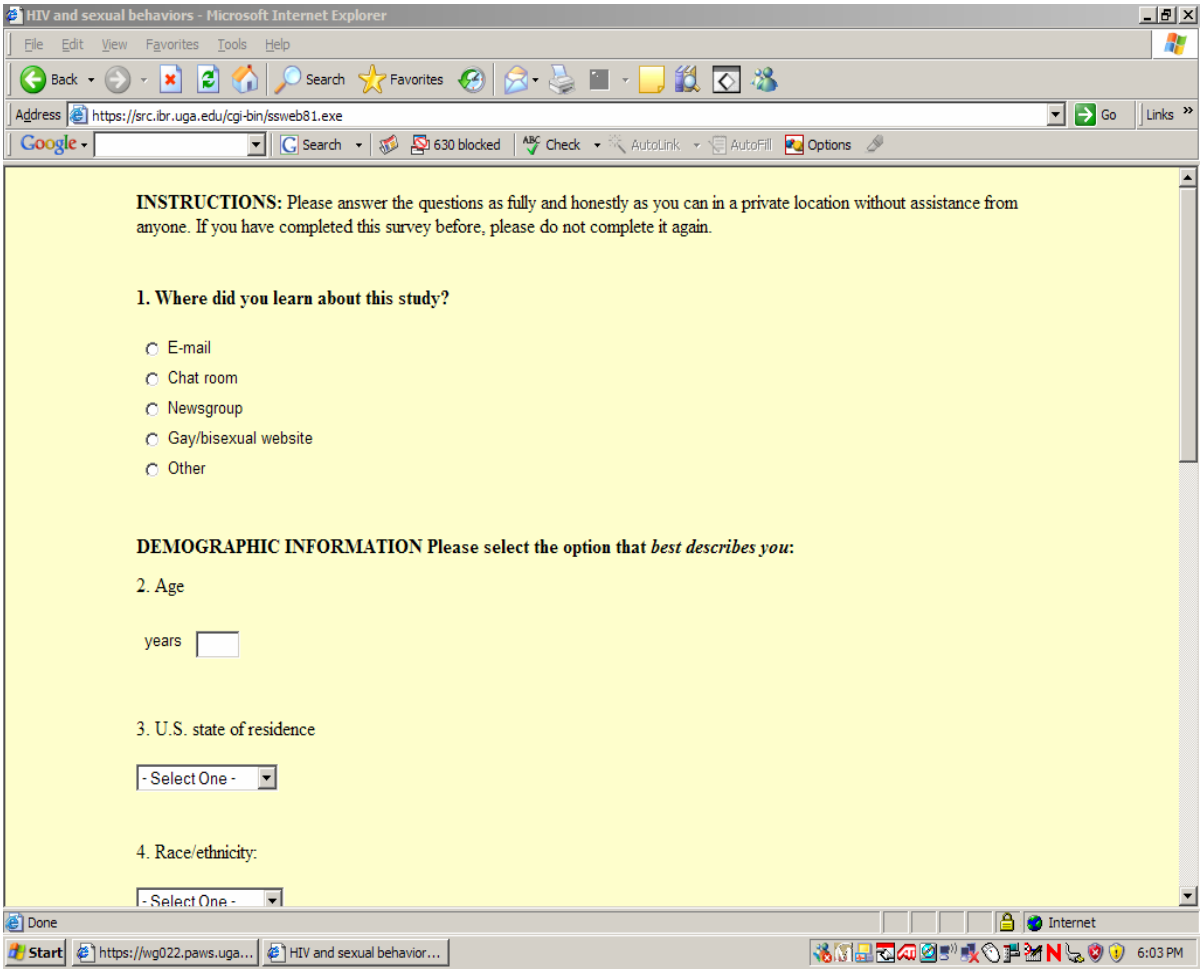

Figure 2: Screenshot of survey instructions and first survey questions

The survey participants were asked to answer questions regarding factors associated with HIV risk behavior. Once the volunteers had answered all questions, the survey thanked them for their participation and instructed them to click the "Submit" button, which concluded their survey participation. After the "Submit" button was clicked they were automatically taken to the University of Georgia's College of Public Health website. This feature verified that the survey was (1) successfully returned, decreasing the likelihood of respondents re-sending the survey, and (2) a legitimate project conducted by researchers in the college.

Incentives

Since it is difficult to deliver a study incentive online without asking the participants to reveal their identity, the participants instead received an indirect incentive. As was explained in the survey invitations and the survey description, if respondents completed the survey the researcher would personally donate money ($200.00) to the *Rainbow World Fund*. It is a gay, lesbian, bisexual, and transgender humanitarian service agency that focuses on global HIV/AIDS, water development, landmine eradication, and hunger (see Rainbow World Fund, n.d.). Providing an indirect incentive was not believed to be a barrier in this study. According to Mustanski (2001), the majority of Internet-based research has been conducted without offering participants incentives, suggesting that lack of subject payment is not an issue when using this methodology. In fact, a recent experiment revealed that although lack of incentive might influence drop out, initial interest in participation and how participants answer the questions are not affected (Frick, Bächlger, & Reips, cited in Mustanski, 2001). According to the book *Conducting Research Surveys via E-mail and the*

Web (Schonlau et al., 2002), it is not yet clear whether incentives affect non-response or measurement error.

Data Management

The study website was created with SRC software for website design, Survey System, and written in HTML which can be interpreted by various web-browsers. As recommended by Stanton (1998), the survey contained narrow response options, thus data returned fit the desired data format and logically would have fewer missing data fields. It follows that data cleaning and editing were minimal. Once the survey had been completed and the participant clicked the "Submit" button, the answers were automatically converted and transferred to a data management program, Statistical Package for the Social Sciences (SPSS), 13.0, thus avoiding coding errors, as described by Strickland and colleagues (2003) and Schonlau and colleagues (2002).

The survey website was hosted by a University of Georgia server: SRC Secure Socket Layer (SSL) server, 128-bit encryption. The returned responses were sent—in encrypted format—to a second, separate file on the same server, that was neither accessible via the Internet nor to the general public. Thus, in the unlikely event that anyone intercepted the data during their transit from the file where the survey was hosted to the file where the data were stored the encrypted data were useless (Lyons, Cude, Lawrence, & Gutter, 2005). The data were stored on the second file in an encrypted format. Only SRC staff had access to the server containing data. To further protect the data, during the data collection process, SRC staff bi-weekly downloaded the survey responses onto a Compact Disk (CD) and deleted the data on the server. Once the researcher received the CD containing the data, all data were

saved in personal files on a password-protected notebook and electronic copies of data were kept in a locked file cabinet in the researcher's office.

Data Analysis

The quantitative responses were analyzed in SPSS 13.0. The survey data contained both continuous and categorical dependent variables, but only continuous variables were used in inferential analyses. Point biserial correlation was used to assess the relationship between the grouping variable (barebackers and non-barebackers) and the criterion variables. To provide an index of the degree of relationship between the predictor and the criterion variables and the proportion of variance in the grouping variable that was shared with each of the criterion variables, the correlation coefficient (r_{pb}) and adjusted coefficient of multiple determination ($_{adj}R^2$) were obtained. The point-biserial test is a univariate test. In the last analysis step, a multivariate test was employed.

In the last step of the analysis, the researcher conducted a multivariate analysis of variance (MANOVA). A one-way MANOVA and descriptive discriminant analysis were used to check the main effects of the categorical variable barebacking on multiple dependent interval variables: AIDS health beliefs, self-efficacy for limiting HIV risk behavior, safer sex social norm perception, sexual sensation seeking, UAI, meeting male sex partners on the Internet, use of alcohol, use of crystal methamphetamine, and use of other illegal drugs. The purpose was to identify group separation configuration in a system of variables by finding which group separation configuration was provided by the group centroids (Huberty & Olejnik, 2006).

These inferential analyses were conducted to show (1) characteristics of MSM more likely to engage in barebacking, (2) factors influencing their HIV risk behavior, and to

suggest why individuals do or do not engage in barebacking. Some survey questions were used mainly for descriptive, not inferential purposes, thus frequency count and percentages were obtained to describe the two groups of men. These variables were: age, race/ethnicity, size of town/city where they live, sexual orientation, relationship status, HIV-status, education, U.S. state of residence, protected (used condom) anal sex, unprotected sex with female partners, number of male bareback partners, and attendance at bareback parties. To ascertain statistical differences between the two groups, Chi-square tests were employed for the categorical sociodemographic questions.

CHAPTER 4

RESULTS

The purpose of the study was to further the knowledge about barebacking among MSM Internet users. Specifically, the study aimed to identify psychosocial and behavioral factors associated with barebacking, to describe the sociodemographic characteristics of men who self-report engaging in barebacking, and finally, to provide an indicator of the extent of barebacking among MSM Internet users. The analysis of the results is presented in this chapter according to (a) data gathering and preparation; (b) instrument properties; (c) response rate; (d) description of the sample; (e) univariate analyses; and (f) multivariate analysis.

Data Gathering and Preparation

Participants were recruited actively and passively on the Internet over a period of 11 weeks during spring 2006. About ten hours per week, totaling more than 100 hours during the recruitment phase, were spent recruiting participants. The general power analysis program, GPOWER (Erdfelder, Faul, & Buchner, 1996) provided information on necessary sample size. For a power of .80 ($1 - \beta = .80$), $r = .33$ with a familywise error rate of .05 ($\alpha = .004$ per analysis) a sample size of 236 was necessary and should be evenly distributed between MSM barebackers and MSM non-barebackers. After 300 surveys had been received and data completeness and distribution deemed satisfactory, recruitment was discontinued. The survey website was subsequently modified providing a message that the study was

completed and thanking potential visitors for their interest. No Internet users accessing the study site after data collection ended could submit responses.

Data Screening

After 11 weeks of participant recruitment, 322 participants had visited the survey website. Of these, 6.8% (n = 22) entered the site but chose to exit before answering any questions. Another 41 men answered only the demographics questions (10 first questions) and did not continue to the second survey screen. Yet another two men failed to answer the ten behavioral questions. The men could therefore not be classified and were removed from the dataset. As a result of 43 men leaving the survey before completion, the attrition rate was 14.3%. Next, thirteen survey submissions with suspect data points on the behavioral questions (frequency of 100 or above, for example, reported they had 999 sexual partners in the last two months) were removed from the dataset. This dataset of 244 cases was screened for double data participation. The participants were matched on age, state of residence, size of town/city where they live, HIV-status, and relationship status. One data duplicate was found and removed from the dataset. One participant reported that he lived in Canada and two men checked the option "Other" to the question asking in which state they lived. Because the sampling frame was limited to men who lived in the United States, these three cases were removed leaving a final dataset of 240 participants.

Data Transformations

Once a participant had completed the web-survey and clicked the "Submit" button, the answers were automatically converted and transferred to the data management program SPSS, 13.0. Thus, the dataset contained no coding errors. However, because the participants

could skip questions at their discretion, some data points were missing. The final dataset (N = 240) was screened for missing observations. Seventeen percent (n = 41) of the participants had skipped one or more questions. Missed variable values on the Likert scale questions (40 total) were replaced with the mean for that variable while missed demographics or behavioral questions—10 values total—were kept intact as missing.

Some Likert scale items on the survey were reverse worded to guard against acquiescence response set. These questions were recoded so all scores for scale items were in the same direction (thus high scores meant the same thing on all scale items). Items reverse worded were the four AIDS Health Belief Barriers questions and one question from the Safer Sex Social Norm Perception (SSSNP) scale.

Recoding was also necessary for creating a cumulative score for the scales, which was done next. First, the AIDS Health Belief subscale items were summed to yield a total subscale score, second, the items for the other three scales—Limiting HIV Risk Behavior scale (LHRB), SSSNP scale, and the Sexual Sensation Seeking scale (SSSS)—were summed and a total score created. The variable "State of residence" contained all U.S. states. This variable was recoded and states collapsed into four U.S. regions—West, Midwest, Northeast, and South—according to the U.S. Census Bureau's Regions and Divisions (U.S. Census Bureau, n.d.). Lastly, a grouping variable was created and participants were assigned to one or the other group according to whether they engaged in bareback sex.

Bareback sex was the explanatory variable in this study because, first, unprotected anal sex has a proven positive relationship with seroconversion (Detels et al., 1989; Goedert, 1987; Winkelstein et al., 1987), and, second, this behavior is of public health interest. The survey data thus distinguished between MSM who reported bareback sex in the past two

months and MSM who did not. For the purpose of this study, barebackers were defined as men who self-reported intentionally and consciously practicing UAI with a non-primary male partner at least once in the last two months. In sum, participants were classified into two groups; those reporting engaging in bareback sex in the last two months and those not reporting bareback sex in the last two months. These two groups were represented by a dummy variable (Z) in the dataset (barebacker = 1, non-barebacker = 0).

The inferential procedures relied on in this study are based on mathematical models that make certain assumptions about the distribution of the variables. Therefore, the researcher assessed whether the data assumptions independence, equal variances, and normality were met. Because of the study's methodology and survey instructions, independence could be assumed. The sub samples were approximately equal, therefore unequal variances posted a limited threat. Nevertheless, Levene's test for equality of variances was used to test equality of population variances on the 12 criterion variables (Table 8).

Table 8: Results of Levene's test for equality of variances

Variables	F (1, 238)	p
Perceived seriousness of HIV	0.27	0.605
Perceived susceptibility of HIV	0.03	0.871
Perceived benefits	2.95	0.087
Perceived barriers	1.64	0.202
Self-efficacy for limiting HIV risk behavior	1.29	0.258
Safer sex social norm perception	0.30	0.582
Sexual sensation seeking	0.06	0.800
UAI	32.58	0.000
Meeting men online for offline sex	9.47	0.002
Being drunk on alcohol in anticipation of/during sex	3.73	0.060
Being high on methamphetamine in anticipation of/during sex	2.84	0.093
Being high on other drugs in anticipation of/during sex	8.45	0.004

The results indicated that the population variances differed on three variables: (1) unprotected anal intercourse, $F(1, 238) = 32.58$, $p = .000$; (2) meeting men online for offline sex, $F(1, 238) = 9.47$, $p = .002$; and (3) being high on other drugs in anticipation of/during sex, $F(1, 238) = 8.45$, $p = .004$. Upon screening the data for non-normality, it was clear that these same quantitative variables, plus two others, showed evidence of skewness and/or kurtosis (value above 2.0). Properties of non-normally distributed variables are listed in Table 9.

Table 9: Properties of the non-normally distributed variables

Variables	Barebackers (n = 94)				Non-barebackers (n = 146)			
	Mean	SD	Skewness	Kurtosis	Mean	SD	Skewness	Kurtosis
UAI	5.50	9.29	4.22	24.68	0.58	4.82	9.14	86.61
Being drunk on alcohol	1.39	3.95	5.00	31.03	0.79	2.81	5.17	30.44
Being high on crystal methamphetamine	0.52	4.14	9.51	91.56	0.18	1.67	11.59	137.55
Being high on other drugs	0.16	0.63	5.74	39.46	0.55	2.55	6.53	46.59
Meeting men online for offline sex	4.02	7.68	5.88	43.44	1.71	2.99	3.73	18.67
Perceived benefits of HIV prevention methods	20.13	3.93	-1.75	3.65	21.18	3.06	-2.06	7.07

Mahalanobis distance, provided in the DeCarlo Macro (DeCarlo, 2006), identified the significant outliers in the dataset. To adequately meet data assumption criteria, these 13 outlier cases (9 barebackers, 4 non-barebackers) were excluded from the analyses involving the respective variables. Thus, six analyses were conducted with $N = 227$. Inspection of stem and leaf plots with groups indicated and descriptive statistics supported only the named variables were skewed or kurtotic. Properties of the normally distributed variables are listed in Table 10.

Table 10: Properties of the normally distributed variables

Variables	Barebackers (n = 94)				Non-barebackers (n = 146)			
	Mean	SD	Skewness	Kurtosis	Mean	SD	Skewness	Kurtosis
Perceived seriousness of HIV	16.48	5.16	-0.38	-0.39	14.80	5.33	-0.10	-0.71
Perceived susceptibility of HIV	14.49	4.35	-0.12	-0.23	14.05	4.27	-0.11	-0.25
Perceived barriers to HIV prevention methods	15.84	3.94	-0.33	-0.09	17.38	3.45	-0.45	-0.21
Self-efficacy for limiting HIV risk behavior	30.61	4.14	-0.99	1.30	32.79	3.52	-1.36	1.73
Safer sex social norm perception	24.33	6.06	-0.36	-0.12	27.93	5.77	-0.82	0.96
Sexual sensation seeking	26.37	4.29	0.07	-0.47	23.39	4.51	-0.50	-0.17
Age	43.44	12.32	-0.19	-0.54	46.66	12.29	0.34	1.94

Instrument Properties

Reliability of the measures was re-examined for this sample. Four scales were used: AIDS Health Belief Scale (AHBS), Limiting HIV Risk Behavior scale (LHRB), Safer Sex Social Norm Perception (SSSNP) scale, and the Sexual Sensation Seeking Scale (SSSS). Reliability analysis showed that all scales, except the AHBS evidenced solid internal reliability (Table 11).

Table 11: Instrument properties

Scale properties	AHBS		LHRB	SSSNP	SSSS
# of items		16	9	6	9
Reliability (α)	Seriousness	0.74	0.736	0.828	0.737
	Susceptibility	0.50			
	Benefits	0.47			
	Barriers	0.36			

Cronbach's alpha was highest for SSSNP, α = .83. The SSSS and the LHRB scale, with nine items each, both showed reliability of α = .74. Inter-item homogeneity for the AHBS on the other hand, ranged from α = .36 to α = .74, with full scale α = .54. While

levels of internal consistency for the SSSNP, the SSSS, and the LHRB scale mirrored results from previous studies, inter-item homogeneity for the AHBS scale was lower than those reported in previous validation studies. According to researchers (see e.g. Kline, 2005), reliability coefficients below $\alpha = .70$ are deemed inadequate. The internal consistency results for the AHBS in this sample suggest the scores on this measure have low reliability.

Response Rate

Participants were recruited passively through postings on five general gay/bisexual websites. Because it is not possible to determine the number of men who viewed the postings, estimate of response rate based on this recruitment technique is impossible. On the other hand, response rate can be assessed, albeit only provisionally, through the second recruitment technique used. One hundred and one (42.1%) of the men who responded (N = 240) said they learned about the study via an e-mail invitation. Given all men received the e-mail inviting participation—6,520 active recruitment e-mails were sent—the response rate for active online recruitment through e-mail was 1.6%. Among the 240 study participants, more than half of the respondents (52.1%) reported that they learned about the study through a gay/bisexual website, and the remainder of the sample (5.8%) checked the option "Other."

Description of the Sample

The final sample used for analysis consisted of 240 MSM Internet users from throughout the United States. The next sections describe the sample in terms of their sociodemographic and behavioral characteristics.

Sociodemographic Data

Sociodemographic data are presented in Table 12. The mean age of the sample was 45.5 years (range 18 - 83). Men who reported bareback sex were on average about three years younger than men who did not report engaging in bareback sex. Most of the men were well educated. Almost 90% stated they had at least some college education. Men who reported bareback sex reported a significantly lower educational level compared to men who did not report engaging in bareback sex (Chi-squared [4] = 10.18, p = .038). No other sociodemographic variables significantly distinguished between the groups. The sample was evenly distributed geographically throughout the U.S., with about a quarter from each of the four U.S. regions (West, Midwest, Northeast, and South). All states were represented, except the four states Kentucky, North Dakota, Oklahoma, and Utah. California had the highest number of participants (6.2%), followed by New York (4.9%), Indiana (4.5%), and Arkansas and Michigan with 4.1% of participants from each of these two states (not tabled). About a quarter of the men (24.7%) were from a large city (between 10,001 – 1 million inhabitants), while 11.7% were from towns with less than 5,000 people. An overwhelming majority of the men (87%) described themselves as Caucasian.

The majority of the men (87%) stated they were HIV-negative. A somewhat higher percent of barebackers, compared to non-barebackers, responded that they were HIV-positive (7.4% vs. 4.1%) or unsure of their status (10.6% vs. 5.5%). Slightly more than half of the sample (61.9%) described themselves as gay/homosexual, and 35.1% described themselves as bisexual. The two men who described themselves as heterosexual had participated in sex with a man in the past two months. Forty percent of the men said they were single and 20% reported that they were married.

Table 12: Characteristics of the sample

	Barebackers (n=94)		Non-barebackers (n=146)		Full sample (n=240)	
Sociodemographic characteristics	n	%	n	%	n	%
Age	43.44 (SD 12.32)		46.66 (SD 12.29)		45.50 (SD 12.38)	
Education						
High school degree or lower	13	13.8	9	6.2	22	9.2
Trade / vocational school	0	0	5	3.4	5	2.1
Some college	32	31.9	39	26.7	69	28.8
College graduate	32	34	47	32.2	79	32.9
Graduate degree	19	20.2	46	31.5	65	27.1
U.S. region of residence						
West	28	29.8	38	26.2	66	27.6
Midwest	23	24.5	35	24.1	58	24.3
Northeast	12	12.8	33	22.8	45	18.8
South	31	33	39	26.9	70	29.3
Size of town						
<5000	9	9.6	19	13.1	28	11.7
5001-20000	15	16	20	13.8	35	14.6
20001-50000	18	19.1	14	9.7	32	13.4
50001-10000	19	20.2	29	20	48	20.1
10001-1 million	17	18.1	42	29	59	24.7
>1 million	16	17	21	14.5	37	15.5
Race/ethnicity						
African-American	2	2.1	4	2.7	6	2.5
Asian-American	1	1.1	2	1.4	3	1.3
Caucasian	84	89.4	124	84.9	208	87
Latino	1	1.1	3	2.1	4	1.7
Mixed	2	2.1	7	4.8	9	3.8
Native American	1	1.1	2	1.4	3	1.3
Pacific Islander	2	2.1	1	0.7	3	1.3
Other	1	1.1	2	1.4	3	1.3
HIV/AIDS status						
HIV-positive	7	7.4	6	4.1	13	5.4
HIV-negative	77	81.9	131	90.3	208	87
Unsure	10	10.6	8	5.5	18	7.5
Sexual orientation						
Bisexual	29	30.9	55	37.9	84	35.1
Gay/homosexual	64	68.1	84	57.9	148	61.9
Heterosexual	1	1.1	1	0.7	2	0.8
Unsure	0	0	1	0.7	1	0.4
Queer	0	0	1	0.7	1	0.4
Other	0	0	3	2.1	3	1.3
Relationship status						
Dating	14	14.9	11	7.6	25	1.5
Have a primary partner	27	28.7	30	20.7	57	23.8
Married	15	16	31	21.4	46	19.2
Separated	9	9.6	9	6.2	18	7.5
Single	29	30.9	64	44.1	93	38.9

Behavioral data

Instances of substance use in anticipation of or during sex were low among men in this sample (Table 13). Alcohol was the most frequently used substance, used by 19.6% of the sample, specifically 27.7% of barebackers and 14.4% of non-barebackers (Full sample mean 1.03, SD 3.31; Barebackers mean 1.39, SD 3.95; Non-barebackers mean .79, SD 2.81). Barebackers used significantly more alcohol in sexual contexts compared to non-barebackers. A minority of the study participants reported being high on crystal methamphetamine (4.2%, mean .31, SD 2.9) or other illegal drugs (9.6%, mean .4, SD 2.03) in anticipation of or during sex.

Some men who use the Internet to meet and socialize with other men choose to be sexually abstinent, temporarily or for longer periods of time. In this sample, 17% (n = 41) of the respondents reported no sexual intercourse, with men or women, in the past two months (not tabled). Most of these men (85%) were HIV-negative and while half of the men abstaining from sexual intercourse were single, 24.3% had a primary partner and 17% were married. Four men (1.6%) reported sex with a woman but not a man in the past two months. These four men were married. Two of them described themselves as bisexual, one as gay, and one as queer. These men were included in the analysis because they met the inclusion criteria and represented an important group of sexually abstinent MSM. Not all MSM, regardless of sexual orientation and relationship status, are sexually active.

While most (83%) of the men were sexually active, only about half (51.7%) of the men stated they had engaged in protected sex one or more times in the past two months (mean 3.01, SD 5.91). More than half (52.8%) of men who engaged in protected sex also reported engaging in unprotected anal sex.

Table 13: Descriptive statistics of sexual behaviors

Behaviors	Barebackers (n=94)		Non-barebackers (n=146)		Full sample (n=240)	
	n (%)	Mean (SD)	n (%)	Mean (SD)	n (%)	Mean (SD)
Being drunk on alcohol	26 (27.7)	1.39 (3.95)	21 (14.4)	.79 (2.81)	47 (19.6)	1.03 (3.31)
Being high on crystal methamphetamine	6 (6.4)	.52 (4.14)	4 (2.7)	.18 (1.68)	10 (4.2)	.31 (2.9)
Being high on other drugs	9 (9.6)	.16 (.63)	14 (9.6)	.55 (2.55)	23 (9.6)	.4 (2.03)
Unprotected sex with woman	17 (18.1)	1.18 (5.03)	33 (22.6)	1.8 (5.04)	50 (20.8)	1.80 (5.03)
Protected anal sex	52 (55.3)	3.47 (6.34)	72 (49.3)	2.71 (5.62)	124 (51.7)	3.01 (5.91)
UAI	85 (90.4)	5.50 (9.29)	4 (2.7)	.58 (4.82)	89 (37.1)	6.76 (7.31)
Meeting men online for offline sex	77 (81.9)	4.02 (7.68)	76 (52.0)	1.71 (2.99)	153 (63.8)	2.61 (5.44)
Attending bareback party	7 (7.5)	.09 (.32)	1 (.7)	.02 (.25)	8 (3.3)	.05 (.28)
Barebacking with HIV+/unknown partner	30 (31.9)	2.22 (8.38)	.	.	.	.
Barebacking with HIV-partner	78 (83.9)	4.24 (8.66)	.	.	.	.
Bareback partners	94 (100)	3.46 (8.03)	.	.	.	.

Less than half of the study participants (37.1%) reported engaging in UAI with a man in the past two months. Among these, the mean frequency of UAI was 6.76 (SD 7.31). Of the sample's 50 men (20.8%) reporting unprotected sex with a woman, 19% (n = 17) also reported UAI with a man and 95.5% of them also reported engaging in bareback sex (not tabled). More than half (63.8%) of the sample had found a sex partner online in the past two months (mean 2.61, SD 5.44), but only a small number of men (n = 8) had attended a bareback party (mean 2.0, range 1 - 3).

Non-barebackers (n = 146) typically reported less HIV risk behavior compared to barebackers. About a quarter of them (22.6%) reported unprotected sex with a woman, only 2.7% of non-barebackers reported UAI, and half of the men not reporting barebacking (49.3%) engaged in protected anal sex. About half of the men who reported no bareback sex (52%) had engaged in sex with men they originally met on the Internet. Among these, the mean number of online partners in the past two months was 1.71 (SD 2.99).

Among the 240 study participants, 39.2% of them reported engaging in bareback sex. Bareback sex was here defined as "intentional anal sex without a condom with a non-primary male partner." Seventeen barebackers (18.1%) reported unprotected sex with a woman. The majority of barebackers also reported protected (used condom) anal intercourse and unprotected anal intercourse, 55.3% and 90.4%, respectively. A large majority of barebackers (81.9%) had had sex with a man they originally met online. Among these, the mean number of online sex partners was 4.02 (SD 7.68). Seven men reporting bareback sex (7.5%) had attended a bareback party in the last two months. The mean number of bareback partners in the past two months was 3.46 (SD 8.03, range 1 – 75). Of the 94 barebackers, 7.4% reported positive serostatus and 82% reported negative serostatus (Table 14).

Table 14: Barebacking behavior

	Barebackers (n=94)		
Variables	HIV+ (n=7)	HIV- (n=77)	Unsure (n=10)
Barebacking with HIV+ partner or man whose HIV-status they didn't know	6 (85.7%)	17 (22%)	7 (70%)
Barebacking with HIV- partner	3 (42.8%)	67 (87%)	9 (90%)

The majority of men reporting bareback sex (84%) engaged in barebacking with an HIV-negative partner. Most barebackers (77.6%) reported engaging in bareback sex with a seroconcordant partner.

Univariate Analyses

Pearson's point-biserial correlation analysis was used to test the hypotheses that there was no relationship between the grouping variable (MSM who bareback and MSM who do not) and the variables AIDS health belief constructs (perceived seriousness, susceptibility, benefits, and barriers), self-efficacy for limiting HIV risk behavior, safer sex social norm

perception, sexual sensation seeking, UAI, meeting men online for offline sex, and substance use in anticipation of/during sex. Because multiple tests were conducted—13 in all including one multivariate analysis—and statistical significance assessed, a fixed alpha approach to hypothesis testing was favored. The probability for each test was adjusted with the Bonferroni method (Huberty & Olejnik, 2006), dividing the overall familywise alpha level, $\alpha = .05$, equally among the tests conducted.

Point biserial correlation was used to assess statistically significant relationship between the grouping variable and 12 continuous variables. The results of its application are presented in Table 15.

Table 15: Results of univariate hypotheses tests

Variables	r_{pb}	$_{adj}R^2$	p	d
Perceived seriousness of HIV	.154	0.02	.017*	.320
Perceived susceptibility of HIV	.050	0.002	.439	.102
Perceived benefits	-.148	0.022	.021*	-.323
Perceived barriers	-.202	0.037	.002**	-.415
Self-efficacy for limiting HIV risk behavior	-.272	0.07	.000**	-.567
Safer sex social norm perception	-.287	0.079	.000**	-.608
Sexual sensation seeking	.313	0.094	.000**	.677
UAI	.496	0.243	.000**	.665
Meeting men online for offline sex	.235	0.051	.000**	.474
Being drunk on alcohol	.154	0.019	.021*	.175
Being high on crystal methamphetamine	.075	0.001	.261	.081
Being high on other drugs	-.049	0.002	.460	-.108

* statistically significant at $\alpha < .05$
** statistically significant at $\alpha < .001$

H1: There is no Relationship between Barebacking and Health Belief Constructs

There was a statistically significant relationship between perceived seriousness of HIV and reporting barebacking (barebackers mean 16.48, SD 5.16; non-barebackers mean 14.80, SD 5.33), $r = .154$, $p = .017$, $d = .320$. This difference was in the opposite direction of

what was hypothesized: Barebackers reported a greater degree of perceived seriousness of HIV, which theoretically is associated with lower HIV risk behavior, than men not reporting bareback sex. A related construct, perceived susceptibility to HIV, was not statistically significant ($r = .050$, $p = .439$, $d = .102$).

As hypothesized, reporting bareback sex was significantly related to lower perceived benefits of HIV prevention methods, such as using a condom (barebackers mean 20.13, SD 3.93; non-barebackers mean 21.18, SD 3.06) $r = -.148$, $p = .021$, $d = -.323$. There was a statistically significant relationship between group membership and perceived barriers to engage in HIV prevention behaviors, $r = -.202$, $p = .002$, $d = -.415$. Barebackers reported higher degree of perceived barriers than non-barebackers (barebackers mean 15.84, SD 3.94; non-barebackers mean 17.38, SD 3.45 [the reader should remember this subscale was reverse coded]). About 4% of the variance in this variable is explained by group membership. These inferential results should be viewed with prudence, because the internal consistency results for the subscales Perceived Benefits and Perceived Barriers in this sample suggested the measures have low reliability.

H2: There is no Relationship between Barebacking and Self-efficacy for Limiting HIV Risk Behavior

Barebackers reported a statistically significant lower degree of self-efficacy for limiting HIV risk behavior (mean 30.61, SD 4.14, non-barebackers mean 32.79, SD 3.52), $r = -.272$, $p = < .001$, $d = -.567$. Group membership explained 7% of the variance in this variable.

H3: There is no Relationship between Barebacking and Safer Sex Social Norm Perception

Barebackers reported a lower degree of perceived safer sex social norms than men who did not report bareback sex (barebackers mean 24.33, SD 6.06; non-barebackers mean 27.93, SD 5.77). Group membership was significantly related to safer sex social norm perceptions, r = -.287, p = < .001, d = -.608, and group membership explained 8% of the variance in this variable.

H4: There is no Relationship between Barebacking and Sexual Sensation Seeking

Also the construct sexual sensation seeking was significantly related to the grouping variable (barebackers mean 26.37, SD 4.29; non-barebackers mean 23.39, SD 4.51), r = .313, p = < .001, d = .677. Group membership explained 9.4% of the variance in the variable.

H5: There is no Relationship between Barebacking and UAI

Barebackers reported more frequently engaging in UAI as compared to men who did not report bareback sex in the past two months (barebackers mean 5.50, SD 9.29; non-barebackers mean .58, SD 4.82), r = . 496, p = < .001, d = .665. This behavior accounted for 24.3% of the variance in the variable.

H6: There is no Relationship between Barebacking and Meeting Men Online for Offline Sex

Compared to non-barebackers, barebackers reported more frequently meeting men online for offline sex (barebackers mean 4.02, SD 7.68; non-barebackers mean 1.71, SD 2.99), r = .235, p = < .001, d = .474. Group membership explained 5.1% of the variance in the variable.

H7: There is no Relationship between Barebacking and Substance Use

Being drunk on alcohol in anticipation of/during sex was significantly related to barebacking, $r = .154$, $p = .021$, $d = .175$. Barebackers, more so than non-barebackers, reported being drunk on alcohol in anticipation of or during sex (barebackers mean 1.39, SD 3.95; non-barebackers mean .79, SD 2.81). The other two tests of substance use in sexual contexts were not significantly related to the grouping variable ($p = .261$, $p = .460$), thus the researcher failed to reject these null hypotheses.

Summary

In sum, nine of the hypotheses (75%) were rejected at familywise $\alpha < .05$. There was a statistically significant relationship between the grouping variable and the criterion variables at $\alpha < .05$ in the expected direction on the following variables: perceived barriers to engage in HIV prevention behaviors, perceived benefits of HIV prevention methods, self-efficacy for limiting HIV risk behavior, safer sex social norm perception, sexual sensation seeking, UAI, meeting men online for offline sex, and use of alcohol in anticipation of/during sex. One hypothesis, perceived seriousness of HIV, was statistically significant at this level in the opposite direction of what was expected. Three of the hypotheses (25%) were not statistically significant. The null hypotheses were not rejected for the variables perceived susceptibility for HIV, use of crystal methamphetamine and other illegal drugs during or in anticipation of sex.

Multivariate Analysis

As evident from Table 16, presented below, there was some difference in the group centroids and standard deviations for the variables used in the multivariate analysis.

Table 16: Descriptives of variables included in multivariate analysis

Variables	Barebackers (n=89)		Non-Barebackers (n=138)	
	Mean	SD	Mean	SD
Perceived seriousness of HIV	16.48	5.16	14.8	5.33
Perceived susceptibility to HIV	14.49	4.36	14.05	4.27
Perceived benefits	20.13	3.93	21.18	2.06
Perceived barriers	15.84	3.94	17.38	3.45
Self-efficacy for limiting HIV risk behavior	30.61	4.14	32.79	3.52
Safer sex social norm perception	24.33	6.06	27.93	5.77
Sexual sensation seeking	26.37	4.29	23.39	4.51
UAI	4.54	6.16	0.04	0.31
Meeting men online for offline sex	3.18	3.76	1.64	2.63
Being drunk on alcohol	1.11	2.65	0.47	1.49
Being high on crystal methamphetamine	0.10	0.48	0.04	0.29
Being high on other drugs	0.16	0.64	0.24	0.91

All outliers (n = 13) were removed, thus the variables were normally distributed. Except for the variables from the AHBS, which—as mentioned earlier—evidenced low reliability, the error correlation matrix revealed a reasonable correlation between all the pairs of outcome variables and it could be assumed that the dependent measures were correlated. Multivariate hypotheses further assume equal population covariance matrices. Log determinant for barebackers = 15.46, log determinant for non-barebackers = 23.95, and log determinant for the pooled covariance matrix = 22.36. The Box M test result revealed that there was some evidence to indicate that the matrices differed, Chi-squared (78) = 757.54, p = .000. The test is sensitive to non-normality. Further, MANOVA is robust in the face of most violations of this assumption when the sample size is large and groups approximately equal. Therefore, unequal variance covariance matrices typically will not affect statistical validity of the analysis.

The result of the omnibus hypothesis test of the equality of the two population mean centroids corroborated the univariate results and suggested sufficient evidence that the centroids differ: Wilks lambda = .666, F (12, 214) = 8.93, p = .000. Also, Bartlett-Pillais and

Hotelling-Lawley multivariate test criterion indicated that the centroids differ. The effect size was .334 (Serlin adjustment = .297), which is quite satisfactory. Since two groups were compared, there is only one dimension. On the other hand, the structure r's (Table 17) showed that the variable UAI in particular explained separation between the groups, followed by sexual sensation seeking, self-efficacy for limiting HIV risk behavior, and safer sex social norm perception. Also the variable meeting male sex partners on the Internet helped explain separation between men who bareback and men who do not.

Table 17: Structure r's

Variables	Structure r's
UAI	-0.808
Sexual sensation seeking	-0.473
Self-efficacy for limiting HIV risk behavior	0.442
Safer sex social norm perception	0.437
Meeting men online for offline sex	-0.342
Perceived barriers	0.314
Perceived seriousness of HIV	-0.234
Perceived benefits	0.231
Being drunk on alcohol in anticipation of/during sex	-0.220
Being high on crystal methamphetamine in anticipation of/during sex	-0.106
Perceived susceptibility of HIV	-0.086
Being high on other drugs in anticipation of /during sex	0.070

These results align with the univariate results. They show that among the variables included in the analysis, the variable UAI has the highest adjusted coefficient of multiple determination and explains most of the variance in barebacking behavior followed by sexual sensation seeking, self-efficacy for limiting HIV risk behavior, and safer sex social norm perception. These four variables can be said to represent a "sex-centric" behavior construct; a confluence of internal and external, sexually-related motivations driving the sexual behavior.

Chapter Summary

The final response set with 240 participants consisted of 40% barebackers and 60% non-barebackers. Most of the men were in their mid 40s, Caucasian, educated, HIV-negative, and described themselves as gay or bisexual. The majority of the men were sexually active, a large proportion of them engaged in unprotected sex, and most of the men had met a sexual partner online in the past two months.

There was a statistically significant relationship between the grouping variable and the criterion variables at $\alpha < .05$ in the expected direction on eight of the variables:

- Perceived barriers
- Perceived benefits
- Self-efficacy for limiting HIV risk behavior
- Safer sex social norm perception
- Sexual sensation seeking
- Being drunk on alcohol in anticipation of or during sex
- UAI
- Meeting men online for offline sex.

One variable, perceived seriousness of HIV, was significant at $\alpha < .05$ in the opposite direction of what was hypothesized, and three hypotheses were not significant. These univariate findings were mirrored by the multivariate analysis. The top four variables, with structure r's ranging from .437 to .808, converged to create a construct that can be labeled "sex-centric."

CHAPTER 5

DISCUSSION AND RECOMMENDATIONS

Barebacking is a complex and commonly practiced sexual risk behavior that may lead to HIV transmission among MSM. This study was undertaken to identify psychosocial and behavioral factors associated with barebacking. Included in the study was an attempt to describe the sociodemographic characteristics of men who self-report engaging in barebacking and to provide an indicator of the extent of barebacking among MSM Internet users. To this end, during spring 2006, MSM were recruited from general gay/bisexual websites through passive postings and from websites with personal advertisements through e-mail. Eligible study participants were invited to complete a web-survey. The participants in the study were 240 MSM, of whom 40% engaged in bareback sex. Univariate and multivariate analyses results indicated nine of the null hypotheses could be rejected. This chapter discusses the major findings, suggests study limitations, and provides directions for further research.

Findings and Conclusions

This section includes a discussion of the study's major findings related to AIDS health belief constructs, self-efficacy for safer sex, perceptions of safer sex social norms, sexual sensation seeking, unprotected anal sex, meeting men online for offline sex, and finally, substance use in sexual contexts.

AIDS Health Belief Constructs

HIV treatments such as HAART have improved not only the longevity of HIV-positive individuals by slowing the progression of HIV and reducing HIV-related deaths (CDC, 2001), but their quality of life as well. These advances may have shaped MSM's perception of HIV as a manageable disease. Early qualitative research on barebacking indicated that men who engage in bareback sex underestimate the seriousness of AIDS, yet consider themselves susceptible to the HIV virus, and explain that there are benefits to barebacking. To shed light on these AIDS health belief perceptions, this study used the AHBS, which had not been used with an MSM population before.

As hypothesized, compared to men not reporting bareback sex, barebackers scored significantly higher on perceived barriers to limit HIV risk behaviors and perceived there to be fewer benefits to limit HIV risk behaviors. Given the low inter-item homogeneity of these subscales, $\alpha = .36$ and $\alpha = .47$, respectively, these statistically significant results are surprising, but corroborate earlier qualitative findings. Concomitantly, barebackers reported a statistically significant higher degree of perceived seriousness of HIV compared to non-barebackers. These conflicting perceptions of HIV/AIDS and HIV risk behaviors are suggestive of a cognitive dissonance in which barebackers realize the seriousness of the disease, yet place such a high value on bareback sex that barriers to limit risk may seem insurmountable and benefits to avoid the risk insignificant.

These conflicting findings may partly be the result of an instrument with low reliability on two subscales. The subscales Perceived Barriers and Perceived Benefits evidenced low inter-item homogeneity, therefore conclusions drawn regarding the men's beliefs about HIV/AIDS should consider this limiting factor. Nevertheless, because literature

now suggests men who practice bareback sex may hold different perceptions about HIV/AIDS compared to other MSM, it would be important to continue to research the topic. Unfortunately, as of today, no other scale appears to reliably measure HIV/AIDS beliefs among MSM. This is an area for future measurement research.

Self-efficacy for Limiting HIV Risk Behavior

With regard to self-efficacy for limiting HIV risk behavior, barebackers reported significantly lower self-efficacy compared to non-barebackers. According to the construct of self-efficacy, which is a person's confidence in their ability to successfully execute a behavior (Janz et al., 2002), if an individual does not believe that safe sex will prevent HIV there is little incentive for him to put forth extra effort. The results from this study show that self-efficacy may hold significant power explaining why some MSM practice barebacking and point to an important belief structure that is amenable to change. The fact that barebackers evidence low self-efficacy for limiting safer sex also aligns with their lack of perceptions of safer sex social norms. Given the influence of unsafe-sex norms in their social network, barebackers may have internalized a belief that unprotected sex is inevitable and even developed a sense of collective low self-efficacy for safer sex.

Safer Sex Social Norm Perception

Clarification of whether a norm of unsafe sexual behavior in fact exists among MSM in this study was assessed through a safer sex social norm perception scale. As mentioned earlier, the barebacking behavior seems to be based on cultural/community norms that at least mediate men's individual health decisions. This study did in fact find a statistically significant relationship between barebacking and perceptions of safer sex social norms.

Barebackers reported a significantly lower perception of safer sex norms in their community compared to non-barebackers, suggesting the presence of a social structure that supports men interested in bareback sex. Given barebackers' lack of a perception of safer sex norms, some MSM may view the behavior as more acceptable because they know their friends are doing it and some MSM communities may have developed a "community of practice" supportive of barebacking. In effect then, whether a real behavioral change has occurred or not, there is a perception that community norms are changing, and once perceptions change, real behavioral consequences may follow.

According to the Social Network and Social Support Theory, through the interpersonal exchanges within a social network individuals are supported and influenced in their health behaviors. Depending on social norms and affirmation/disconfirmation provided by one's social network, support may increase or decrease unsafe behaviors (Heaney & Israel, 2002). It is likely that the social boundaries of sexual risk taking among MSM have been pushed further and that these broader community-level changes influence MSM's perceptions and subsequently shape their behaviors toward more sexual risk taking. As a result, in some MSM communities, social support that affirms and creates a normalization of bareback sex may in fact exist. Morin et al., (2003), conjecture that "the normalization of the term 'barebacking,' combined with media attention and community-level discussion about it, have contributed to the perception that the behavior is widespread in the community, creating a social pressure to conform" (p. 357). Conceivably, in this social climate of bareback normalcy, a minority of MSM may feel not only peer pressure to bareback, but also learn sexual practices in a socio-cultural context accepting of unsafe sex. For MSM who live in a

social climate in which barebacking form a community of practice, social learning likely plays a role in how they come to approach sexual health.

In sum, the findings that barebackers do not perceive a norm of safer sex in their community may point to why some MSM are now more willing to practice risky sexual behaviors such as barebacking than they were in the past.

Sexual Sensation Seeking

Sexual sensation seeking was significantly associated with barebacking, thus corroborating earlier findings that suggest a link between risk-taking and barebacking (Halkitis & Parsons, 2003; Halkitis, Wilton, Wolitski et al., 2005; Mansergh et al., 2002). Zuckerman (1994) defines sensation seeking as: "the seeking of varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experiences" (p. 27). As an example, MSM who are high sexual sensation-seekers may be more likely to eschew condoms during anal sex because they value the pleasure of skin-on-skin contact. Results from two studies in particular, Pinkerton and Abramson (1996) and Bancroft et al. (2003), suggest that sensation-seeking affects sexual risk-taking in two main ways: by increasing the preparedness to take risks in order to achieve the desired immediate benefits, and by influencing how the individual appraises the risk: They choose to accept the risks.

The findings in this study alone give credence to the fact that barebackers are sexual sensation-seekers who show a greater willingness to accept or even seek out risk in sexual encounters. Intense sexual experiences and pleasure-of-the-moment considerations appear to be pertinent factors involved in barebacking, more so than consideration of some future infection event. Given this is the third study that identifies a link between barebacking and

sexual risk-attraction (sexual adventurism [Halkitis & Parsons, 2003], sexual compulsivity [Halkitis, Wilton, Wolitski et al., 2005], and here sexual sensation seeking), and its theoretical propinquity to sexual addiction, it seems likely some MSM may struggle to control their sexual behavior. Conceivably, although most barebackers first and foremost are in pursuit of sexual pleasure, they may find bareback sex thrilling, partly because it is "forbidden." Interestingly, in the present study, they did not uniformly indicate risk attraction; barebackers used about the same amount of substances in sexual contexts as non-barebackers, suggesting men who bareback discriminate in their risk-taking.

Unprotected Anal Intercourse

Consistent with the results of other empirical studies (Halkitis, Wilton, Wolitski et al., 2005; Mansergh et al., 2002), this investigation shows that men reporting bareback sex are significantly more likely to practice UAI. In fact, while only 2.7% of non-barebackers reported UAI, more than 90% of men reporting bareback sex also reported engaging in UAI. This suggests, first, that men not reporting bareback sex typically refrain from any unprotected anal intercourse, thus limiting the risk of HIV transmission. Second, it appears plausible that a great proportion of unprotected anal sex among MSM, at least outside monogamous relationships, can be categorized as barebacking. Third, current self-professed barebackers are largely the same men who engage in UAI. Accordingly, the presence of two separate groups, one group of men practicing "unintentional" anal sex and a separate group engaging in "intentional" bareback sex appears unlikely. The fact that risk factors associated with barebacking are also related to UAI—alcohol use, sensation seeking, lower perceived social and peer norms—lends credence to this argument.

On the other hand, provided a strict definition of barebacking, the results in this study indicate that respondents may conceptualize UAI and barebacking differently. Yet, results of inferential tests, with $r_{pb} = .496$, suggest there is a lack of discriminant validity between the two constructs as behaviors. This lends some support to recent research offering evidence that MSM largely define barebacking as "anal sex without a condom" (Halkitis, Wilton & Galatowitsch, 2005, p. 40; Wilton et al., 2005). MSM may use the term referring to both sexual situations in which there is a clear intent to practice condomless anal sex and in which unprotected anal sex occur as a result of poor planning or relapse. The fact is, for many MSM the term bareback sex may simply be a new vernacular for an old behavior.

It has been suggested that researchers' definitions of barebacking and insistence on differentiating it from UAI were motivated by a desire to separate a sexual behavior that promotes risk (barebacking) from a sexual act that reduces risk—UAI between seronegative partners in a monogamous relationship (Wolitski, 2005). It is questionable whether such a distinction is achievable in most sexual encounters, substantiated by most MSM, easily communicated to the health community, and more importantly, useful for HIV prevention purposes. For the purpose of assessing public health risk, deliberate (barebacking) versus unplanned unprotected anal sex do not vary in their health outcomes. Regardless of how barebacking is defined, from a transmission perspective, it refers to a form of unprotected anal sex among MSM which, like UAI, may transmit communicable diseases such as HIV. Therefore, although barebacking may represent a different type of sexual experience than other sexual risk behaviors, as suggested by Halkitis, Wilton, and Galatowitsch (2005), the transmission risk and factors surrounding the behavior appear similar to UAI. In regard to HIV prevention for MSM, then, is the distinction between barebacking as a behavior and

UAI significant? Most likely not, unless barebacking behavior is understood in relation to a barebacking identity which is separate from the behavior.

Some researchers (Halkitis, Wilton, Wolitski et al., 2005) suggest there is a critical distinction between barebacking as a behavior and as an identity, reasoning that a man who practices unprotected sex may have a very different psychological profile and motivations for unsafe sex compared to a man who also thinks of himself as a barebacker. For example, Shidlo, Yi, and Dalit (2005) hypothesize that a barebacker experiences bareback sex as ego-syntonic, that is, consistent with his sense of self: "I have bareback sex because this is who I am" (p. 120). It is possible that the term has come to be a social and sexual identity for men who prefer unprotected sex with primary and casual partners even in HIV risk contexts.

Although early research suggested there was relative congruity between MSM and health professionals in their understanding of the term barebacking, the term may have developed too fast at the community level for researchers to keep abreast, undermining researchers' understanding of the behavior and possibly the validity of extant empirical research about barebacking. The emergence of the term barebacking in the mid 1990s is perhaps a marker of a cultural shift regarding not only norms for safer sexual behaviors, but also the changing nature of sexual risk-taking among MSM, in which a rejection of condoms became impenitent within MSM communities. Barebacking as a term may be a linguistic manifestation of a sexual status quo in transition away from safer sex. In extension, the emergence of this neologism may have given credence to, validated, and perhaps assisted with community building and solidarity among MSM who deliberately rejected the idea of safer sex.

Meeting Men Online for Offline Sex

The availability of the Internet has an enormous impact on how individuals interact with one another; even the process of finding romantic and sexual partners is done online. Previous research shows that the majority of MSM have met sexual partners via the Internet (Benotsch et al., 2002; Bull et al., 2004). Findings in the present study extend health professionals' knowledge about the impact of the Internet by showing a statistically significant relationship between barebacking and meeting men online for offline sex. As evidenced by the proliferation of websites designed explicitly for MSM who are looking for sex, it is clear the advent of the Internet has brought new opportunities for meeting sex partners and as such, the Internet has facilitated access to likeminded men seeking bareback sex. Not only is the Internet instrumental in bringing bareback partners together, because this private behavior has become more public, it may also, as suggested by Wolitski (2005), have increased awareness of bareback behavior among some MSM that may reduce safer sex norms.

Social groups online form patterns of social relationships for barebackers that are not provided by traditional social units, such as work groups and family. On the one hand, the Internet therefore helps reduce isolation and loneliness, which increases MSM's overall quality of life. On the other hand, the Internet constitutes a social structure in which there is limited opposition to barebacking. In fact, some websites affirm and promote bareback sex, creating a climate characterized by a lack of sexual inhibition and a sense of community for men interested in barebacking. For example, on the homepage of *Barebackcity.com* it says: "No excuses! No justification! …We are here for those who want to live this lifestyle, and don't feel they fit into the 'safe-sex world'" (Shidlo et al., 2005, p. 120). Websites such as

Barebackcity.com make it easy to locate sex partners and may particularly appeal to MSM who suffer from compulsive sexual behaviors. As a social structure, the Internet therefore helps sustain barebacking as a cultural phenomenon and explains why some men engage in bareback sex. In this regard, the present research concurs with Halkitis and colleagues (2003). Together with offline social norms, the Internet's online social norm of unsafe sex helps explain why some MSM develop along trajectories that lead to barebacking.

Substance Use in Anticipation of or During Sex

For more than two decades, use of substances has been a consistent predictor of unsafe sexual behavior among MSM (Ekstrand et al., 1999; Kalichman et al., 1997; Koblin et al., 2003; Siegeal et al., 1989; Stall et al., 1986; Strathdee et al., 1998). Two previous studies about barebacking confirmed that men who report bareback sex or self-identify as a barebacker are more likely, compared to non-barebackers, to abuse crystal methamphetamine and other drugs (Halkitis, Wilton, Wolitski et al., 2005; Mansergh et al., 2002). Neither study detected differences between the groups in use of alcohol, however. In the present study, the statistically significant relationship between bareback sex and being drunk on alcohol in anticipation of or during sex lends credence to the fact that alcohol is an independent risk factor for barebacking among MSM, similar to risk of UAI among MSM. Use of other substances was very low in this sample and the relationship non-significant. This finding reinforces the idea that alcohol abuse among MSM reveals an important intervention potential.

Summary

Statistically significant results from this study show that a complex combination of factors underlies barebacking. Four psychosocial characteristics of MSM—low perception of benefits to avoid HIV risk behavior, high perception of barriers to avoid HIV risk, low self-efficacy for limiting HIV risk behavior, and high sexual sensation seeking—are related to barebacking behavior. Related, and consistent with previous research, men who engage in bareback sex also engage in other risk behaviors, specifically, men who report barebacking also practice UAI, use substances in sexual contexts, and use the Internet to meet sex partners. Additionally, cultural/sociological elements that exist outside of the individual influence MSM's barebacking behavior. Men who bareback report a low perception of safer sex social norms, which likely stem from the technological influence of the Internet as well as community norms that increasingly endorse unsafe sex.

In combination, these psychosocial, experiential, and cultural elements likely affect the way MSM negotiate safety before and during sex with their partner. From a public health perspective, bareback sex among MSM is problematic because of the HIV risk inherent in the behavior. The findings in this study assist health professionals' understanding of the underlying processes and factors influencing behaviors that are amenable to change. Strategies to affect these changes are discussed in the recommendations section.

Description of Men Reporting Bareback Sex

The average age of men reporting bareback sex in this sample was 43.44 years (SD = 12.32), which was about three years younger than men not reporting bareback sex (mean 46.66, SD 12.99). This statistic is neither statistically nor practically significant, but supports findings by Halkitis, Wilton, Wolitski and colleagues (2005), who found that men who said

they thought of themselves as a barebacker were younger than men who did not (the average age of barebackers was 40.24 years). It is generally acknowledged that risk taking in any form is often more prevalent among younger individuals, but the average age of these samples were 40 and 43 years, which is a mature age. From a prevention perspective, it does not appear that that age is a meaningful factor associated with barebacking.

Barebackers hold a lower educational level compared to non-barebackers. Among men in this sample, 13.8% of barebackers reported having a high-school degree or lower educational level. This is twice as many as non-barebackers. Similarly, a smaller percent of barebackers compared to men not engaging in bareback sex held a graduate degree. This finding is consistent with sociodemographic factors associated with UAI. With regard to U.S. region, size of town in which they live, and racial/ethnic background, barebackers transgress boundaries. Barebackers in this sample lived all over the country and in towns of all sizes; from towns with less than 5,000 people to cities of more than a million people. Although the majority of MSM in the sample was Caucasian, all racial and ethnic backgrounds were represented. All but one barebacker identified as gay or bisexual.

In an effort to validate whether the majority of barebackers are in fact HIV-positive and engage in serosorting, as research indicates, this study asked about HIV-status of both the respondent and his sexual partners. In contrast to previous studies, the majority of men in this sample, including barebackers, reported negative HIV-status; only 7.5% of barebackers said they were HIV-positive, however, 10.6% was unsure of their serostatus. Most barebackers reported engaging in bareback sex with a seroconcordant partner. As a result, the risk of HIV transmission is limited. This statistic corroborates results from earlier research (Halkitis et al., 2003; Mansergh et al., 2002), suggesting serosorting is widely practiced.

Nevertheless, the possibility of both HIV re-infection and seroconversion existed among barebackers in this sample: Almost 90% of HIV-positive barebackers reported bareback sex with seroconcordant men and a quarter of barebackers who were HIV-negative or unsure of their HIV-status reported that their bareback partners were HIV-positive/unknown partners.

Overall, most bareback sex, among both HIV-positive and HIV-negative barebackers was seroconcordant sex, but this was not a consistent behavior. Furthermore, 90% of barebackers reported also engaging in unprotected anal sex and 18% self-reported unprotected sex with a woman in the past two months. This sample therefore consisted of about 10% MSM/W, and as also results by Bull et al. (2004) suggest, a "cross-over" HIV risk between MSM and the larger community exists.

In an attempt to corroborate previous findings and determine the degree to which attending bareback parties is a frequent behavior among MSM, the study included a question about attendance at bareback parties. In this sample only seven barebackers (7.5%) reported attending such a party. This number is much lower than that reported by Halkitis and colleagues (2003), but the earlier sample consisted of gay and bisexual men from New York City. Overall, attending bareback parties does not seem like a common behavior among MSM Internet users. Neither does drug use in anticipation of or during sex, other than alcohol, which about a third of barebackers reported. Lastly, 82% of barebackers reported meeting men online for offline sex. As mentioned earlier, the Internet has made locating likeminded individuals easy and it appears the vast majority of barebackers use this technological medium to find sex partners.

In sum, barebackers in this study were in their early 40s, Caucasian, and held a lower educational level compared to non-barebackers. Among barebackers in this sample,

perceptions of negotiated safety through serosorting seemed a preferred method of risk reduction. According to Suarez and Miller (2001), the intent of serosorting appears to be harm reduction, in other words, minimization of HIV transmission risk. Despite this possible intent, among the 30 barebackers who engaged in barebacking with an HIV-positive partner, 80% were potentially serodisconcordant (HIV-negative or unsure of their HIV-status), and therefore at risk for seroconversion. Furthermore, the large majority acknowledged meeting men online for offline sex. On the other hand, few men reported attending a bareback party or combining illegal drugs with sex, thus some previously identified risk markers for barebacking were absent in this study.

Extent of Barebacking among MSM Internet Users

Prevalence of barebacking among this Internet sample of men who have sex with men was established in an effort to gain a better sense of the degree to which the phenomenon is engaged in among various samples of MSM. The results show that 39.2% of men in this geographically diverse sample practices barebacking. The lack of scientific inquiry into barebacking as an HIV risk behavior makes it difficult to draw parallels to other investigations.

Nevertheless, the proportion of MSM reporting bareback sex in this sample is relatively consistent with findings from New York City (Halkitis et al., 2003; Halkitis, Wilton & Galatowitsch, 2005) and San Francisco (Halkitis, Wilton, Wolitski et al., 2005). On the other hand, it is much lower than other findings based on MSM Internet users from across the United States. Halkitis and Parsons (2003) determined that 84% of their HIV-positive Internet sample engaged in bareback sex. Because the samples are different with respect to serostatus—HIV-positive MSM typically report higher rates of barebacking—and the

previous study was limited to a small sample of gay men who seek sex partners on the Internet, this is not too surprising. Yet, considering that MSM who use the Internet typically report a greater sexual risk profile (Benotsch et al., 2002; Elford et al., 2001; McFarlane et al., 2000), the 40% prevalence rate in the current sample may be judged lower than expected.

The data for the previous six studies in which prevalence rates were estimated was collected between 2000 and 2004. The current data, collected in the spring of 2006, does not suggest the rate of barebacking is increasing. Neither does it show any signs of barebacking decreasing in popularity as a sexual behavior among MSM.

Among this sample of adult MSM Internet users, less than half of them engaged in barebacking. Although this prevalence rate is relatively similar to previous findings, the extent of barebacking among MSM continues to be an ongoing area of speculation. More research, with larger and more diverse samples, should be carried out in an effort to understand the degree to which MSM risk HIV infection through the practice of bareback sex. The fact that participants for this study were recruited through the Internet may have biased the sample. Internet as a research tool, for the purposes of this study, is discussed in a later section.

Research Limitations

In light of the above discussion, it is important to consider the limitations of this study. Because of the "hidden" nature of the MSM population in general, it is impossible to draw a probability sample of MSM Internet users, the study's target population. An attempt was made to increase representativeness by defining the target population as a subset of web-users based on specific characteristics. For this study, the researcher mainly sampled from personal advertisements and general U.S.-based websites catering to MSM. Thus, the sample

was one of convenience and cannot be considered representative of all MSM Internet users. Furthermore, this study, as most other studies investigating barebacking, included predominantly Caucasian, gay and bisexual males who were well educated. Consequently, generalizability in this study is limited to educated, Caucasian MSM, who use personals and general gay/bisexual websites to meet other men, and who volunteered to participate in an online survey. It should be mentioned that studies show that MSM Internet respondents and conventional sampling respondents are largely similar (Rhodes, DiClemente, Cecil, Hergenrather, & Yee, 2002; Ross, Tikkanen, & Månsson, 2000). Furthermore, it is important to note that the nature of the research topic and the population necessitates relying on convenience samples. Nevertheless, the study should be replicated with other samples of MSM and more exploration is needed into the various factors that underlie barebacking.

As in most HIV-related research, data-collection methods in this study relied on self-reports of behaviors, which are susceptible to response biases. In this study, 240 surveys were collected through two different sampling strategies. Nonetheless, although varied data sources help check consistency of findings, participants' reports of privately occurring activities may be susceptible to recall inaccuracy. The lack of in-person interaction during the actual data collection means that even demographic information cannot be validated. Related, that the AHBS had not been tested on an MSM population is a limitation. The answers also depend on the participants' honesty and willingness to share private information in a confidential online survey. The researcher acknowledges the uncertainty of reliability and validity of such self-report answers. Studies suggest, however, that respondents provide more honest responses and express increased self-disclosure in online studies as compared to offline surveys (Joinson, 1999; Martin & Nagao, 1989; Servan-Schreiber & Biknik, 1989).

Another Internet-related limitation is that the actual data collection environment can be neither controlled nor monitored by the researcher (Daley et al., 2003). There may therefore have been serious co-occurring interferences to testing, such as influences from friends or participants being tired, intoxicated, etc. These are factors that are beyond the control of the researcher. The problem is that the study was not completed in a controlled environment, which threatens the validity of the data. To counter this threat, the study instructions followed Andrew and colleagues' (2003) guidelines and encouraged the participants to complete the survey in a private location without assistance from anyone. Furthermore, according to Mustanski (2001), these problems, and therefore assurance of collection of internally valid data, are equally problematic in traditional data collection from human subjects.

The study's cross-sectional design prohibits causal conclusions. It would be wrong to suggest that a research participant's perception of safer sex social norms or self-efficacy was caused by barebacking. All that can be inferred from the findings in this study is that a relationship does exist between certain psychosocial, behavioral, and cultural variables and the likelihood that an MSM will engage in bareback sex. In an effort to minimize the number of questions asked, the survey did not ask whether the unsafe sex was insertive or receptive. This distinction is important with regard to HIV transmission risk and should be included in future studies. Lastly, the reader should recognize that the researcher, as a product of history and society, has biases and assumptions that enter the discussion. In particular, the researcher takes a holistic approach to health, which includes responsible sexual practices as part of a healthy lifestyle.

Despite its limitations, this research offers a preliminary understanding regarding the phenomenon of barebacking. This study, along with the few earlier empirical investigations of barebacking, provide a starting point for further exploration of the psychosocial, behavioral, and cultural factors surrounding barebacking, but may not be representative of beliefs and behaviors of MSM Internet users in general.

Recommendations

This web-based study of barebacking among MSM Internet users represents an attempt to explore the phenomenon of an understudied and largely ignored HIV risk behavior among MSM. Intervention programs and further research in the area of barebacking among MSM are needed. Based on the findings in the present study, some recommendations are made.

Future Application

Findings from the current study can be used to inform HIV prevention planning for MSM, specifically men who bareback. Knowledge about the target audience, specifically which factors influence their HIV risk behavior, can assist prevention educators in developing relevant and effective programs that are more likely to be successful.

Targeted Interventions

Although barebacking is a sexual behavior that cuts across demographics and serostatus, results from this study suggest that particularly men without a graduate degree should be targeted. Further, program messages should perhaps particularly appeal to HIV-positive men since they make up the majority of barebackers. It has been suggested that HIV-

positive MSM make up a particularly promising ally in efforts to reduce HIV transmission among MSM (Wolitski et al., 2003).

Social Norming

Factors and convictions that influence men's self-care behaviors are complex and situational, but cultural elements, experiential involvement, and psychosocial characteristics appear important. First, to counter the normalizing of barebacking, it seems essential to encourage social norms for safer sex and collective responsibilities to prevent HIV transmission. The relationship between barebacking and a low perception of safer sex social norms suggests the presence of a social structure that supports men interested in bareback sex. This social structure may also have strengthened men's perception that HIV is difficult to avoid for men having sex with men. The possibility of emphasizing personal and social responsibilities as well as calling on the MSM community to be sensitive to the financial, social, and psychological burden of HIV/AIDS has been expressed by MSM (Carballo-Diéguez, 2001) and may be a profitable avenue for prevention. Barebackers are part of a larger MSM community and their behavior, it could be argued, is an affront to same-sex-attracted men. Second, similarly to programs in the 1980s, messages could work to enhance MSM's sense of community and community empowerment with the goal of creating collectives in which barebacking is socially unacceptable.

For norms to shift, repetition is key. Thus, people need to be constantly reminded that safe sex is the norm and that wearing a condom with casual sex partners is the expectation. Further, positive reinforcement is crucial to support safer sex norms and limit new infections; consequently, absolutist prevention messages must be avoided. Rather, the message must be

that having sex is a life-affirming, healthy behavior, and educated and informed sex need not be something to fear when sexual behavior is practiced responsibly.

Interventions with a social norm anchor should perhaps particularly appeal to men's sense of responsibility for decreasing transmission rates. According to Halkitis, Wilton, Wolitski and colleagues (2005), self-perceived responsibility for safer sex is lower among men who identify as barebackers than non-barebackers. Such prevention messages must carefully profile the target audience and also balance protection of the public's health and respect for individuals' right to make choices regarding their health. A commitment to community-driven health promotion may go a long way to achieve this balance.

Internet

Now that the role of the Internet in sexual risk-taking is becoming clear—meeting men online for offline sex is related to barebacking—and the Internet is a venue in which MSM are comfortable operating, online health promotion constitutes a promising venue that may reach men otherwise inaccessible to traditional prevention efforts. As suggested by researchers (Bull, McFarlane, & King, 2001; Kalichman, Weinhardt, Benotsch, & Cherry, 2002), the Internet can be used to provide prevention information, referrals to services, and interactive interventions in a timely and cost-effective manner. Furthermore, specific subsets of MSM, such as barebackers, can be targeted with tailored messages by placing information on websites serving specific men (Wolitski, 2005). More importantly, its acceptability among MSM appears promising and preliminary online intervention studies indicate outcome success (Bolding, Davis, Sherr, Hart, & Elford, 2004; Rhodes, 2004). Apart from the Internet scene, other places where HIV transmission moves efficiently must be identified.

Interventions can include modifying the environment in which higher risk activity is taking place and informing men of the risk level of their own environments.

Negotiated Safety

Unprotected anal sex and barebacking are clearly related behaviors and should be addressed jointly as sexual risk behaviors that may transmit the HIV virus. One prevention alternative that meets this goal is negotiated safety, i.e., there exists an agreement between two men in a monogamous relationship to stop using condoms for anal sex under the explicit understanding that they are both HIV-negative (Kippax, Crawford, Davis, Rodden, & Dowsett, 1993). Blechner (2002) similarly proposes that HIV prevention messages emphasize that monogamous, committed, sexual relationships without constraints of safer sex might be a possibility for gay men. Such messages may also help increase men's sense of self-efficacy for limiting HIV risk behaviors, lower their perception of barriers to avoid HIV risk behavior, and strengthen their perceptions of benefits of prevention methods. These beliefs should be fostered by demonstrating the efficacy of monogamy, condom use, and HIV testing. Alternatives for less risky ways to sexual fulfillment and satisfaction may in fact be well accepted in the MSM community. Research indicates that rectal microbicides for example may have high acceptability among MSM (Carballo-Diéguez et al., 2000; Mansergh, Marks, Rader, Colfax, & Buchbinder, 2003). Product characteristics such as high effectiveness in preventing HIV/STIs, "does not reduce physical pleasure," and "does not break the mood" were rated highest among men who had negative attitudes about using condoms (Rader et al., 2001). For these purposes, more focused and unique programmatic approaches are applicable and should recommend healthy sex lives to maintain overall wellness.

Alternative Intervention Approaches

The fact that some barebackers are motivated by sexual sensation seeking and are intoxicated in sexual contexts poses unique intervention challenges. One possible prevention strategy is that of harm reduction; research already suggests serosorting is used for this purpose among barebackers. As explained by Suarez and Miller (2001), harm reduction involves alternative risk reduction options that may offer perfunctory, but viable HIV precautionary approaches, such as early withdrawal and sexual positioning.

Another possible prevention strategy for these risk factors is motivational interviewing (MI). In Parsons' (2005) view, this harm reduction approach, which is a method for enhancing intrinsic motivation to change by exploring and resolving ambivalence toward a behavior, could prove an effective means to increase a barebacker's motivation for change by providing a non-judgmental atmosphere for men who feel ambivalent about the pleasure experienced in sexual practices and the risk of HIV infection. Motivational interviewing may also be a promising strategy for influencing men's beliefs about benefits of prevention methods and barriers to engage in HIV prevention behaviors. Unfortunately, MI is an individual-based method that requires the barebacker to proactively contact a counselor. Perhaps MI techniques could be incorporated with social marketing strategies in which MSM receive continuous reminders to protect themselves and their partners.

The fact that some MSM may suffer from sexual addiction suggests the need for not only creating awareness of a problematic behavior, but also directing men to treatment options, such as therapy. Further, to keep the attention of men who are high sensation seekers, it seems important to fashion cutting-edge, sexually-explicit prevention messages that constantly change to reflect current trends. What is critical, is that all aspects of a

prevention program are developed with the wants, needs, and characteristics of the target audience, such as MSM risk-takers, as the central focus.

Summary

To conclude, irrespective of program focus and target population, prevention efforts aimed at curtailing further spread of HIV among MSM must be careful not to oversimplify the dynamics at play. The above recommendations may seem as easy answers, and it could be argued that they fail to deal with one pertinent factor: HIV fatigue. As mentioned earlier, MSM are tired of safe sex messages. To overcome this barrier, intervention planners must aim to be proactive and ecological in their approach. Programs must, first, carefully balance respect for individual rights and protection of the public's health; second, be context- and population specific; third, avoid pathologizing or marginalizing barebackers; fourth, constantly change according to new trends; and lastly, be based on the best available scientific information. Recommendations for continued scientific inquiry about barebacking are the topic of the next section.

Continued Research

As evident from the previous section, helping HIV risk-taking individuals make life-affirming choices is challenging, but as health professionals, that is part of our commitment. Thus, although the topic of barebacking may make people uncomfortable—which could explain why there is a void in research into the phenomenon—health professionals cannot ignore the HIV prevention challenge the behavior entails.

Since very little is known about the risk behavior barebacking and those who engage in it, one goal of future research would be to simply become more familiar with the issue.

Important areas of research include theory development; racial, geographical, and otherwise sociodemographic prevalence differences; serosorting behavior and other harm reduction strategies related to barebacking; additional factors that affect MSM's safer sex negotiation; and the phenomenology of barebacking as a behavior versus an identity.

In this study, two theories were explored: Health Belief Model (HBM) and Social Network and Social Support Theory. While empirical research strongly suggests health beliefs are linked to barebacking, application of the HBM was unknown in the present study because two subscales showed low reliability with an MSM population. Alternative instruments and methods for assessing this link should be explored. Similarly, continued research with a social network/social support anchor may help further uncover the ties and factors that help sustain barebacking not just as a behavior motivated by AIDS health beliefs, but as a cultural phenomenon. Relatedly, intervention development would benefit from learning the extent of the behavior in various MSM communities. As of today, only three studies, the present one included, have targeted non-urban MSM communities. In an effort to learn more about the men who bareback, future research efforts should target diverse subsets of MSM, such as MSM in rural communities and older MSM. Methodologically, replication research would be informative. For example, the present study with similar variables included should be replicated with a non-Internet sample, particularly targeting non-Caucasian MSM participants. It is also important to continue to investigate factors that directly affect MSM's safer sex negotiation with primary and casual partners.

Diverse research corroborates the idea that serosorting is used as a harm reduction strategy among men who bareback, but health professionals know little about the cognitive and affective processes that take place toward this behavior. More research is needed to

appreciate the assumptions of barebackers using negotiated safety and sexual positioning as harm reduction approaches. Additional studies identifying other psychosocial, behavioral, situational, and cultural variables which could be related to sexual risk taking are needed. Possible variables include partner violence, family support, internalized homophobia, suicidality, and use of risk avoidance strategies. Empirical evidence strongly suggests sexual addiction may be a relevant factor related to barebacking. This potential link warrants research.

Finally, understanding of the phenomenon of barebacking would be greatly furthered by exploring the space between identification and behavior, that is, the cognitive and affective part of barebacking versus the behavior. This would help health professionals understand barebacking as a construct and the meaning various MSM communities ascribe to the term. In all likelihood, barebacking is neither a static nor unidimensional construct, but varies across subsets of MSM. As evidenced by two recent studies, the term holds different meanings across serostatus (Halkitis, Wilton, & Galatowitsch, 2005) and cultural groups (Wilton et al., 2005). Future research should examine, inductively and holistically, the constructed meaning of barebacking—as a behavior and possibly identity—in context-specific settings. Only though a deeper and more precise understanding of the phenomenology of barebacking can health professionals fully understand the human experience of barebacking and motivations for the behavior. The goal must be to develop a single definition of barebacking—based on scientific, qualitative and quantitative, research—in order to develop a concrete understanding of the phenomenon.

In sum, the circumscribed nature of barebacking as a research area begs further exploratory investigation. Qualitative and quantitative studies would be equally suited to

answer critical, but distinctly different, questions. The Internet may be a particularly fertile avenue for research given that a majority of men involved utilize the Internet and that diverse men from wide geographic areas can be reached.

Internet as Research Tool

In preparation of this study, concerns specific to Internet-based research were noted. They included, (a) response rate is hard to estimate; (b) technology can fail; (c) the researcher has limited control over the data collection environment, and as a result, the sample obtained may be biased. A retrospective assessment of these issues will be discussed in order to gain a better understanding of the possible biases the Internet introduced in this study as well as benefits and drawbacks of web-based survey methods in future research with an MSM population.

Response Rate

Although research shows that a web-based survey method shows significant advantages over mail and fax methods in terms of response rate (Cobanaglu et al., 2001) and this survey could be completed in less than 15 minutes, it was expected that the response rate would be relatively low. Active e-mail recruitment in this study—response rate cannot be assessed for passive recruitment techniques—yielded a return of 101 responses, resulting in a response rate of 1.6%. This response rate, however, is based on two assumptions: that all individuals who were sent a personal survey invitation (n = 6,520) in fact received it and that they met the inclusion criteria. This is probably not the case. As evidenced by the fact that a high number of personals appeared "dormant", some men who were sent an invitation may simply not have accessed their personal advertisement and therefore not received the e-mail during the time the survey website was operational. Furthermore, although only U.S.-based

websites that in their description stated that they catered to adult men were selected for recruitment, men under the age of 18, men who had not had sex with other men, and women may have placed personals on these websites but clearly not met the inclusion criteria. Despite the researcher's concerted efforts not to send an e-mail invitation to men other than those who appeared to meet the study entry criteria, a number of other individuals may have received an invitation. For example, a few men (n = 4) contacted the researcher via e-mail to offer support for the study but explained their low age (under 18 years of age) excluded their participation; and three men replied to the e-mail invitation, explaining that they had not had sex with a man yet and therefore could not complete the survey. Lastly, it is possible that also some women post their advertisement on these websites. Because of these erroneous assumptions, it is likely that the actual response rate presented here is deflated.

A simple and basic website designed with the low end computer user in mind was developed to save download time and possibly increase response rate and decrease attrition rate. As outlined above, the simplicity of the website does not appear to have affected the response rate, but it might have contributed to the low attrition rate. Only 14.3% of the participants left the survey website prior to completion. It appears however, that this number could be lower had the survey consisted of only one question screen. All men who abandoned the survey stopped at the end of the first or the second screen, no participants abandoned the survey mid-screen. Thus, as researchers (Schonlau et al., 2002) advise, using a single screen appears advantageous to minimize attrition.

Technology

The study website was successfully hosted by the SRC and only minimal difficulties occurred during the 11 weeks the website was operational. During the recruitment phase, the

researcher accessed the survey website daily and only detected one instance of technical difficulty. The webpage was inaccessible for two days (March 18 - 19, 2006) due to an accidentally severed SRC cable (caused by road construction). Only a few participants (n = 11) contacted the researcher via e-mail and expressed trouble accessing the webpage. In all likelihood, the problem was linked to technological constraints on the part of the respondent's computer and the researcher could offer limited help. The researcher nevertheless promptly responded to all inquiries, proposing the men copy and paste the link in the address bar of their web-browser, double check the address, and disable any pop up blocks. While the technical skills of researchers conducting Internet-based research should be substantial, also investigators with introductory technical abilities can successfully execute this type of research. They should however, work closely with and receive assistance from professionals skilled in online recruitment and data collection.

Sample Bias

Limited control over the data collection environment is one of the main arguments against web-based research. This study aimed to include only men who were 18 years and older, i.e. adults. To this end, (1) only websites that in their description stated that they catered to individuals 18 years and older were selected; (2) the survey information and informed consent section repeatedly instructed potential participants that only men who were 18 years and older should participate in the study; and (3) the survey asked the respondents' age. Although the researcher could not visually observe the participants completing the survey, these strategies appear to have worked well. First, four potential participants contacted the researcher via e-mail to offer support for the study but explained their low age (under 18 years of age) excluded their participation. Second, all men who completed the

survey reported they were 18 years and older. Participants likely noted and respected the age inclusion.

As mentioned earlier, research shows that a high number of MSM utilizes the Internet and that it is possible that some of these individuals are not openly "out" yet and might therefore be missed with other more traditional data collection strategies, such as intercept surveys at gay bars. Three percent of the men in this study did not describe themselves as gay or bisexual and about 20% reported that they were married. The Internet therefore appears to be a viable medium for reaching MSM who may not be easily reached through other means. Moreover, as expected, the collapsed geographic boundaries found online paired with the recruitment strategy through personals did result in a geographically diverse sample of MSM; all but four states were represented relatively equally. The likelihood of obtaining a diverse sample of MSM is enhanced through the Internet, with one possible exception. The fact that almost 90% of the respondents self-reported a Caucasian background may reflect the presence of a sustained digital divide online. African-American and other minority MSM may not be represented online to the same extent as Caucasian MSM. Studies of Internet demographics indicate that underrepresented groups online include some members of racial and ethnic minorities (CommerceNet & Nielsen, cited in Zhang, 1999).

It was noted earlier that one advantage of Internet-based research as opposed to offline research is respondents' increased honesty and self-disclosure. In the present study it is unclear whether this is the case, because some respondents (n = 13) reported what appear as dishonest answers—for example, having sexual intercourse 999 times in two months suggests an average of 16 sexual encounters daily, which seems unlikely for most individuals. It is entirely possible of course that some of these data points reflect entry error

on the part of the respondent. They may also reflect frustration toward the researcher. Although spamming was avoided, some men may have reacted toward the survey invitation as an invasion of their "private" online space. Five men (0.07%) did reply to the e-mail invitation and express resentment against using a website dedicated to personals for research purposes. On the other hand, four times as many men (n = 25) replied to the invitation, not only to offer their support and encouragement, but their continued assistance if such help was desired. One man wrote: "I wish you success with your study. I will take your survey. If, at some point, you want more information or if you find you can use my help in some manner, please write. I'll gladly assist you if I can." Other positive responses included: "Thank You! For inviting me to take your survey," "I will be happy to help you with this," "I'm happy to complete your survey. I wish you luck with your dissertation," "Thanks for writing –I appreciate the chance to participate in your survey."

Summary

In summary, this study evidenced success in use of the Internet for recruitment and data collection. Contracting with professionals with expertise in survey development and management proved a winning strategy. Although the response rate was low, it appeared men placing personals were receptive to the study. For researchers with less time available for active recruitment, passive postings appear promising. Respondents also seem to read and respect the study instructions. Lastly, the attrition rate could have been lowered by placing all questions on one survey screen, and despite the geographical diversity that can be obtained through the Internet, this medium appears less advantageous for inclusion of an ethnically and racially diverse sample.

Conclusions

While most MSM consistently take safe sex precautions over extended periods of time, including abstinence, a large minority engages in barebacking. These men and this behavior were the focus of the current study and thus heeds Halkitis, Wilton, Wolitski and colleagues' (2005) call for research to examine the phenomenon. The purpose was three-fold: to provide an indicator of the extent of barebacking among MSM Internet users, to identify factors associated with barebacking, and to determine sociodemographic characteristics of men engaging in barebacking. Some conclusions can be drawn.

First, bareback sex appears to be not only widely practiced—40% of MSM in this sample reported engaging in the behavior—but also well accepted among MSM Internet users. This is suggestive of an impending paradigm shift regarding safer sex. A low perception of safer sex social norms was reported by barebackers. The normalcy of bareback sex may be a testament to the fact that barebacking represents a return to pre-HIV norms of condomless sex. But as this study clearly shows, there is not one salient operative dynamic that explains barebacking. Rather, reasons for barebacking form a "sex-centric" confluence of psychosocial, experiential, as well as structural and technological influences that exist outside of the individual. Other factors that were significantly related to barebacking included: low perceived benefits of prevention methods, high perception of barriers to engage in HIV prevention behaviors, high sexual sensation seeking, low self-efficacy for limiting HIV risk behaviors, meeting men online for offline sex, engaging in unprotected anal intercourse, and combining alcohol use with sex. Thus, barebacking is not an isolated risk behavior. Some barebackers, most of whom are less educated than non-barebackers, appear to be serosorting while others engage in non-discriminant barebacking. In fact, one

salient finding is that MSM Internet users show a general complacency regarding safer sexual practices.

Clearly, convictions and beliefs organizing a person's self-care behaviors are amorphous and complex. These above factors, however, suggest opportunities for reducing the rate of HIV transmission among MSM, and men who bareback in particular, through intervention approaches that are well-designed and directed. Prevention strategies must target factors influencing sexual risk behaviors, work to sustain overall quality of life, and recognize the diversity of the MSM community. Possible strategies to promote satisfying, healthy, disease-free sexuality for MSM, such as harm reduction approaches, were suggested here and remain critical if our society is to witness abating HIV transmissions among MSM. Honest communication with the target population, MSM themselves, would likely lead to more alternatives. Unfortunately, barebacking is a polymorphous term, definitions and perceptions have evolved as the practice has grown, which complicates the research process. Yet, health professionals must accept the challenge and initiate research efforts so that barebacking, also as a neologism, can be understood and explored to a greater extent.

In conclusion, the present study was important because it promoted an understanding of factors influencing some MSM to engage in barebacking and others not. Although definitiveness is difficult because of the methodological constraints of the study, the findings indicate that complex motivations, situational factors, and evolving community norms play a part in the decision of some MSM to engage in bareback sex. Hopefully, this study may generate greater understanding and potentiate further research into the phenomenon of barebacking.

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APPENDICES

APPENDIX A

IRB APPROVAL

The University of Georgia

Office of The Vice President for Research
DHHS Assurance ID No. : FWA00003901

Institutional Review Board
Human Subjects Office
612 Boyd GSRC
Athens, Georgia 30602-7411
(706) 542-3199
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www.ovpr.uga.edu/hso

APPROVAL FORM

Date Proposal Received: 2005-10-18 **Project Number:** 2006-10246-0

Name	Title	Dept/Phone	Address	Email
Ms. Rigmor B. Carneiro	PI	Health Promotion & Behavior Ramsey +6522 706-542-8734		carneiro@uga.edu
Dr. Mark G. Wilson	CO	Health Promotion & Behavior Ramsey Center +6522 542-4364		mwilson@uga.edu

Title of Study: Barebacking among an Internet Sample of Men who have Sex with Men

45 CFR 46 Category: Full Board (2005-11-18)
Parameters:
Waiver of Signed Consent 46.117 (c) (2);

Change(s) Required for Approval and Date Completed:
Revised Consent Document(s);

Approved : 2005-11-18 Begin date : 2006-01-19 Expiration date : 2006-11-17

NOTE: Any research conducted before the approval date or after the end data collection date shown above is not covered by IRB approval, and cannot be retroactively approved.

Number Assigned by Sponsored Programs:

Funding Agency:

Form 310 Provided: No

Your human subjects study has been approved.

Please be aware that it is your responsibility to inform the IRB:
. . . of any adverse events or unanticipated risks to the subjects or others within 24 to 72 hours;
. . . of any significant changes or additions to your study and obtain approval of them before they are put into effect;
. . . that you need to extend the approval period beyond the expiration date shown above;
. . . that you have completed your data collection as approved, within the approval period shown above, so that your file may be closed.

For additional information regarding your responsibilities as an investigtor refer to the IRB Guidelines.
Use the attached Researcher Request Form for requesting renewals, changes, or closures.
Keep this original approval form for your records.

Chairperson, Institutional Review Board

APPENDIX B

SURVEY INSTRUMENTS

AIDS Health Belief Scale (AHBS)
Zagumny, M. J. & Brady, D. B. (1998). Development of the AIDS Health Belief Scale (AHBS). *AIDS Education and Prevention, 10*, 173-179.

Response categories: 1 = Strongly disagree … 6 = Strongly agree
Items:
Susceptibility
1. I feel that the chances are good that I can get HIV.
2. I am afraid that I might contract HIV.
3. I believe that I can be exposed to HIV infection if my sex partner is gay.
4. I believe that I can get HIV even if I am only having sex with one partner.

Severity
5. AIDS causes death.
6. I would rather have any other terminal illness than AIDS.
7. I would rather die from a violent death (e.g. gunshot, car accident, etc.) than from AIDS.
8. AIDS is probably the worst disease a person can get.

Benefits
9. I believe that the chances of contracting HIV can be significantly reduced by using a condom.
10. I think it is worth the effort to have condoms readily available.
11. I feel that the chances of contracting HIV can be reduced by having sex with only one person.
12. If a condom is not available, it would be worth the effort to discontinue sexual activity to obtain a condom.

Barriers
13. Using a condom seems like an insult to my partner.
14. It is embarrassing (to me) to buy condoms.
15. I do not enjoy (or think I might not enjoy) sex when using a condom.
16. I would offer first aid to an AIDS-patient because I would feel guilty not offering help.

Limiting HIV Risk Behaviors (LHRB) Scale
Smith, K. W., McGraw, S. A., Costa, L. A., & McKinlay, J. B. (1996). A self-efficacy scale for HIV risk behaviors: Development and Evaluation. *AIDS Education and Prevention, 8*, 97-105.

Response categories: 1 = Not sure at all … 5 = Very sure
Items: How sure are you that you could …
1. Talk about safe sex with a casual partner?
2. Buy condoms in a drug store?
3. Refuse to have sex with someone you don't know very well?

4. Use a condom correctly if your partner wanted to?
5. Refuse to shoot up drugs if your friends asked you to shoot with them?
6. Convince a partner that he or she should use a condom?
7. Prevent a partner from having anal sex with you?
8. Ask a partner about his or her other sexual partners?
9. Refuse to use a needle that had already been used by a friend?

Safer Sex Social Norm Perception scale
McCusick, L., Coates, T. J., Morin, S. F., Pollack, L., & Hoff, C. (1990). Longitudinal predictors of reductions in unprotected anal intercourse among gay men in San Francisco: the AIDS behavioral research project. *American Journal of Public Health, 80*, 978-983.

Response categories: 1 = Disagree strongly … 6 = Agree strongly
Items:
1. Many of my friends have unsafe sex.
2. My friends think it is important to use a condom when having anal sex with a new partner
3. Most of my friends think you should avoid unsafe sex
4. My friends always use condoms when having anal sex with new partners
5. Most gay men I know only engage in safe sex practices
6. Most of my friends think you should always have safe sex

Changes from original scale: The questions were not specific to gay men, thus, in order to capture the social norms of MSM specifically, the wording "gay friends" (as opposed to the original "friends") was used.

Sexual Sensation Seeking Scale
Kalichman, S. C., Johnson, J. R., Adair, V., Rompa, D., Multhauf, K., & Kelly, A. (1994). Sexual sensation seeking: Scale development and predicting AIDS-risk behavior among homosexually active men. *Journal of Personality Assessment, 62*, 385-397.

Response options: 1 = Not at all like me … 4 = Very much like me
Items:
1. I like wild "uninhibited" sexual encounters.
2. I have made promises I did not mean to keep to get a person to have sex with me.
3. I have felt curious about having anal intercourse without a condom.
4. I enjoy the company of "sensual" people.
5. I enjoy watching "X-rated" videos.
6. I have said things that were not exactly true to get a person to have sex with me.
7. I am interested in trying out new sexual experiences.
8. I feel like exploring my sexuality.
9. I like new and exciting sexual experiences.

APPENDIX C

SURVEY WEBSITE SCRIPT

Welcome!

Thank you for taking the time to read about the study and hopefully answer the questions listed further down ☺

I am the main researcher for this study: I am a 31 year old PhD candidate at The University of Georgia. It is my hope that the results of this study can give us some ideas about the beliefs men have that lead to behaviors placing them at risk for HIV.

Project Information and Informed Consent

The reason for this study is to investigate the relationship between beliefs about HIV and sexual behaviors. In order to study this, I will ask you to provide some demographic information (age, educations, etc.) and respond to several opinion and behavior questions. I will NOT ask you any identifying information.

The survey should only take you about 12-15 minutes to complete.

The benefits you can expect from it are feelings of personal gratification because you help with fighting HIV, and pride for contributing to The Rainbow World Fund: the researcher will personally donate money to this gay, lesbian, bisexual, and transgender service agency if respondents complete this survey.

AS A PARTICIPANT IN THIS STUDY YOU SHOULD READ AND UNDERSTAND THE FOLLOWING STATEMENTS:

- Only men who have sex with other men and are 18 years or older should participate in this study.
- Your participation in this study is VOLUNTARY. You are not required to answer every question that might be asked. This means that you are free not to participate and to stop participating at any time for any reason without penalty, except the loss of benefits directly related to your participation in this study.
- There are no codes or any other information contained on the questionnaire or any other materials associated with it that identifies you as an individual respondent to this survey.
- All participant responses will be kept strictly confidential; you will NOT be identified in any presentation or publication of this research. All information you provide will be combined with the answers from many other respondents and reported as grouped data. No information about you, or provided by you during the research, will be shared with others without you permission, except if required by law.
- You have the right to be informed of all potential risks associated with your participation in this study. There is no more than minimal risk associated with participation in this study. Possible psychological risks are likely to be small and unlikely to occur, however, you may find some of the questions very personal and they may make you uncomfortable. You may be concerned about your confidentiality. Although your identity will not be associated with the information collected for this project or with any reports, you may have concerns that your identity as a participant in this study will become known. There is a limit to the confidentiality that can be guaranteed due to the technology itself.
- All responses will be stored on a secure socket layer server and protected with an encrypting file system.

NOTE: There is a risk associated with the unlikely chance that somebody else may view the information you provide. For example, you should protect yourself from the types of occurrences identified below:

1. There is a possibility that your responses could be viewed by an outside party if you do not EXIT/CLOSE your Internet browser (e.g. Internet Explorer, Mozilla Firefox) as soon as you finish answering the questions because your answers may be visible if you (or someone else) click the BACK button on the browser. In order to eliminate this possibility, you should EXIT/CLOSE the browser as soon as you finish answering the questions and have submitted your responses.

2. There is a possibility that your answers could be viewed by an outside party if you leave your browser on and leave the computer terminal before finishing the survey (e.g. answer the phone, leave the computer unattended, etc.). In order to avoid inadvertent access to your answers by a third party, complete the survey in a private location, do not leave the terminal or stop responding to the survey until you have completely finished and closed the browser.

If you would like to participate in this study using a method other than the web survey, you may do so by contacting the researcher and requesting a written copy of the survey OR print the survey [click here], complete it by hand, and send it to the researcher. Also, if you would like more information or have any concerns about this project or your participation, please contact: Rimo Carneiro, Health Promotion and Behavior, 300 River Road, The University of Georgia, Athens, GA 30602. E-mail: rimo@uga.edu Phone: 706-542-8734

The study is being conducted by Rimo Carneiro under the direction of Dr. Mark Wilson. The study has been approved by the researchers' Internal Review Board. For additional information regarding human participation in research, please feel free to contact IRB at 706-542-3199.

Click on the "I agree" button below to indicate that you have read this form and understand the information above. The submission of a complete survey constitutes your agreement to participate in the study. Only persons over 18 years should participate.

I agree.

Disclaimer: The contents and the opinions expressed on this Web page do not necessarily reflect the views of nor are they endorsed by The University of Georgia or the University System of Georgia.

INSTRUCTIONS: Please answer the questions as fully and honestly as you can in a private location without assistance from anyone. If you have completed this survey before, please do not complete it again.

Where did you learn about this study?

1. □E-mail □Chat room □Newsgroup □Gay/bisexual website □Other

DEMOGRAPHIC INFORMATION

Please select the option that *best describes you*:

2. Age ___ years
3. U.S. state of residence ____
4. Race/ethnicity: □African American □Asian-American □Caucasian □Latino □Mixed □Native American □Pacific Islander □Other
5. HIV/AIDS status: □HIV positive □HIV negative □Unsure
6. Size of town where you live: □less than 5,000 □ between 5,001-20,000 □20,001-50,000 □50,001-100,000 □100,001-1 mill □over 1 mill
7. Sexual orientation: □Bisexual □Gay/homosexual □Heterosexual □Queer □Unsure □Other
8. Relationship status: □Dating □Have a primary partner* □Married □Separated □Single
   *(Primary partner is here understood as "Someone who you live with or have seen a lot and to whom you feel a special emotional commitment").
9. Education: □High school degree or lower □Trade vocational school □Some college □College Graduate □Graduate degree

BELIEFS ABOUT HIV & SEX

Please indicate how much you *agree* or *disagree* with each of the following statements by checking the option that best fits your response to each item. There is no right or wrong answer. Please use this scale:

Strongly Disagree					Strongly Agree
1	2	3	4	5	6

10. I feel that the chances are good that I can get HIV. 1□ 2□ 3□ 4 □ 5□ 6□ NA□
11. I am afraid that I might contract HIV. 1□ 2□ 3□ 4 □ 5□ 6□ NA□
12. Most of my gay friends think you should always have safe sex. 1□ 2□ 3□ 4 □ 5□ 6□
13. I believe that I can be exposed to HIV infection if my sex partner is gay. 1□ 2□ 3□ 4 □ 5□ 6□
14. I believe that I can get HIV even if I am only having sex with one partner. 1□ 2□ 3□ 4 □ 5□ 6□
15. AIDS causes death. 1□ 2□ 3□ 4 □ 5□ 6□
16. My gay friends think it is important to use a condom when having anal sex with a new partner. 1□ 2□ 3□ 4 □ 5□ 6□

Reminder: Use the following scale:

Strongly Disagree					Strongly Agree
1	2	3	4	5	6

17. I would rather have any other terminal illness than AIDS. 1□ 2□ 3□ 4 □ 5□ 6□
18. I would rather die from a violent death (e.g. gunshot, car accident, etc.) than from AIDS. 1□ 2□ 3□ 4 □ 5□ 6□
19. Most gay men I know only engage in safe sex practices. 1□ 2□ 3□ 4 □ 5□ 6□
20. AIDS is probably the worst disease a person can get. 1□ 2□ 3□ 4 □ 5□ 6□

21. I believe that the chances of contracting HIV can be significantly reduced by using a condom. 1□ 2□ 3□ 4 □ 5□ 6□
22. Most of my gay friends think you should avoid unsafe sex. 1□ 2□ 3□ 4 □ 5□ 6□
23. I think it is worth the effort to have condoms readily available. 1□ 2□ 3□ 4 □ 5□ 6□
24. I feel that the chances of contracting HIV can be reduced by having sex with only one person. 1□ 2□ 3□ 4 □ 5□ 6□

Reminder: Use the following scale:

Strongly Disagree					**Strongly Agree**
1	**2**	**3**	**4**	**5**	**6**

25. If a condom is not available, it would be worth the effort to discontinue sexual activity to obtain a condom. 1□ 2□ 3□ 4 □ 5□ 6□
26. Using a condom seems like an insult to my partner. 1□ 2□ 3□ 4 □ 5□ 6□
27. Many of my gay friends have unsafe sex. 1□ 2□ 3□ 4 □ 5□ 6□
28. It is embarrassing (to me) to buy condoms. 1□ 2□ 3□ 4 □ 5□ 6□
29. I do not enjoy (or think I might not enjoy) sex when using a condom. 1□ 2□ 3□ 4 □ 5□ 6□
30. I would offer first aid to an AIDS-patient because I would feel guilty not offering help. 1□ 2□ 3□ 4 □ 5□ 6□
31. My gay friends always use condoms when having anal sex with new partners. 1□ 2□ 3□ 4 □ 5□ 6□ NA□

Please continue!

For the next 9 questions, please choose the option that *best describes you*. Use this scale:

Not at all like me			**Very much like me**
1	**2**	**3**	**4**

32. I like wild "uninhibited" sexual encounters. 1□ 2□ 3□ 4□
33. I have made promises I did not mean to keep to get a person to have sex with me. 1□ 2□ 3□ 4□
34. I have felt curious about having anal intercourse without a condom. 1□ 2□ 3□ 4□
35. I enjoy the company of "sensual" people. 1□ 2□ 3□ 4□
36. I enjoy watching "X-rated" videos. 1□ 2□ 3□ 4□
37. I have said things that were not exactly true to get a person to have sex with me. 1□ 2□ 3□ 4□
38. I am interested in trying out new sexual experiences. 1□ 2□ 3□ 4□
39. I feel like exploring my sexuality. 1□ 2□ 3□ 4□
40. I like new and exciting sexual experiences. 1□ 2□ 3□ 4□

Again, please choose the option that *best describes you*. Use this scale:

Not at all sure			**Very sure**
1	**2**	**3**	**4**

How sure are you that you could:

41. Talk about safe sex with a sexual partner? 1□ 2□ 3□ 4□
42. Buy condoms in a drug store? 1□ 2□ 3□ 4□
43. Refuse to have sex with someone you didn't know very well? 1□ 2□ 3□ 4□
44. Use a condom correctly if your partner wanted to? 1□ 2□ 3□ 4□

45. Refuse to shoot up drugs if your friends asked you to shoot up with them? 1□ 2□ 3□ 4□
46. Convince a partner that he should use a condom? 1□ 2□ 3□ 4□
47. Prevent a partner from having anal sex with you? 1□ 2□ 3□ 4□
48. Ask a partner about his/her other sexual partners? 1□ 2□ 3□ 4□
49. Refuse to use a needle that had already been used by a friend? 1□ 2□ 3□ 4□

The last questions ask about sexual behavior. Please continue, there are only a few questions left!

SEXUAL BEHAVIOR

* Barebacking is here understood as "Intentional anal sex without a condom with a non-primary male partner" (primary partner is someone who you live with or have seen a lot and to whom you feel a special emotional commitment).

In the last 2 months, *how many times* have you:

50.	Engaged in barebacking* with someone who was HIV positive or whose HIV status you didn't know?	___ times
51.	Engaged in barebacking with someone who was HIV negative?	___ times
52.	Engaged in unprotected anal sex?	___ times
53.	Engaged in protected (used condom) anal sex?	___ times
54.	Engaged in unprotected sexual intercourse with a woman?	___ times
55.	Attended a bareback party?	___ times
56.	Been drunk on alcohol in anticipation of/during sex?	___ times
57.	Been high on crystal methamphetamine in anticipation of/during sex?	___ times
58.	Been high on drugs (cocaine, crack, ecstasy, heroin, ketamine, hallucinogens, marijuana, poppers) in anticipation of/during sex?	___ times

Think back over the last 2 months. Please write your *total number of*:

59.	Bareback partners	___ partners
60.	Men you have had sex with whom you originally met on the Internet	___ partners

Thank You!

Thank you for your willingness to participate in this study. Your responses will be included with those of many other participants. I am evaluating the extent to which beliefs about HIV and sexual behaviors are related.

If you have comments on the study you just completed, or to report any problems, please contact Rimo Carneiro, Health Promotion and Behavior, 300 River Road, The University of Georgia, Athens, GA 30602, OR e-mail: rimo@uga.edu Phone: 706-542-8734

Please click on the "Submit" button below to conclude your participation.

Submit

or

Discard the data

APPENDIX D

STUDY INVITATION VIA PERSONALS

Hello:

Would you be willing to help me with my important study about men's sexual health? You can help by reading the e-mail message below. If you fit the criteria, please complete my simple online survey (12 minutes only!) which explores the possible relationship between beliefs about HIV and sexual behaviors.

To participate you must be a man who has (ever) had sex with other men and be 18 years or older. If respondents complete this on-line survey, I will personally donate money to The Rainbow World Fund, a gay, lesbian, bisexual, and transgender service agency.

Participation in this study is simple. All you need to do is go to a website and answer a few questions. You can either click on the address below (if it is highlighted) or copy it and paste it to the address box of your Internet browser (e.g., Netscape, Internet Explorer, etc.).

The link is:
https://src.ibr.uga.edu/surveys/rimo/intro.htm

The website provides project information, informed consent, and the survey questions. My web-based survey takes only about 12 minutes to complete. The survey will NOT ask for any information that would identify who the responses belong to (i.e., name, e-mail address). This project has been approved by the researcher's Internal Review Board (phone 706-542-3199).

You can ask questions about this research by contacting me, Rimo Carneiro, through e-mail at rimo@uga.edu or phone 706-542-8734.

Thank you in advance for your support!!

Sincerely,
Rimo Carneiro

APPENDIX E

STUDY INVITATION VIA BULLETIN BOARD

Hello,

Would you be willing to help me with my important study about men's sexual health? You can help by reading the announcement below. If you are a man who has (had) sex with other men and are 18 years or older, please complete my simple online survey (12 minutes only!). The study explores the possible relationship between beliefs about HIV and sexual behaviors. The survey will NOT ask for any information that would identify who the responses belong to (i.e., name, e-mail address). This project has been approved by the researcher's Institutional Review Board (706-542-3199).

Participation in this study is simple. All you need to do is go to a website and answer a few questions. You can either click on the address below (if it is highlighted) or copy it and paste it to the address box of your Internet browser (e.g., Netscape, Internet Explorer, etc.). The website provides project information, informed consent, and the survey questions.

The link is: https://src.ibr.uga.edu/surveys/rimo/intro.htm

If respondents complete this on-line survey, I will personally donate money to The Rainbow World Fund, a gay, lesbian, bisexual, and transgender service agency.

You can ask questions about this research by contacting me, Rimo Carneiro, through e-mail at rimo@uga.edu OR phone 706-542-8734.

Thank you in advance for your support!!

Sincerely,
Rimo Carneiro