

Heterosexual Anal Sexuality and Anal Sex Behaviors: A Review

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Little research addresses the role of anal sexuality and anal sexual behaviors as a widely practiced but relatively less frequent element of a heterosexual sexual repertoire. However, the importance of anal sex in sexual health is increasingly well-defined by epidemiological and clinical studies. This article reviews existing data on a range of heterosexual anal sex practices and provides conceptual and methodological recommendations for new research.

Heterosexual anal intercourse is associated with increased risk for HIV and other genital and anal sexually transmitted infections (STIs; Buchacz, van der Straten, Saul, Shiboski et al., 2001; Halperin, 1999). Increasing rates of anal cancer may be attributable to more prevalent practice of anal intercourse and to the high prevalence of human papillomavirus (HPV) infection (Eng, 2006; Scott, Khourey, Moore, & Weissman, 2008). However, most research on anal intercourse addresses men who have sex with men (MSM), with relatively little attention given to anal intercourse and other anal sexual behaviors between heterosexual partners (Halperin, 1999). Heterosexual penile–anal intercourse has been treated as analogous to coitus in most published research. Research is quite rare that specifically differentiates the anus as a sexual organ or addresses anal sexual function or dysfunction as legitimate topics. As a result, we do not know the extent to which anal intercourse differs qualitatively from coitus. The purpose of this article is to review literature in four primary areas of heterosexual anal sex research—history and culture, prevalence and frequency, public health and sexual health issues, and behavioral antecedents and correlates—and to provide recommendations for future research.

Terminology

The terms *anal sex* and *anal intercourse* are typically used synonymously to refer to a dyadic sex act involving

insertion and thrusting of one partner's penis in the anus of the other (Merriam-Webster Dictionary Online, 2009). The term *sodomy* sometimes indicates anal intercourse in historical, journalistic, and legal settings, but will not be used here. The Internet site Sex-Lexis.com (2009) lists more than 200 slang terms for anal intercourse, although many refer to same-sex rather than opposite-sex behavior. In this article, anal sex is used to encompass anal intercourse, as well as other anal sexual behaviors, such as oral–anal contact (analingus) and penetration by fingers or other objects. The term anal intercourse refers specifically to penile–anal intercourse.

Historical Overview and Shifting Cultural Norms

Historical Overview

Depictions of heterosexual anal sex can be found in art and artifacts dating to antiquity (Reinisch, Ziemba-Davis, & Sanders, 1990). Peruvian Moche stirrup-spout pots, erotic ceramic vases, from 300 AD may be some of the earliest and most prolific examples of such representations (see Figure 1). A survey of Moche pots found that 31% depicted heterosexual anal intercourse, significantly more than any other sexual act (Tannahill, 1992).

Chinese and Japanese *shunga*, woodblock prints and painted handscrolls, produced between the 16th and 19th centuries, depict a vast array of sexual practices, including heterosexual anal sex. Erotic French lithography and photography from the late 19th and early 20th centuries include both images of penile–anal intercourse, as well as digital–anal penetration. Erotica from the same period has described heterosexual anal sex acts. Today, images of heterosexual anal sex are so highly

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Figure 1. Example of a Peruvian Moche stirrup-spout pot. *Note.* Image courtesy of the Kinsey Institute for Research in Sex, Gender, and Reproduction.

prevalent in pornographic films and Web sites that the sites advertise material based on whether it includes anal sex (e.g., “100% vaginal,” “no anal,” “100% anal,” and “double penetration”).

The term *sodomy* is broadly defined as anal penetration or oral copulation with a member of the opposite or same sex, or with an animal (Merriam-Webster Dictionary Online, 2009). The sexual use of the term sodomy as a synonym for anal intercourse among homosexual men is attributed to the Byzantine emperor Justinian I (538 AD). During the Medieval Inquisition (1184), hereticism was increasingly associated with fornication and sodomy, thus linking the behaviors to witchcraft and satanism. Since these times, sodomy and its biblical proscription have influenced the meaning and acceptability of anal intercourse behavior in Western culture.

Laws banning acts of sodomy can be traced to documents written between 500 and 600 AD. Historians have traced earlier bans to 149 BC; however, definitive written documentation no longer exists. Historically, anti-sodomy laws have been used to punish same-sex sexual behaviors, particularly anal sex among men. In the United States, anti-sodomy laws can be traced to the colonial period and were still enforced in several states until 2003 when the U.S. Supreme Court ruled such laws unconstitutional (see *Lawrence v. Texas*, 2003). Perhaps due to the cultural and legal sanctions associated with anal sex, the behavior received only brief mention (e.g., Kinsey, Pomeroy, Martin, & Gebhard, 1953) in the scientific literature until the emergence of HIV and AIDS in the 1980s.

Shifting Cultural Norms

Heterosexual anal sex has been present in the spectrum of erotic imagination and behavior for

hundreds, if not thousands, of years. Despite continued cultural stigma, anecdotal evidence suggests that attention to heterosexual anal sex in the popular culture has risen over the past decade. A recent Internet search (conducted by us) of the term “heterosexual anal sex” yielded 790,000 links to media articles and Web sites. A review of the first 500 sites indicated that some sites depict pornographic and erotic images or chats, but many report scientific findings or provide information about anal sexual health. Scientific data documenting a rise in behavioral prevalence has prompted some news media to suggest that anal sex is the “new oral sex,” another behavior that was once stigmatized but is now accepted as highly prevalent. In addition to the apparent rise in media interest, there seems to be a shift in the focus of content. A search of newspaper articles and newswire press releases (also conducted by us) for the past two decades indicated that early coverage (1986–1996) of anal sex focused on risk for HIV and AIDS, whereas articles published within the past five years focused on laws, sexual liberties, and sexual expressions.

Attention to heterosexual anal sex has not been limited to the news media. Rather, references can be found in almost all forms of popular media, including magazines, television programs, movies, songs, and books. For example, an episode of the television program *Sex and the City* titled “Valley of the Twenty-Something Guys” (King & Maclean, 1998) detailed the dilemma of the character, Charlotte, when her boyfriend asked her to engage in anal sex. In the pilot episode of the television program *Californication* (McMartin & Freundlich, 2007), the character, Charlie, is the surprised recipient of the “stinky pinky” when his wife inserts her finger into his anus. Magazine articles such as “The Bottom Line,” published in *New York Magazine*, and “Is Anal Sex the New Deal Breaker,” published in *Men’s Style*, feature interviews with men and women who practice anal sex (EM & LO, 2007; *Men’s Style*, 2007). A number of “how-to” guides have been published, including Tristan Taormino’s best-selling book *The Ultimate Guide to Anal Sex for Women* (Taormino, 2006), providing further evidence of public interest.

Although there has been no systematic study of public interest or opinion of heterosexual anal sex, the proliferation of materials and references in popular culture, combined with scientific documentation of increased behavioral prevalence, may together suggest shifting cultural norms. Shifting norms have several implications for understanding heterosexual sexual relations, including sexual problems and what constitutes “safer” sex or responsible sex. Changing norms may affect the frequency of heterosexual anal sex behaviors and suggests that there is a role for the “exotic” in the sexual repertoires of some heterosexuals. In terms of theorizing heterosexual anal sexuality and behavior, the role of the “exotic” may be important. Virginity literature has found “gifting” to be a primary theme in

experiences of virginity loss (Carpenter, 2002). Gifting may influence some acts of heterosexual anal intercourse and deserves further investigation. Shifting norms may also have implications for the reification of gendered sexual norms, such as the male as the penetrator and the female as the penetrated.

Prevalence and Frequency

Prevalence

Estimates of lifetime prevalence of anal intercourse range from 6% to 40%, with up to 10% of heterosexuals reporting at least one instance in the previous year (Baldwin & Baldwin, 2000; Laumann, Gagnon, Michael, & Michaels, 1994; Misegades, Page-Shafer, Halperin, & McFarland, 2001; Reinisch, & Hill, 1995; Reinisch, Sanders, Hill, & Ziemba-Davis, 1992). Based on an extensive review of the research, Voeller (1991) estimated that at least 10% of sexually active American women engage in receptive anal intercourse with some regularity. Halperin (1999) pointed out that even if this estimate is inflated twofold, anal intercourse occurs among more women annually than among MSM—four million versus one million, respectively.

The National Health and Social Life Survey (NHSLs) has been a frequently cited source of prevalence data for anal intercourse (Laumann et al., 1994). The NHSLs found a past 12 months prevalence rate of 10% among men and 9% among women, with 2.3% and 1.2%, respectively, reporting heterosexual anal intercourse during their most recent sexual event (Laumann et al., 1994). A population-based study ($n = 3,545$) published in 1995 found 8% of men and 6% of women reported engaging in heterosexual anal intercourse at least monthly throughout the previous year (Erickson et al., 1995). A study assessing the prevalence of anal intercourse among HIV-seronegative women at high risk for HIV exposure ($n = 1,268$) found that 32% of participants reported at least one instance of anal intercourse within the preceding six months (Gross et al., 2000). One percent of the sample ($n = 17$) reported anal intercourse, but no vaginal intercourse, within the past six months.

Recent studies have reported higher prevalence rates of heterosexual anal intercourse. A large scale survey found that 38.2% of men between the ages of 20 and 39 and 32.6% of women aged 18 to 44 had engaged in heterosexual anal intercourse in their lifetime; a 1992 survey had found that 25.6% of men and 20.4% of women reported lifetime heterosexual anal intercourse (Mosher, Chandra, & Jones, 2005). In Project RESPECT, the proportion of participants reporting anal intercourse in the previous three months was two times higher in RESPECT II (1999–2000) than in Project RESPECT (1993–1995), increasing from 9% to 22% among women and 9% to 21% among men

(Satterwhite et al., 2007). These changes were seen regardless of gender or study site and were consistent across racial and ethnic groups. Further, the increase in reports of anal intercourse also occurred across age groups, suggesting an historical increase in reporting rather than a cohort effect. Using data from the National Survey of Family Growth, Leichter, Chandra, Liddon, Fenton, & Aral (2007) found that 34% men and 30% women ($N = 12,547$) reported ever participating in heterosexual anal sex. The percentage of participants reporting heterosexual anal sex was significantly higher among 20- to 24-year-olds and peaked among 30- to 34-year-olds, which may suggest heterosexual anal sex becomes part of the sexual repertoire as individuals age.

Demographic and behavioral characteristics. Characteristics of heterosexual men and women who engage in anal intercourse include younger age, higher number of lifetime sex partners, history of STIs (Bogart et al., 2005; Erickson et al., 1995; Gross et al., 2000; Laumann et al., 1994), and participation in other risk behaviors (e.g., unprotected intercourse, injection drug use, and sex in exchange for money; Bogart et al., 2005; Gorbach et al., 2009; Wilson et al., 1999; Zule, Costenbader, Meyer, & Wechsberg, 2007). Both men and women with a history of same-sex partners are more likely to report anal intercourse (Foxman, Aral, & Holmes, 1998a, 1998b). Gorbach et al. (2008) found that the use of sex toys was associated with anal intercourse in men and women. Studies exploring prevalence by gender report that women participate in anal intercourse at roughly equal or slightly higher rates than men (Baldwin & Baldwin, 2000; Erickson et al., 1995; Lewis & Watters, 1991; Reinisch & Hill, 1995). Ethnic and racial group differences in rates of anal intercourse are inconsistent, although Hispanic men and White women have generally been found to report the highest rates (Erickson et al., 1995; Gross et al., 2000; Laumann et al., 1994).

Most of the data about heterosexual anal intercourse is based on research conducted in samples with behavioral and demographic characteristics (e.g., injection drug use or offering sex in exchange for money) that place them at relatively high risk for HIV and STI transmission. The extent to which the association of heterosexual anal sex among these populations is causal (e.g., through substance-related disinhibition) or distal (e.g., propensity for sensation-seeking) is unknown. Moreover, little is known about the characteristics of lower risk populations, although observed rates of anal intercourse have been found to be higher within the contexts of serious or long-term relationships, cohabitation, and marriage when compared to casual partnerships (Erickson et al., 1995; Gurman & Borzekowski, 2004; Houston, Fang, Husman, & Peralta, 2007; Lewis & Watters, 1991). A study of sexually active women in California found that of the respondents who reported

ever having had anal intercourse, 29.6% of women with a steady partner and 7.3% of women with a casual partner had engaged in anal intercourse within the previous two months (Misegades et al., 2001). McBride and Janssen (2007) found that the majority of men ($n = 631$) and women ($n = 856$) who reported heterosexual anal intercourse in the past 12 months were in exclusive, monogamous relationships: 69% and 73%, respectively.

Underreporting taboo behaviors. Despite what is known about anal sex, according to Halperin (1999) it must be assumed that self-reported data for historically taboo sex practices, such as anal intercourse, is an underestimation. A study that investigated the underreporting of sensitive behaviors, with a particular interest in abortion, found that participants ($n = 63$) were more willing to admit to having an abortion than to engaging in anal intercourse (Smith, Adler, & Tschann, 1999). Although the small sample size limits the ability to make inferences, the findings suggest that anal sexual behaviors are underreported. Further, it has been suggested that measurement techniques, such as those used in the NHSLS survey (Laumann et al., 1994), have resulted in additional underestimations of prevalence (Halperin, 1999). Specifically, the NHSLS survey asked participants to respond solely in regards to one's "regular or secondary partner." The few studies that have attempted to elicit more accurate responses have reported considerably higher rates of prevalence (Erickson et al., 1995).

To what extent underreporting has influenced the accuracy of estimations of incidence and prevalence of anal sex among heterosexuals is speculative. However, Voeller (1991) commented on the Bolling (1977) study, stating patients initially denied engaging in anal intercourse and only acknowledged and discussed this aspect of their sexuality at the second or third interview. Voeller suggested that such reticence is to be expected with certain behaviors and that this reticence may have played some role in HIV and AIDS studies that have failed to identify anal sexuality in participants.

Frequency

The frequency of heterosexual anal intercourse is poorly documented. The majority of studies that have measured it have used lifetime items or items assessing a specified period of time (e.g., in the past year), and many have dichotomized response options, typically "yes" or "no." As a result, a large body of literature documents the prevalence of heterosexual anal sex, but much less information relates to behavioral frequency. Because behavioral frequency can have significant implications for understanding the importance of anal sex in sexual health, assessing its actual incidence will be important to identifying subpopulations that may be at increased risk of negative health outcomes. Although prevalence rates document the occurrence of anal sex in

heterosexual populations, they do little to further our understanding of the factors associated with specific events. Data from a sample of 266 men who reported heterosexual anal intercourse within the past 30 days found a mean of 4.6 ($Mdn = 2$) occurrences (McBride & Reece, 2008; McBride, Reece, Herbenick, Sanders, & Fortenberry, 2008). Recent data from 350 adolescents, aged 12 to 18 years, showed that prevalence rates of anal intercourse among individuals with a main partner and those with casual partners were similar (16% vs. 12%, respectively). However, higher frequencies of anal intercourse were found among participants with main partners (about once per week) compared to those with casual partners (about once per month; Houston et al., 2007).

Public Health and Sexual Health Issues

Condom Use

Condom use for anal intercourse among heterosexuals is typically low, with less use for anal intercourse than for vaginal intercourse (Baldwin & Baldwin, 2000; Civic, 2000; Ehde, Holm, & Robbins, 1995; Gurman & Borzekowski, 2004; Hein, Dell, Futterman, Rotheram-Borus, & Shaffer, 1995; Leichter et al., 2007; Misegades et al., 2001). McBride and Janssen (2007) explored the relationship between condom use for vaginal intercourse versus anal intercourse in a sample of heterosexuals who reported both behaviors. Findings suggested significant differences in condom use, with rates being lower for anal intercourse among both men and women. A study of 2,357 heterosexuals found that for anal intercourse in the past three months, 27.3% of participants consistently used condoms, whereas 63% never used condoms. Consistent condom use for anal intercourse was associated with having consistent condom use for vaginal intercourse, two or more partners, and anal intercourse with a casual or new partner (Tian et al., 2008). Among intravenous drug users, condom non-usage rates for anal intercourse are 70% or higher (Bogart et al., 2005; Lewis, Watters, & Case, 1990; Wilson et al., 1999). Among adolescents, condom use rates for anal intercourse between 0% and 47% are reported (Catania et al., 1989; Hein et al., 1995; Houston et al., 2007).

Methodological problems make estimating actual condom use for heterosexual anal intercourse problematic because the majority of studies investigating condom use fail to distinguish between vaginal and anal sex. Further, sample sizes have often not been large enough to conduct statistical analyses that specifically focus on anal intercourse in heterosexual men and women.

Few studies have explored the reasons for lower condom use during anal versus vaginal intercourse. McBride and Janssen (2007) found that relationship

status and number of sexual partners significantly predicted condom use among men, whereas only relationship status was found to be a significant predictor for women. Other studies have identified themes associated with the perceived risks of STI and HIV infection and pregnancy as being associated with condom use. Erickson et al. (1995) found that among married respondents who reported engaging in anal intercourse, 50% of women and 45% of men did not use condoms because they felt they were at “no risk” for a sexually transmitted disease. Similarly, among college students, the most commonly endorsed reason for condom non-use during anal intercourse was, “I just knew my partner was safe” (Civic, 2000). The second-most commonly endorsed reason was related to pregnancy: “We didn’t need to use a condom because pregnancy was not an issue.” A recent study found that, in a sample of adolescents, condom use was more likely to occur for anal intercourse with a casual partner (47%) versus a main partner (21%). Anal intercourse was significantly more likely to be used as a method of contraception by adolescents in casual partnerships when compared to those with main partners (Houston et al., 2007). These findings suggest that because anal intercourse alone does not result in pregnancy, there is not a need to use contraception. This perceived safety may serve as a disincentive for condom use despite the potential for STI exposure and transmission.

Studies assessing condom use errors have implications for STI risk associated with anal intercourse. Although not addressing anal intercourse specifically, a study utilizing a convenience sample of 260 undergraduates found that 83% did not use a new condom when switching between vaginal and anal sexual behaviors (Yarber, Graham, Sanders, & Crosby, 2004). Further, condom breakage, slippage, and discomfort occur more commonly during anal intercourse than vaginal intercourse, which may serve as a further disincentive to use (Grady & Tanfer, 1994; Reiss & Leik, 1989; Silverman & Gross, 1997; Thompson, Yager, & Martin, 1993).

Non-intercourse anal sexual behaviors. Data are scarce on non-intercourse anal sex behaviors such as digital-penetration, manual stimulation, and oral-anal contact. However, such behaviors may have significant implications for the risk of STI transmission and other aspects of sexual health. A recent study investigated the prevalence of heterosexual anal sex behaviors in a sample of heterosexual men ($n = 1,478$), distinguishing between men with insertive anal intercourse experience and those without (McBride & Reece, 2008; McBride et al., 2008). Among the men with insertive anal intercourse experience ($n = 266$), 53% reported that they had inserted a finger into a female partner’s anus within the past 30 days. Further, 24% ($n = 63$) had received a finger in their anus, 24% ($n = 63$) had put their mouth on their partner’s anus, and 15% ($n = 40$) had received

Table 1. *Anal Sexual Behaviors in the Past 30 Days by Lifetime History of Insertive Heterosexual Penile–Anal Sex ($N = 1,478$)*

Variable	Yes ($n = 266$)		No ($n = 1,212$)	
	<i>n</i>	%	<i>n</i>	%
Anal insertive intercourse	$n = 266$	18	—	
Inserted finger in partner’s anus	$n = 151$	53	$n = 125$	10
Received finger in anus	$n = 63$	24	$n = 35$	3
Placed mouth on partner’s anus	$n = 63$	24	$n = 49$	4
Received mouth on anus	$n = 40$	15	$n = 23$	2

a mouth on their anus. In comparison, men with no insertive anal intercourse experience reported lower rates of anal sex behaviors. In this group ($N = 1,212$), 10% reported inserting a finger into their partner’s anus, whereas other behaviors were reported at rates ranging from 2% to 4% (see Tables 1 and 2).

McBride, Sanders, and Hill (2009) investigated the prevalence of non-intercourse anal sex behaviors among a sample of men ($n = 1,299$) and women ($n = 1,919$) with anal intercourse experience and found that 51% of men and 43% of women had participated in at least one act of oral-anal sex, manual-anal sex, or anal sex toy use.

These findings suggest that heterosexual anal sexual contact is not limited to penile-anal intercourse. Further, findings by McBride et al. (2008) suggest that anal sexual contact occurs in the absence of anal intercourse, although prevalence rates of such behaviors are lower in those without penile-anal intercourse experience. The American Association of Sexuality Educators, Counselors, and Therapists published a position paper in *Contemporary Sexuality* (Melby, 2007) calling for attention to behaviors beyond anal intercourse such as oral-anal, manual penetration, and sex toys for anal sex. The paper stated that the failure to consider non-intercourse anal sex behaviors may result in inaccurate estimates of sexual health risk.

Potential mechanisms of increased HIV and STI risk. Heterosexual anal intercourse is a risk factor for both HIV-seroconversion and STI transmission (Halperin, 1999). However, the mechanisms by which anal intercourse increases risk—to the extent these are

Table 2. *Mean Number of Times the Behavior was Performed in Past 30 Days by Lifetime History of Insertive Heterosexual Anal Sex ($N = 1,478$)*

Variable	Yes ($n = 266$)		No ($n = 1,212$)	
	<i>M</i>	<i>Mdn</i>	<i>M</i>	<i>Mdn</i>
Anal insertive intercourse	4.60	2.00	—	
Inserted finger in partner’s anus	6.99	5.00	3.75	2.00
Received finger in anus	5.56	3.00	3.62	2.00
Placed mouth on partner’s anus	6.90	4.00	3.75	2.00
Received mouth on anus	5.52	3.50	4.29	2.00

understood—likely differ by organism (and tropism for specific tissue types) and whether transmission is male-to-female or female-to-male. Three general types of increased risk have been suggested to be associated with anal intercourse: trauma to the anus and rectum associated with penile insertion and thrusting; inflammatory responses to cleansers, lubricants, or semen; and increased presence of types of cells directly infected by specific organisms (Naftalin, 1992; Tabet et al., 1999).

HIV. Unprotected anal intercourse is a key risk factor associated with heterosexual HIV transmission (European Study Group, 1992; Skurnick et al., 1998). The per-act risk of HIV transmission is estimated to be five times higher for receptive anal intercourse and 1.3 times higher for insertive anal intercourse, compared to vaginal sex (Varghese, Maher, Peterman, Branson, & Steketee, 2002).

The most likely explanation for increased susceptibility to male-to-female HIV transmission associated with anal intercourse has to do with the denser population of Chemokine (C-C motif) receptor 5 (CCR5)-bearing immune cells in the rectal mucosa, compared to other tissues (Grivel et al., 2007). Presumably, increased rectal viral shedding among infected women would also account for increased female-to-male transmission risk. Factors associated with variability in rectal HIV shedding are not well-established, especially among infected women (Zuckerman et al., 2007). It is important to note that in all of these studies, anal intercourse and HIV transmission were conducted in samples of MSM. Naftalin (1992) proposed that human semen contains at least two different components which facilitate the degeneration of the membrane that supports the colonic epithelial cell layer, leading to heightened risk for HIV and STI transmission. The inferences from these findings, however, are limited, as the study was conducted using a sample of rats.

HPVs and anal cancers. Like cervical cancers, anal cancers are associated with HPV infection (Joseph et al., 2008; Palefsky et al., 2001; Scott et al., 2008). The prevalence of anal cancers in heterosexual men and women has risen steadily over the past four decades, whereas the prevalence of cervical cancers in women has declined. Anal cancer in the general population is still relatively rare (i.e., roughly two to three cases per 100,000), with increased risk among those who are infected with HIV (Bower et al., 2004; Chiao, Krown, Stier, & Shrag, 2005; Johnson et al., 2004; Palefsky et al., 2001). In some samples of women, it has been found that the prevalence of anal HPV is actually higher than the prevalence of cervical HPV infection (Melbye et al., 1996; Palefsky et al., 2001; Williams et al., 1994). This difference may help account for the increased incidence of anal cancers in women.

Studies of the prevalence of anal HPV in men have primarily focused on samples of HIV-positive men and MSM. Recent findings from a study of 222 heterosexual men, who reported no lifetime same-sex experience, found an overall anal HPV prevalence rate of 24.8% (Nyitray et al., 2008).

Receptive anal intercourse is associated with increased risk of anal cancer among women in some studies (Daling et al., 2004; Hernandez et al., 2005; Moscicki et al., 1999; Sharma, Ranjan, & Mehta, 2004) but not all (Tseng, Morgenstern, Mack, & Peters, 2003). HPV-related cancers likely occur in the absence of reported anal intercourse because of underreporting or because of virus contained in vaginal discharge, or associated with non-intercourse anal sexual behaviors (Moscicki et al., 2003; Winer et al., 2003). For example, in men, anal HPV has been associated with a higher lifetime number of female sexual partners and a higher frequency of sex with female partners in the past month (Nyitray et al., 2008). A study of men with HPV-infected female partners found that 76% were HPV DNA positive (Nicolau et al., 2005).

Palefsky and Rubin (2009) reported that there is biologic similarity between the cervix and the anus with respect to cells infected by HPV. They suggested that the HPV target area is where there is transition between two types of epithelium. In the cervix, HPV preferentially infects squamous epithelial cells on the exocervix at the junction with columnar epithelium of the endocervical canal. In the anus, HPV appears to preferentially infect squamous epithelium of the anus at the junction of columnar epithelium of the rectum (Palefsky & Rubin, 2009). HPV requires direct access to nucleated, basal squamous epithelial cells in order to cause infection. These basal cells are typically covered by several layers of non-nucleated squamous cells. Abrasion of the superficial squamous epithelial cells during intercourse is thought to allow access of HPV to its target cells. Anal epithelia could be especially susceptible if inadequate lubrication were associated with anal intercourse (or penetration by other objects). However, no studies document the frequency or extent of local trauma associated with anal sex, and none have attempted to demonstrate reduction in local trauma associated with lubricant use. Abrasions to the penile skin may also occur during anal intercourse, increasing the possibility of HPV infection should the partner be infected. Although penile cancers are associated with HPV, we find no data that directly links anal intercourse to increased risk of HPV-associated penile cancer.

Most genital HPV infections are clinically inapparent, and are usually resolved by the immune system. Clearance rates of anal HPV may differ when compared to vaginal clearance rates (Shvetsov et al., 2009). Longitudinal findings suggest that anal HPV infections in healthy women resolve quickly, although anal intercourse is

among the non-viral factors found to delay clearance (Shvetsov et al., 2009). Early stages of anal cancer can be identified by Papanicolaou cytology, analogous to screening for cervical cancer. However, no data document reduction in anal cancer rates or improvement in survival associated with such screening.

Gonorrhea, chlamydia, herpes, and other STIs. Many studies have reported higher STI rates among heterosexuals with anal intercourse experience when compared to those without (Auslander et al., 2009; Baldwin & Baldwin, 2000; Bogart et al., 2005; Gross et al., 2000; Kim et al., 2003). For example, lifetime history of anal intercourse was associated in univariate (but not multivariate) analyses with herpes simplex virus–Type 2 (HSV–2) seropositivity (Wald, Koutsky, Ashley, & Corey, 1997). However, findings from other studies found no such association. Gorbach et al. (2009) reported finding no relationship between vaginal and urethral STI (chlamydia trachomatis, neisseria gonorrhoeae, mycoplasma genitalium, trichomonas vaginalis, and genital herpes [HSV–2]) and anal intercourse experience. Screening studies where both genital and anal or rectal specimens are obtained show that anal intercourse is an STI risk factor, but only for men (Nelson et al., 2007).

A number of studies link anal intercourse to changes in vaginal microflora and reproductive tract infections, which can increase the likelihood of STI transmission (Newton, Piper, Shain, Perdue, & Peairs, 2001; Sharma et al., 2004). For example, receptive anal intercourse before vaginal intercourse is independently associated with the acquisition of bacterial vaginosis (Cherpes, Hillier, Meyn, Busch, & Krohn, 2008). The mechanisms by which anal intercourse influences vaginal microflora are unclear because overlap in the two microbial communities is substantial (Van der Pol et al., 2009). Carriage of typically ano-rectal organisms on the penis (e.g., on the glans or beneath the foreskin) has not been assessed. These issues are relevant because most studies of anal sex and vaginal microflora changes are associational.

Lubricants and other products. A variety of sexual lubricants is commercially available, although many women use saliva, vaginal fluids, or lubricated condoms (or use no lubrication at all) for anal intercourse (Exner et al., 2008). Commercially available water-based lubricants typically contain glycerin or propylene glycol, as well as one or more parabens, as preservatives. All of these products are compatible with latex condoms. Silicone-based lubricants typically do not contain preservatives and are also compatible with latex (but not with silicone sex toys). Petroleum-based lubricants continue to be in relatively common use, at least among MSM. The influence of these products on HIV and STI transmission is not extensively studied. Some commercially available lubricants cause vaginal irrita-

tion, suggesting potential for more severe damage to the potentially more fragile rectal epithelia (Adriaens & Remon, 2008; Fuchs et al., 2007; Sudol & Phillips, 2004). As development of vaginal microbicides proceeds, careful study of use with anal intercourse is important (Buck et al., 2006; Fuchs et al., 2007; Longfield, Astatke, Smith, McPeak, & Ayers, 2007).

Few studies address potential adverse effects of other products associated with anal sex (e.g., desensitizing cream or anal douches). Although unstudied among heterosexuals, rectal douching and enema use may increase HIV and STI risk among MSM (Coates et al., 1988; Koziol, Saah, Odaka, & Munoz, 1993; Schreeder et al., 1982). Men who used anal enemas were 7.8 times more likely to develop proctitis associated with lymphogranuloma venereum stains of chlamydia trachomatis (De Vries et al., 2008). Topical desensitizing creams are used to make anal sex more comfortable by numbing the anus (Hilton, 2007). The active agents can include lidocaine, tetracaine, benzocaine, and prilocaine—all of which may pose health risks when absorbed systemically. The U.S. Food and Drug Administration issued an advisory in February 2007, warning against potential health hazards associated with use. The extent to which these products may have negative sexual health consequences is unknown. Anal bleaching is a procedure that lightens the dark skin around the anus. The procedure is done solely for cosmetic purposes, using a cream that contains up to 20% hydroquinone. Hydroquinone is a suspected carcinogen and banned in several countries, including the United Kingdom. A participant in a recent qualitative investigation of rectal microbicide use discussed the practice of anal bleaching as associated with preparation for anal intercourse, stating, “. . . and bleach the area to lighten it up, you know, keeping it attractive. . . . So there is really a lot that goes into it . . . maintaining a good-looking booty” (Exner et al., 2008).

Behavioral Antecedents and Correlates

There has been virtually no systematic investigation of the individual and interpersonal factors that motivate behavioral occurrence and frequency of heterosexual anal sex. What is currently known is primarily based on retrospective studies. For example, research suggests that alcohol and other substance use is associated with anal intercourse experience; however, the lack of event-level data makes it impossible to determine if alcohol or substances were used at the time that anal sex occurred. Hensel, Fortenberry, and Orr (2008) published results from a daily diary study of sexual behavior in adolescent women, including event-level data on heterosexual anal intercourse. The results indicated that days with both anal intercourse and vaginal intercourse were associated with younger age, alcohol use, higher sexual interest, greater negative mood, no coitus in the previous week, and anal intercourse in the previous

week. Days that consisted of anal intercourse only were associated with vaginal bleeding, no coitus in the past week, and days with anal intercourse and coitus in the previous week. These findings suggest that event-level contextual factors may influence the occurrence of heterosexual anal intercourse.

On a broader level, there has been speculation about the extent to which social and cultural factors, such as abstinence-based sexuality education and the proliferation of anal sex images of heterosexual couples in pornography, have contributed to the recent rise in behavioral prevalence.

Virginity. Much of the initial interest in understanding the relationship between heterosexual anal intercourse and virginity was sparked by findings from a study conducted by Sanders and Reinisch (1999). The researchers found that among a sample of 589 college students, 19% of respondents did not consider anal intercourse to be sex (Sanders & Reinisch, 1999). Thus, an individual who engages in anal intercourse but abstains from vaginal sex may still label herself a “virgin.” Few published studies explore virginity as a motivating factor for anal sex; however, a study of urban high school students ($N=2,026$) in Grades 9 through 12, who identified as virgins, found that 1% of the sample had engaged in heterosexual anal intercourse during the previous year (Schuster, Bell, & Kanouse, 1996). More recently, a focus group study that evaluated the language and meaning that abstinence-only-until-marriage program participants (8–17 years old) assigned to the term *abstinence* found that anal intercourse was only mentioned in one focus group of six that were conducted (Goodson, Suther, Pruitt, & Wilson, 2003). Although the significance of the role of virginity as it relates to heterosexual anal intercourse activities cannot be established based on three studies, these findings suggest that “virginity” may play a role in the occurrence of anal intercourse among adolescents.

Pornography and erotica. The influence of pornography on sexual behaviors is documented in adolescents and adults, particularly its effects on aggression and risk taking (Brown & L’Engle, 2009; Vega & Malamuth, 2007; Wosnitzer & Bridges, 2007). The coupling of prevalent heterosexual anal sex images in pornography and erotica and the rise in behavioral prevalence has led to the suggestion that pornography may be influencing the actual incidence of anal sex. We could not find any evidence to support or refute the possibility.

Anal sexuality. An apparently prevalent assumption (with associated social and legal proscriptions) is that penile–vaginal intercourse is “normal” heterosexual sexuality. At best, heterosexual anal sexual behaviors are treated as marginal corollaries to coitus. For example, three widely cited human sexuality texts give no specific

attention to heterosexual anal sex, except in passing mention (Bancroft, 2009; Hyde & Delamater, 2008; Strong, Yarber, Sayad, & De Vault, 2006). Because much of the research, to date, has been conducted within an infection risk paradigm, little consideration has been given not only to anal sexual pleasure, but also to anal sexuality. It is known that anal intercourse occurs less frequently than vaginal intercourse, is associated with low levels of condom use, and is associated with other behavioral risk characteristics. It is also known that heterosexual anal intercourse is often reported to occur within the context of a committed, monogamous partnership. Researchers have often overlooked the latter because the risk for infection is low, although monogamous partners may eventually change or extra-relational partners may affect risk. Within the context of a relationship, it is likely that some heterosexuals incorporate anal sexual behaviors into their sexual repertoires on a regular basis (McBride et al., 2008). For these individuals and couples, anal sex may be a part of their sexuality, but the meanings associated with it might be distinct from those attached to other forms of sexual behavior within the repertoire (i.e., vaginal intercourse).

To better understand feelings toward heterosexual anal sex and the individual meanings ascribed to the behavior, a qualitative analysis of the articles “The Bottom Line,” published in *New York Magazine*, (EM & LO, 2007) and “Is Anal Sex the New Deal Breaker,” published in *Men’s Style* (*Men’s Style*, 2007), was conducted by Kimberly R. McBride in September 2007. In addition, a blog that related to the *Men’s Style* article was reviewed. Quotations from individuals who were interviewed for the articles or who posted comments on the blog were analyzed for themes, and those found to be recurrent were organized into conceptual categories. Six broad categories were identified, including intimacy–trust–gifting, novelty–variety, control–domination, taboo–forbidden–erotic, pain–pleasure, and relationship status–context. To confirm themes, chat room messages on a number of other sites were reviewed. Sites were diverse in content and audience, but all had discussions of anal sexual behaviors—typically, intercourse. No new themes arose. Examples of quotations supporting each category are as follows:

- Intimacy–trust–gifting: “For me, anal sex is very intimate, much more so than regular sex.” (Female respondent)
- Novelty–variety: “Variety is sexy.” (Male respondent)
- Control–domination: “For most of my friends, it’s sort of a domination thing.” (Male respondent)
- Taboo–forbidden–erotic: “. . . and breaking taboos is sexy.” (Female respondent)
- Pain–pleasure: “I think it can feel good for anyone—except if you’re too uptight about it,

meaning, you're literally tight assed." (Female respondent)

- Relationship status–context: "I first did it with my husband. It was a regular part of our married sex life, and I enjoyed it." (Female respondent)

Although not generalizable, the quotations suggest that for a certain number of heterosexuals, anal intercourse is pleasurable, exciting, and perhaps considered more intimate than vaginal sex. Many of the chats that were reviewed focused on the importance of cooperation and communication among partners. Anal intercourse was seen as something that had to be worked toward by both partners in order for it to be a mutually pleasurable experience. It required more planning than vaginal intercourse, including proper preparation. A number of messages discussed aspects of preparation and gave advice—typically, "use a lot of lube," "go very slow," and "incorporate anal play prior to penile penetration." Remarkably, most of the advice was consistent with that of professional sexual health educators and therapists. However, the nature of these data makes it impossible to determine whether the opinions presented are representative of anal intercourse experiences for a substantial number of practitioners or whether they reflect a small number of individuals who happen to enjoy or prefer this form of sexual interaction over vaginal sex. Understanding how anal sex behaviors are introduced and negotiated, as well as the meanings individuals attach to these behaviors, will be important to understanding anal sexuality.

Sexual pleasure. Few studies have devoted attention to sexual pleasure as a motivating factor for anal sex. A small number of studies have briefly commented on sexual pleasure as one aspect of anal sex; however, none has clearly related experiences of pleasure to behavioral motivation. A study that investigated the associations between the pleasurability of various sexual activities and behavioral experiences with the activities found gender main effects for anal intercourse, with heterosexual men rating anal intercourse significantly more pleasurable than women (Pinkerton, Cecil, Bogart, & Abramson, 2003). Among women, higher pleasure ratings were correlated with increased behavioral frequency for all behaviors, *except* anal intercourse. An earlier study of gender differences in college students' attitudes toward sexual behaviors found that men had significantly more positive attitudes toward anal intercourse than women did (Wilson & Medora, 1990). A study that explored young women's motivations for engaging in anal intercourse found that 58% of the women in their sample who had engaged in anal intercourse reported doing so at the request of their male partner (Flannery et al., 2003). These data do not provide information on whether this result differs markedly from gender differences in coital initiation or whether the 58% of

women found anal sex to be unpleasurable or unerotic. However, 45% of the overall sample of women said that they had engaged in anal receptive penetration with a finger or sex toy (e.g., butt-plug, dildo, or vibrator), suggesting that pleasure may be a behavioral motivation for some women who engage in anal activities. Jack Morin, in his 1986 book on anal pleasure and health, wrote:

This brief overview represents virtually all that is known about anal sexuality in the United States, and also indicates the limited scope of research into other times and societies. Although this information is interesting, perhaps even provocative, when we compare it with the depth and detail of materials available about other sensual/sexual behaviors, especially in studies of Americans, it is clear that we are faced with an "information gap." For example, we know next to nothing about people's feelings toward anal pleasure. (p. 14)

Morin's passage was written in 1986; over two decades later, virtually nothing is known about people's attitudes toward heterosexual anal pleasure and its influence on behavioral motivations.

Gender and sexual agency. The findings from the aforementioned studies raise questions about the role of gender and sexual agency in acts of heterosexual anal sex. Although prevalence rates of anal intercourse are roughly the same by sex, these studies suggest that women's ratings of pleasure are lower than men's. Similarly, one study found that 47% of their all-female sample reported anal intercourse experience, with the majority evaluating it as a negative experience (Rogala & Tyden, 2003).

The extent to which coercion or violence play a role in some acts of anal sex must be considered. Sexual coercion and intimate partner violence have been consistently linked to the risk for HIV and STIs (Josephs & Abel, 2009; Kalichman, Williams, Cherry, Belcher, & Nachimson, 1998). Typically, studies have assessed risk by measuring condom use and other behavioral risk factors. For example, a study investigating intimate partner violence and HIV risk among methadone-maintained women ($n=416$) in New York City found that intimate partner violence (sexual or physical) was associated with having unprotected anal intercourse (El-Bassel, Gilbert, Wu, Go, & Hill, 2005). A study that investigated the prevalence and correlates of anal sex among young, inner-city women found that participants who reported having a main partner mostly take the lead "in deciding what you do when you have sex" was significantly associated with unprotected anal intercourse (Friedman et al., 2001). Because both of the studies inquired about unprotected anal intercourse and not intercourse itself, it is difficult to determine whether intercourse was unwanted or coercive.

Sociocultural scripts for sexual behavior may contribute to such findings. Dominant sexual scripts are phallogentric and value "insertive" sexual behavior over

“receptive” sexual acts. Pervasive gendered scripts coupled with the stigma associated with anal sex make receptive anal intercourse one of the least desirable sexual behaviors in Western culture. As a result, there is a cultural assumption that women should view anal sex as undesirable or unerotic and that participation in the behavior can only legitimately result from some level of coercion or acquiescence. This perspective does not allow for wanted anal sex, which marginalizes the sexuality of women who find anal sex pleasurable or erotic. By disallowing the possibility of pleasure in anal sex, cultural discourses are reinforced. The ways in which stigma shapes individual interpretations of, and the willingness to report, anal sex experience has not been explored, although doing so may give insight into experiences of sexual pleasure, as well as acquiescence.

Phallogocentric discourses and the stigma associated with anal sex have influenced the study of heterosexual anal sex by sexual scientists. Research has assumed that anal sex behaviors in women are strictly receptive. Among men, the measurement of anal sex behaviors has been limited to penile–anal insertive or to penile–anal receptive intercourse, which implies a male partner. Very few efforts have been made to understand receptive anal sex behaviors in heterosexual men with female partners, including anal masturbation. Findings from studies by McBride and Reece (2008), McBride et al. (2008), and McBride et al. (2009) document receptive anal sex behaviors, both oral–anal and manual–anal contact, occurring in heterosexual men who report having only had female sexual partners. That fewer men were found to have been the receptive partner than the insertive partner for any given behavior is not surprising, given dominant sexual scripts. Simultaneously, the data document men participating in receptive anal sexual behaviors with female partners.

To understand heterosexual anal sexual behavior, sexual scientists will need to be aware of their own biases and assumptions, particularly as these may affect measurement. For example, traditional measures of sexual behavior may not capture men who are the receptive partners in anal sex with a woman. Ignoring the possibility that men may be engaging in receptive anal sex behaviors severely limits our ability to accurately estimate risk. And, beyond the potential for negative sexual health outcomes, these assumptions confine our understanding of human sexuality to traditional notions of gendered sexual behavior.

Discussion

Anal sex is clearly part of the contemporary heterosexual sexual repertoire and has been for centuries. However, to consider anal sex predominantly as a marginal or atypical heterosexual behavior contributes to its

continued stigmatization. That stigma *never* contributes to sexual health is among the many harsh lessons of the worldwide epidemics of HIV and AIDS. Moreover, the sexual science of heterosexual anal sex seems to follow closely the larger phallogocentric sociocultural scripts that “insertive” sexual behaviors are more acceptable (and even erotic) than “receptive” sexual behaviors. The degree to which sexual science endorses these larger scripts reinforces the idea that anal sex is simply an atypical and more dangerous version of coitus. From this perspective, progress in a new understanding of human sexuality and sexual behavior is unlikely.

Recommendations for Research

Prevalence and frequency. Regardless of the accuracy of prevalence estimates, anal intercourse is practiced, for some with regularity, in heterosexual populations. Data from large-scale, population-based studies have found an increase in behavior among both men and women over the past decade (Mosher, Chandra, & Jones, 2005). To accurately assess risks to sexual health, it will be necessary to broaden the scope of research efforts. Documenting frequency rates of both anal intercourse and other anal sex behaviors, such as oral–anal contact or manual stimulation, will add precision to estimates of risk. Research that includes questions about anal sex behaviors other than intercourse will allow us to gather information from participants who may be at heightened risk, yet would not be identified by research focusing solely on penile–anal intercourse.

Public health and sexual health issues. Exploration of practices associated with anal sex behaviors is also needed. Findings suggest that practices, such as anal douching and sexual lubricant use, may have significant implications for sexual health. Sexual health experts often recommend the use of sexual lubricants to facilitate anal penetration and, recently, sexual lubricants have been used in research as a surrogate for rectal microbicides. Simultaneously, it has been demonstrated that certain sexual lubricants may compromise sexual health by causing irritation that may increase the likelihood of disease exposure and transmission. Other anal products, such as desensitizing creams and anal bleaches, have not been studied. As a result, the associated risks to sexual health remain unknown. Documenting the effects of product use will be important to estimating risk.

A recent study of anal intercourse practices in women found that, for the majority of the sample, anal intercourse was unplanned (Exner et al., 2008). These findings may help explain low levels of condom use. Low condom usage rates indicate that anal intercourse may not be perceived as “risky” because it does not, alone, result in pregnancy. Much like vaginal sex, the context

of the relationship in which anal intercourse and other anal sexual behavior occurs appears to influence behavioral practices. Data suggest that condom use is lower for anal intercourse in the context of a primary or “main” partnership. Additional data indicate that the perceived low risk of STI within an established partnership may serve as a disincentive to condom use.

Behavioral antecedents and correlates. Investigating the role that contextual factors play in influencing both the occurrence of and practices associated with anal sex behaviors will be necessary to understanding the phenomena. Research suggests that anal intercourse is more likely to occur in the presence of alcohol or drug use. However, whether these findings are attributable to proximal factors that act as situational disinhibitors, or are distal factors, such as a propensity for sensation seeking, remains unknown. Future research exploring the association of anal sex behaviors and contextual factors, such as substance use, will be critical to identifying situations in which this sexual risk taking is more likely to occur.

Culture. Despite evidence indicating a rise in the prevalence of heterosexual anal intercourse, anal sexual behaviors continue to carry sociocultural stigma. The extent to which stigma impacts sexual health protective behaviors is unknown. Data indicate that anal intercourse is often unplanned. It may be that sociocultural stigma limits an individual’s ability to negotiate anal sex behaviors, including condom use. Due to the limited study of contextual factors associated with heterosexual anal sex events, it is as yet impossible to gauge the extent to which stigma plays a role in sexual risk taking. Further, it is crucial to consider the extent to which stigma impacts our willingness or ability as researchers to engage in anal sex research.

Summary

Although the sexual health outcomes of heterosexual anal intercourse have been well-documented, we know much less about its precipitating factors, and lack of attention to such detail in the research is problematic. Combined research to date suggests that anal sexual behaviors are complex and influenced by a multitude of factors. As such, researchers wishing to further understand anal sex behaviors need themselves to be flexible and responsive to the challenges of this work. Yet the lack of a theoretical framework in research is also problematic. Since most research has not considered heterosexual anal sex as a behavior independent of coitus, instead, treating it as a riskier substitution for vaginal sex, to explore the relationships between anal and vaginal sex behaviors and anal behaviors occurring in the absence of vaginal sex will contribute to a more precise theoretical framework. Attention to methodology will be critical.

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