SEXUAL MEDICINE REVIEWS REVIEWS

Sexual Dysfunction in Men Who Have Sex With Men

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ABSTRACT

Introduction: Historically, sexual health research has focused on men who have sex with women (MSW) and most research examining the sexual health of men who have sex with men (MSM) has focused on HIV transmission. Despite a high prevalence of sexual health disorders among MSM, there is limited research that has evaluated the diversity of sexual issues in these patients.

Objectives: The purpose of this review is to describe the unique sexual behaviors, concerns, and dysfunctions of MSM by evaluating the literature on sexual health in this specific patient population.

Methods: A PubMed literature search was conducted through December 2020 to identify all relevant publications related to the sexual health, sexual practices, and sexual dysfunction of MSM. Original research, review articles, and meta-analyses were reviewed, including comparisons of sexual behavior and dysfunction between MSM and non-MSM populations and between gay/bisexual men and heterosexual men. Approximately 150 relevant articles were reviewed and 100 were included in the manuscript.

Results: Minority stress can lead to an increase in high-risk sexual behavior, sexual dysfunction, and mental health disorders in MSM. MSM engage in a variety of sexual behaviors, which can lead to differences in sexual dysfunction, such as anodyspareunia during receptive anal intercourse. MSM have higher rates of erectile dysfunction than non-MSM counterparts. MSM have unique activators of sexual pathologies, such as insertive anal intercourse for Peyronie's disease. Prostate cancer treatment may cause MSM to change sexual roles and practices following treatment due to ED, anodyspareunia, or decrease in pleasure from receptive anal intercourse after prostatectomy.

Conclusion: MSM have been neglected from sexual medicine research, which translates to disparities in health care. Further research that focuses on the MSM population is necessary to better educate healthcare practitioners so that MSM patients can receive adequate care that is tailored to their specific needs. **PJ Cheng, Sexual Dysfunction in Men Who Have Sex With Men. Sex Med Rev 2021;XX:XXX–XXX.**

Key Words: LGBTQ; Gay; MSM; Sexual Dysfunction; Sexual Health

INTRODUCTION

Data from the 2009 National Survey of Sexual Health and Behavior showed that 4.2% of adult men in the United States (U.S.) identified as gay, 2.6% as bisexual, and 1.0% as other.[1] The National Health and Nutrition Examination Surveys in 2001–2006 revealed that 5.2% of male respondents had sex with men, while only 44.5% of those men identified as homosexual or gay.[2] Since sexual identity does not necessarily correlate with the gender of recent or lifetime sexual partners, this article will use the term men who have sex with men (MSM) and men who have sex with women (MSW) rather than homosexual, gay, bisexual, and heterosexual unless that terminology was used in the original cited studies. Historically, sexual health research on men has focused on MSW and most research examining the sexual health of MSM has focused on the HIV-positive population and HIV transmission risk. Recently, more studies have evaluated the diversity of sexual health issues among MSM, as the prevalence of sexual disorders among HIV-negative MSM ranges from 42.5% to 79%.[3,4] Commonly reported sexual symptoms include low sexual desire, erectile dysfunction (ED), premature ejaculation (PE), performance anxiety, and anorgasmia.[3] This article will review the different types of sexual behavior of MSM and summarize the different forms of sexual dysfunction in MSM, including sexual desire disorders, mental health disorders, ED, ejaculatory dysfunction, anodyspareunia, the effects of prostate cancer and its treatment, Peyronie's disease (PD), and penile fracture.

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METHODS

A PubMed literature search was conducted through December 2020 to identify all relevant publications related to the sexual health, sexual practices, and sexual dysfunction of MSM. Original research, review articles, meta-analyses, quantitative studies, and qualitative studies were all reviewed, including comparisons of sexual behavior and dysfunction between MSM and non-MSM populations and between gay and bisexual men (GBM) and heterosexual men. Approximately 150 relevant articles were reviewed and 100 were included in the writing of the manuscript. Key words used in this search included the following: gay, bisexual men, men who have sex with men, sexual minorities, LGBT, LGBTQ, healthcare disparities, evaluation, sexual dysfunction, sexual behavior, sexual practices, sexual desire, ED, ejaculatory dysfunction, premature ejaculation, HIV, sexually transmitted infection, geosocial networking, pornography, sexually explicit media, mental health, Peyronie's disease, penile fracture, priapism, anal sex, anal intercourse, anodyspareunia, prostate cancer, prostate cancer treatment, testosterone, male hypoactive sexual desire disorder, male sexual desire disorder, and sexual desire discrepancy.

HEALTHCARE DISPARITIES AND EVALUATION OF MSM

Despite recent advances in the recognition of sexual and gender minorities, these individuals still face significant barriers to appropriate medical care, resulting in worse physical and mental health outcomes.[5] One important factor that can help explain these healthcare disparities is Meyer's minority stress model, which states that discrimination, prejudice, social stigma, internalized homonegativity, and victimization create a hostile and stressful social environment that can lead to high-risk behaviors, mental health problems, and negative physical health outcomes, all of which can negatively affect sexual functioning.[6,7] Contributors of minority stress include (i) objective stressful events and discriminatory experiences; (ii) expectations of stressful events and discrimination and the vigilance this expectation requires; (iii) the internalization of society's negative attitudes, such as homophobia; and (iv) the concealment of one's sexual orientation.[7] Studies have found that sexual minority individuals experience higher rates of mental health disorders, smoking, physical limitations, and poor general health than their heterosexual counterparts.[8,9] Gonzales et al. evaluated nationally representative data from the 2013 and 2014 National Health Interview Survey and found that GBM were more likely to report severe psychological distress, heavy drinking, and smoking than heterosexual men.[10] While this study found that gay and bisexual men had higher levels of education relative to their heterosexual counterparts, that advantage did not translate into better health outcomes, which is evidence that sexual minority stress could be a stronger influence on health than socioeconomic status.[10] Among older men (aged 50 years or older), GBM have higher rates of hypertension and diabetes than do heterosexual men.[9] Another study of older men found that compared to heterosexual men, GBM were more likely to have poor physical health, disability, and poor mental health.[5] Older GBM were also more likely to smoke, drink excessively, and live alone.[5] These disparities were seen despite the fact that GBM had higher education levels and no significant differences in access to care (health insurance, financial barriers, and personal healthcare provider) compared to heterosexual men.[5]

Since studies show healthcare disparities for sexual minority men despite high education levels and equal access to care, one factor could be the quality of healthcare they are receiving. There is a lack of medical education that focuses on the specific health needs of sexual minority individuals like MSM.[11,12] A survey of medical school deans revealed that a median of only 5 hours was spent on lesbian, gay, bisexual, transgender, and queer (LGBTQ) education across all 4 years of medical school.[11] Many healthcare practitioners have negative implicit biases toward sexual minority patients, do not feel comfortable in their ability to provide quality care for sexual minority patients, and do not routinely perform thorough sexual histories.[13] Accordingly, many LGBTQ persons have had negative experiences with the healthcare community, including discrimination, a shortage of knowledgeable providers, and a lack of inclusive information. Due to these experiences and a general distrust of the healthcare system, LGBTQ individuals have lower rates of primary care utilization.[14] For those who do seek out health care, hesitancy to disclose sexual orientation and sexual behavior is common, which is associated with decreased adherence to screening practices and preventative health measures.[14]

Even experts in sexual medicine are not trained adequately to treat sexual minority patients. Saheb Kashaf et al. conducted a survey study of 92 members of the Sexual Medicine Society of North America (SMSNA) and found that 75% of respondents had no or insufficient training on LGBTQ sexual health issues, and while 93% reported treating MSM patients, only 52% routinely ask about sexual orientation or gender of sexual partners.[15] Of those who do not ask, 42% reported that sexual orientation is irrelevant to their patients' care and 26% reported that patients will disclose this information if they think it is important. If healthcare providers who specialize in the treatment of sexual health are not adequately trained to treat sexual minority populations, then it is not surprising that many of them do not inquire about their patients' sexual behaviors or address their specific needs.

A start to fixing the disparity in care for sexual minority patients is by implementing a medical education curriculum that incorporates LGBTQ-specific health issues and transforming the healthcare system to create an environment that is welcoming and affirming for LGBTQ patients and staff.[16–18] Organizations can create a better environment for MSM by providing sexual minority-specific training for healthcare providers and front office staff and enforcing a nondiscrimination office policy.[19]

Other ways include engaging in the local LGBTQ community, utilizing inclusive intake forms, assessment tools, and educational materials, and hiring physicians and staff members who are part of the LGBTQ community.[19] It is extremely important for providers to create a safe space for expression and elicit information about sexual orientation, gender identity, and sexual behaviors and preferences through nonjudgmental discussion and use of appropriate words and terminology that are inclusive and avoid discrimination.

Similar to how healthcare organizations have ignored treating the specific needs of MSM, sexual medicine studies have historically excluded MSM as well. Accordingly, there are methodologic issues with evaluating the sexual function of MSM as questionnaires and research tools are typically geared toward heterosexuals or MSW, and thus, not validated for MSM. Coyne et al. adapted and modified the International Index of Erectile Function, a widely accepted tool used to assess erectile function in MSW, for use in MSM.[20] The researchers incorporated insertive and receptive anal sex, oral sex, and masturbation to the questionnaire, which was administered to 486 MSM with high internal consistency. Another tool developed specifically to evaluate sexual dysfunction in MSM is the Gay Male Sexual Difficulties Scale, a 25-item Likert-type questionnaire, which focuses on receptive and insertive anal intercourse, erectile function, foreskin difficulties, body embarrassment, and seminal fluid concerns.[21] In general, sexual dysfunction studies rely on self-reported data from telephone, internet, and in-person surveys. Despite the adapted International Index of Erectile Function and Gay Male Sexual Difficulties Scale, findings are often not standardized, which makes it difficult to evaluate the MSM population as a whole and compare findings. Furthermore, most studies have relied on non-probability convenience sampling that is not generalizable to the larger population of MSM in the United States.[22] Nonetheless, the literature on sexual health among the MSM population is growing more rapidly in recent years.

SEXUAL BEHAVIOR

Sexual function has many different components, such as desire, arousal, erection, orgasm, ejaculation, comfort, and satisfaction. To help improve the sexual functioning of MSM patients, it is important to first establish what behaviors they are engaging in. Healthcare providers should ask patients if they engage in any sexual activities, and if so, whether they are solo practices or activities involving a partner. If they are sexually active with others, it is important to discern the number and types of partners. For MSM, sexual activity may involve kissing, full body contact, oral sex, genital stimulation, masturbation, anal stimulation (ie, penetration with penis, toys, fingers, tongue/mouth, etc.), and more.[22–24] Rosenberger et al. conducted an internet survey of almost 25,000 MSM in the United States, which revealed that kissing on the mouth, oral sex, and mutual masturbation were extremely common, but only a minority (37.2%) of respondents engaged in anal intercourse during their most recent male-partnered sexual event.[24] Among MSM who do engage in anal intercourse, sexual roles may be fixed or fluid. For instance, an individual may primarily take on an insertive role ("top"), a receptive role ("bottom"), or both, which can be known as "versatile" or the action of "flipping." These roles may change and evolve overtime and may be influenced by preferences of partners.

Other documented sexual behaviors that MSM may engage in include sexual compulsivity, drug use ("party and play"), group sex, and fetishes/kinks/paraphilias, such as role playing (ie, pup play), urination ("watersports"), scatologia (use of feces during sexual acts), sounding (inserting a catheter or object into the urethra), fisting (inserting a fist into the rectum), felching (sucking semen from partner's anus), use of a sex sling (a harness designed to allow sexual activity between one partner suspended by a swing and another who moves freely), and bondage, domination, and sadomasochism (BDSM).[23,25–28] An increasing number of MSM use geosocial networking smartphone applications (apps), such as Grindr, to meet new sexual partners, with a significant proportion engaging in condomless anal intercourse (CAI).[29,30] In addition to condomless sex, other high-risk sexual behaviors (ie, anonymous sex and group sex) and an increasing number of sexual partners put MSM at a disproportionately high risk of contracting HIV and other STIs.[23,31–33] It is important to keep in mind that these sexual behaviors are not specific to gay men, bisexual men, or MSM. It has been suggested that a higher proportion of MSM engage in some of these practices compared to MSW and women, though there is not enough research comparing the sexual practices of MSM with other groups to quantify and compare proportions.

Among older men, there may be more commonalities among sexual practices and sexual problems between sexual minority and sexual majority individuals,[34] but most studies show that there are differences in sexual behavior.[22,27] Data from the 2012 National Survey of Sexual Health and Behavior showed that unpartnered gay men were much more likely to be sexually active than their unpartnered heterosexual and bisexual counterparts.[22] Compared to heterosexual and bisexual men, gay men are also more likely to be in consensual non-monogamous relationships.[27] Studies show that gay men in open relationships compared to gay men in closed relationships have no significant differences in the quality of their relationships with regards to assessments of degree of love for the partner, relationship satisfaction, sexual satisfaction, communication, and commitment.[35,36] Some same-sex male relationships go through stages in which they start out with sexual exclusivity followed by openness as the men get older, but the opposite has also been documented.[35] There are diverse factors that may influence how long-term same-sex male relationships evolve, such as sexual desire mismatch, sexual role mismatch, a desire to avoid jealousy versusversus a desire for sexual variety, and personal attitudes and values about the merits of exclusivity.[35] Nonetheless, Fleishman et al.

found that older MSM (aged 60−75) in same-sex relationships tend to have high levels of relationship satisfaction and resilience, moderate levels of sexual communication and sexual satisfaction, and low levels of internalized homophobia.[37]

SEXUAL DESIRE

The American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) defines male hypoactive sexual desire disorder (HSDD) as persistently or recurrently deficient sexual or erotic thoughts, fantasies, and desire for sexual activity.[38] There is very limited research on male HSDD, but a survey of 1,410 men conducted in the United States in 1992 showed that the prevalence of low sexual desire in men aged 18−59 years ranged from 14% to 17%.[39] Given limited research on men with sexual desire disorders, rates of male HSDD as defined by the DSM-5 have not been established and the typical onset of desire problems is unclear, though it is likely that the acquired, situational form is more common than the lifelong and generalized subtype.[40] It is also unclear whether there are differences in prevalence of male HSDD among MSM compared to MSW. Male HSDD is often erroneously attributed to other medical problems, such as depression, hypogonadism, or erectile dysfunction. DeRogatis et al. provided the first comprehensive characterization of men diagnosed with HSDD using patient-reported outcomes and verified the existence of male HSDD after excluding men with confounding comorbidities.[41]

Sexual desire is an important component of sexual health and sexual desire discrepancy can lead to relationship dissatisfaction.[42] Sexual desire discrepancy, where one member of the couple has higher or lower sexual desire relative to their partner, has been shown to be negatively associated with sexual and relationship satisfaction in heterosexual couples.[43] Pereira et al. conducted the first study evaluating sexual desire discrepancy in gay men compared to heterosexual men. They found that men who experienced no desire discrepancy were more satisfied with their relationship and sex life compared to men with sexual desire discrepancy. There were no differences between men in same-sex relationships versus opposite-sex relationships.[42]

HIV AND SEXUALLY TRANSMITTED INFECTIONS

In the United States, the MSM population is the highest risk group for HIV infection, accounting for 69% of all newly diagnosed infections among adult and adolescent males in 2018.[44] MSM who are black or Latino are at even higher risk and are more likely to be unaware of their HIV status.[44] Several HIV prevention strategies for MSM have been implemented since the AIDS crisis, including behavioral strategies (ie, condom use, seroadaptive practices) and chemoprophylactic strategies (ie, pre-exposure prophylaxis (PrEP), post-exposure prophylaxis, and treatment as prevention.[45] The primary recommended behavioral strategy for MSM is consistent condom use, but only a minority of MSM report using condoms with anal intercourse. Data from the National Survey of Family Growth showed that 31% of MSM reported condom use at last sex,[31] while McFarland et al found that in a cohort of 1,207 MSM in San Francisco, only 25% used condoms consistently.[33]

Since 2012, the antiretroviral drug combination of emtricitabine and tenofovir, known as Truvada (Gilead Sciences, Foster City, CA, USA), has been used for PrEP as an effective strategy in preventing HIV transmission. Descovy, also created by Gilead, was approved as a second option for PrEP by the U.S. Food and Drug Administration in 2019. Grant et al. demonstrated that PrEP with Truvada is effective in reducing the incidence of HIV by 44% and is even more effective with improved adherence to the daily regimen.[46] Among subjects with a detectable study-drug level, compared with those without a detectable level, there was a relative risk reduction of 92%.[46] The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) both recommend the use of PrEP among "high risk" MSM.[47,48] Despite the evidence supporting the safety and efficacy of PrEP, the strategy is underutilized, especially among black and Latino MSM, which is likely attributed to poorer access to health care. Some studies have shown an increase in high-risk sexual behaviors among MSM who take PrEP, while others found no differences in behavior.[45,49]

It is well-known that CAI is associated with HIV transmission, but as described above, MSM engage in a variety of sexual behaviors that may also be associated with STIs and HIV. Rice et al. conducted a cross-sectional survey study of 235 MSM seeking care in a public clinic for STIs.[23] STI prevalence was significantly associated with certain sexual behaviors, such as felching, group sex, fisting, anonymous sex, use of sex slings, and use of insertive sex toys, while HIV prevalence was significantly associated with fisting, felching, use of enemas, and group sex.[23] The use of geosocial networking smartphone apps to find sexual partners may also contribute to a higher risk of STIs, with one study showing significantly higher rates of gonorrhea and chlamydia among MSM who use the apps compared to MSM who do not.[50]

Studies have shown ED is more prevalent among men with HIV compared to HIV-negative men.[51,52] Shindel et al. evaluated 1,361 MSM and found that there was a significantly higher rate of ED among men with HIV ages 40-59 compared to their HIV-negative counterparts.[52] HIV infection without AIDS was not associated with greater odds of ED, while HIV infection with AIDS was associated with significantly higher rates of ED.[52] Huntingdon et al. performed a systematic review of 14 studies evaluating men with HIV to examine factors associated with ED and found that some of the studies found a positive association between CD4 counts and erectile function. Other factors that were found to have significant associations with ED include age, anxiety, depression, time on antiretroviral medication, and protease inhibitor use.[51] Studies have shown that use of ED medications (EDMs), such as phosphodiesterase-5

inhibitors (PDE5i), is more common among HIV-positive MSM compared to HIV-negative MSM.[52,53] One study evaluating HIV-positive MSM showed that compared to MSM who are not prescribed PDE5i, those with a prescription are more likely to engage in insertive CAI with a serodiscordant partner.[53]

Ever since the AIDS crisis began in the 1980s, HIV-positive MSM have experienced discrimination and social stigma, leading to negative mental and physical health outcomes. Young MSM with HIV experience high levels of HIV-related stigma, such as issues related to disclosure of HIV status and negative self-image.[54] HIV-related stigma is associated with increased rates of depression.[54] One study found that, compared to HIV-negative MSM, HIV-positive MSM were more likely to have multiple sexual problems, such as ED and low sexual desire, which were associated with use of antidepressants, the use of avoidant strategies to deal with stress, and sexual risk-taking in casual encounters.[55] It is clear that MSM with HIV are extremely susceptible to both depression and sexual dysfunction.

MENTAL HEALTH

It is well-established that sexual minority individuals have a higher prevalence of mental disorders than heterosexuals. Studies have shown that MSM have higher rates of depression and anxiety compared to the general male population in the United States.[56] There is also a direct correlation between an increase in depression/antidepressant use and the prevalence of sexual dysfunction among MSM.[57] Sexual dysfunction and overall decreased sexual quality of life among MSM can also be attributed to negative body image, internalized homophobia, and experiences of discrimination.[58–60] A study from Hong Kong revealed that MSM who experienced discrimination were more likely to have ED and PE, while those who felt shame regarding one's sexual orientation experienced less satisfaction with sex.[59] Minority stress can also lead to sexual dysfunction among young MSM. Li et al. found that among a cohort of 678 MSM aged 16–29, 14% reported ED and internalized stigma was negatively associated with global satisfaction with one's sex life.[6]

In addition to depression and anxiety, MSM also have higher rates of substance use disorders compared to non-MSM counterparts.[61] Commonly used substances by MSM include alcohol, marijuana, alkyl nitrites ("poppers"), gamma hydroxybutyrate, methamphetamine, cocaine, ecstasy, ketamine, and recreational use of EDMs.[3,52,53,61–66] Drug use by MSM is associated with high-risk sexual behavior and HIV seroconversion.[64] Methamphetamine and sildenafil use are both independently associated with high-risk sexual behavior, such as unprotected anal intercourse, but the association is even greater when both drugs are used together.[66] Substance use is also associated with mental health disorders. For instance, methamphetamine and alcohol use disorders are associated with increased likelihood of comorbid depression, antisocial personality disorder, suicidality, obsessive-compulsive disorder, and social phobia.[61]

Compared to MSW, MSM have higher rates of body dissatisfaction.[60] Negative body image appears to be a significant risk factor for sexual dysfunction among MSM; for instance, negative body image and body dissatisfaction is predictive of PE, while an increased drive for muscularity is predictive of ED.[60] The high rates of negative body image among MSM could stem from an unavoidable comparison to a male partner, which can lead to competition with penis size and asserting masculinity.[67] There is also a strong emphasis on physical appearance within the gay community, which is a problem exacerbated by the pervasiveness of pornography. Studies have shown that 96%–100% of gay men watch sexually explicit media (SEM) and that GBM report significantly more frequent use of internet SEM compared to heterosexual men.[68–70] Greater consumption of SEM is associated with more negative body attitude and symptoms of depression and anxiety.[70]

ERECTILE DYSFUNCTION

While biomedical risk factors for ED are similar in all men, there is evidence that sexual minority men have higher rates of ED than sexual majority men. A meta-analysis of 4 studies by Barbonetti et al. showed that homosexual men had 1.5-fold higher odds of reporting ED compared to heterosexual men.[71] Breyer et al. administered a survey on sexuality to over 2,000 medical students in North America and found that 13.2% of male respondents reported being gay and that the incidence of ED was twice as high among homosexual medical students compared to heterosexuals (24% vs. 12%, $P = .02$).[72] In a study of 7,001 MSM, Hirshfield et al. found that 79% reported having one or more sexual dysfunction symptoms in the past year, with 45% of men reporting ED.[3] One study found that gay men reported more sexual inhibition due to concerns about performance failure, which was a strong predictor of ED.[73] Another study found that older age, HIV seropositivity, lower urinary tract symptoms, and prior use of EDMs were associated with increased odds of ED among MSM, while being in a stable relationship decreased the odds.[63]

The types of sexual practices that an individual engages in may dictate the degree of tumescence required for sexual satisfaction, but one should never assume that a patient does not desire a rigid erection. For MSM who engage in anal intercourse, erectile function is important whether or not they take on a penetrative or receptive position. The erectile response could be a sign of arousal or related to showing masculinity rather than solely for the purpose of offering sexual pleasure to the partner.[27] Accordingly, it is important to offer treatment options to all MSM with ED regardless of sexual behavior.

EJACULATORY DYSFUNCTION

Historically, the definition of premature ejaculation was heteronormative, focusing on the inability to delay ejaculation

during vaginal penetration. According to the American Urological Association (AUA), PE is ejaculation that occurs sooner than desired, either before or shortly after penetration, causing distress to either one or both partners.[74] Nonetheless, there is no universally accepted definition of PE, especially when evaluating MSM. It is particularly problematic that the definition of PE explicitly excludes non-coital sex. What an individual MSM considers to be PE may be different than what MSW or other MSM consider to be PE, especially considering the heterogeneity of sexual behavior in this population. A significant proportion of MSM do not engage in penetrative anal intercourse and of those that do, not all will take on an insertive role. Accordingly, it can be difficult to compare rates of PE in research studies, especially considering that most do not characterize the specific sexual practices when comparing rates of sexual dysfunction between MSM and MSW. A more appropriate definition of PE that is inclusive for LGBTQ patients and individuals who do not engage in sexual behaviors with others would be the following: the following: ejaculation that occurs sooner than desired, causing distress to the individual.

Among MSM, greater odds of PE is associated with younger age, lower number of lifetime sexual partners, having a stable partner, engagement in anal intercourse, high-risk sexual behaviors, social discrimination, and lower urinary tract symptoms.[59,63,75] Compared to MSW, one study shows lower rates of PE among MSM,[59] while another shows higher rates.[39] Similar research comparing homosexual and heterosexual men also have mixed results, with some studies showing lower rates of PE among gay men,[71,73] while others show higher rates or no differences.[72,75] Some studies show an association between a lower number of sexual partners and increased odds of PE.[63,73] For example, Bancroft et al. found that being in a committed relationship was predictive of PE in heterosexual men.[73] Possible explanations for mixed results include sampling errors and biases within these studies, a lack of an appropriate definition of PE that is more applicable to MSM, and the fact that a large proportion of MSM does not engage in insertive anal intercourse. When comparing specific sexual activities, differences in the rates of PE may go away. Jern et al. studied ejaculatory dysfunction in 3,103 Finnish men and when they controlled for differences in frequencies and patterns of sexual activities, they found no significant effects of sexual orientation on ejaculatory dysfunction.[75]

ANODYSPAREUNIA

Compared to MSW, MSM report higher rates of pain during sexual activity.[67] Dyspareunia describes painful vaginal intercourse, while anodyspareunia refers to pain that occurs during or after receptive anal intercourse. Physiological factors that make receptive anal intercourse more prone to being painful include the type of epithelium of the anus, the tightness of the anal sphincter, lack of natural lubrication, and the anorectal angle.[76] Rosser et al. first described anodyspareunia as an unacknowledged sexual dysfunction, with a lifetime prevalence as high as 61%.[4] In a study by Damon and Rosser of 404 MSM, 14% experienced anodyspareunia, most of which avoided anal sex for a period of time, experienced psychological distress, and reported that psychological factors were the primary contributing cause of their pain.[77] Vansintejan et al. surveyed 1,752 Belgian MSM who had engaged in anal intercourse; of the 1,190 men who engaged in receptive anal intercourse within the previous 4 weeks, 59% reported some degree of anodyspareunia.[78] Predictors of anodyspareunia include younger age, decreased frequency of sex, decreased number of partners, inadequate lubrication, lack of oral/digital stimulation prior to penetration, and psychological factors such as anxiety, internalized homophobia, and not feeling relaxed.[76,78,79]

Anodyspareunia is so common that many MSM believe that anal sex must be painful by necessity.[78] Given that Grabski and Kasparek found that 22.3% of MSM did not experience any pain from receptive anal intercourse within the last 12 months and only about 10% reported severe pain, anodyspareunia is not inevitable.[76] Diminishing or preventing pain with penetration can be accomplished with anal foreplay, such oral/digital stimulation, anal massage, anal dilators such as dildos, lubricants, and use of alkyl nitrites ("poppers").[78,79] In order to facilitate anal intercourse, alkyl nitrites are inhaled, causing relaxation of the smooth muscle of the anal sphincter, leading to vasodilation, tachycardia, and a feeling of excitement or euphoria. In the study by Vansintejan et al., 34% of respondents reported use of alkyl nitrites.[78]

PROSTATE CANCER

Cancer survivors are much more likely to develop sexual dysfunction than the general male population.[80] Common causes of sexual dysfunction in cancer survivors include hypogonadism due to gonadal, hypothalamic, or pituitary injury, or direct damage to critical nerves and blood vessels in the pelvis.[80] Prostate cancer treatment can lead to hypogonadism via androgen deprivation therapy or chemotherapy, and damage to nerves and vessels via radical prostatectomy or radiation therapy. Given that approximately 5% of the male population in the United States is MSM, there is an estimated prostate cancer incidence of over 11,000 and prevalence of over 140,000 among MSM.[81] Despite these numbers, the overwhelming amount of research on how prostate cancer treatment affects the health of the patient focuses solely on MSW. Limited studies show that MSM who are diagnosed with prostate cancer are affected by treatment in unique ways. Compared to published norms, MSM who undergo treatment for prostate cancer experience worse mental health functioning, access to psychosocial support, dissatisfaction with their prostate cancer care, ejaculatory concern, and disease-specific quality of life, including worse urinary, bowel, and hormonal symptoms.[81–83]

For MSM, prostate cancer treatment-induced sexual dysfunction includes ED leading to changes in sexual roles and decreased condom use, anodyspareunia, anejaculation, decreased libido,

anatomical penile changes, and urinary incontinence during sex or at orgasm (climacturia).[81–86] Hart et al. evaluated 92 gay men treated for prostate cancer and found that 55% reported substantial changes in sexual behavior following treatment, with 40% reporting marked reduction in sexual activity.[82] ED following prostate cancer treatment is common, which can have a significant effect on men who engage in insertive anal intercourse, especially since more rigid erections are required for anal penetration compared to vaginal penetration.[87] Thus, treatment for ED may not be as effective in MSM compared to MSW. Studies have shown that only 22%–27% of MSM following prostate cancer treatment had erections sufficient for insertive anal intercourse.[83,86] Men who engage in receptive anal intercourse are also affected, particularly following radical prostatectomy, since prostate stimulation contributes to the pleasure of receptive anal intercourse. Furthermore, anodyspareunia following radiation is common due to damage to the rectum or anus.[83,86–88] Prostate cancer treatment may force MSM to change their sexual practices, which is not always an ideal solution since men may experience multiple symptoms of sexual dysfunction that inhibit their abilities to switch roles, changing sexual practices may lead to incompatibility with partners, and sexual roles may be an important part of one's identity.[82,85,86] Accordingly, discussing patients' sexual roles and practices is an important aspect of pretreatment counseling in this population.

Ejaculatory dysfunction following prostate cancer treatment may be more distressing to MSM than for MSW.[81] This could be explained in part by the greater tendency for MSM to eroticize ejaculation and semen through different sexual practices, such as swallowing semen, being ejaculated on, and felching.[26,82,86] Some men report a loss of sensation and pleasure as a result of anejaculation.[86] Ejaculation is often viewed by MSM as evidence of sexual satisfaction, excitement, and completion; thus, anejaculation is associated with sexual dissatisfaction and even partner disappointment, leading some men to avoid sex.[86]

For many MSM, sexual activity is an important aspect of the male identity. Compared to MSW, MSM tend to prioritize sexuality more and remain more sexually active as they age.[86] MSM with committed partners may be better able to cope with the sexual side effects of prostate cancer treatment. However, compared to MSW, MSM are less likely to be in stable relationships; thus, sexual dysfunction particularly burdens single and non-monogamous MSM, who may lack confidence and struggle to find casual or long-term partners.[81] Abstaining from sex may ultimately lead to feelings of social and sexual isolation.[86]

Prostate cancer and hypogonadism, or testosterone deficiency, are both common among older men. Men with hypogonadism may experience decreased libido, erectile dysfunction, decreased muscle mass, decreased strength, fatigue, and depressive symptoms. Some men with prostate cancer undergo medical castration through androgen deprivation therapy, which can lead to severe sexual dysfunction. Repletion of androgen levels through testosterone replacement therapy has been shown to effectively treat symptoms of hypogonadism, including sexual dysfunction and has been recommended by endocrinologists and urologists alike.[89,90] Historically, the use of testosterone therapy in patients with a history of prostate cancer has been controversial due to concerns about exogenous testosterone leading to prostate cancer growth.[91] More recent research has shown that testosterone therapy does not increase the risk or severity of prostate cancer and can be used safely, particularly in men without a history of high-risk prostate cancer.[92,93] Given the importance of sexual function among MSM and the high prevalence of hypogonadism among older MSM with a history of prostate cancer, it is important to consider testosterone use in these patients.

It is clear that MSM undergoing prostate cancer treatment have difficulties with sexual recovery. Healthcare providers need to learn about the unique impacts of prostate cancer treatment on MSM so that they can appropriately counsel their patients. In order to help patients make a treatment decision, providers need to ask about their sexuality, practices, and post-treatment goals and expectations. More research is needed in order to develop more effective sexual recovery strategies that are tailored to the needs of MSM.

PEYRONIE'S DISEASE

Peyronie's disease, which is characterized by penile deformity due to the formation of a fibrous scar within the tunica albuginea of the corpora cavernosa, may affect MSM differently than MSW. Farrell et al. studied a cohort of 27 MSM with PD and compared them to 200 non-MSM PD patients and found that MSM were more likely to present with a non-curvature deformity, such as a narrowing, indentation, hourglass, or hinge (11% vs. 1%, $P = .01$).[94] Of the 75% of MSM engaging in anal intercourse, 42% reported insertive anal intercourse as the activator of PD.[94] Since microtrauma to the penis is a risk factor for PD, it is possible that penetrative anal intercourse puts MSM at higher risk for developing PD. Given that a high degree of penile rigidity is required for insertive anal intercourse, this increased resistance could play a role in causing the formation of penile plaques. Among MSM in the study, 31% experienced decreased libido, 50% reported decreased frequency of sexual activity, and 93% were self-conscious about the appearance of their penis and dissatisfied with its size.[94] PD had negative emotional effects in 89% of MSM.[94] Accordingly, psychosexual assessment is an essential part of PD treatment.

PENILE FRACTURE

Penile fracture is the rupture of the tunica albuginea of the corpora cavernosa. The primary cause in Western countries is trauma during sexual intercourse,[95–98] while the most common etiology in the Middle East is manual bending of the erect penis to achieve detumescence, a practice known as "Taghaandan."[99] Penile fractures due to sexual intercourse may occur more

commonly in stressful situations, such as extramarital affairs or sex in unusual locations outside of the bedroom.[97] The likely mechanism of injury during sexual intercourse is the penis slipping out of the vagina or anus and hitting the perineum or pubic symphysis with a high degree of force,[96] or in the case of the "partner on top" position, the penis slips out and the partner lands on the erect penis with force.[98] Studies evaluating the association between penile fracture and sexual positions show mixed results with one meta-analysis showing no association between sexual position and relative risk of penile fracture.[100] Barros et al. found that out of 69 cases of penile fracture due to sexual intercourse, the majority occurred in the "doggy style" position (37 cases, 53.6%).[96] In contrast, another study found that "woman on top" was the most common position (14 of 32 cases, 43.8%).[98] The "man on top" and "doggy style" positions were associated with increased severity of the penile fracture (ie, bilateral corporal injuries, urethral injury) compared with the "woman on top" position.[96]

Two studies consisted of a few MSM patients in their penile fracture cohorts, with all cases occurring during anal intercourse.[95,98] Reis et al. found four cases of penile fracture among MSM with 2 cases involving "doggy style" and 2 with the patient on top.[98] Barros et al. also evaluated four cases of penile fracture involving MSM and found that all 4 cases resulted from the "doggy style" position.[95] Two patients had unilateral corporal injuries, 2 had bilateral injuries, and 1 had complete urethral injury. All 4 patients developed sexual complications, such as penile pain, low sexual desire, ED, PE, and delayed ejaculation.[95] Some physical features that patients complained about were surgical scars, palpable fibrotic nodules, decreased penis size, and penile curvature.[95] Although penile fracture is a rare urologic injury, it is important to study the etiologies, presentations, and complications in MSM.

CONCLUSION

There is a high prevalence of sexual health disorders among MSM. Minority stress can lead to an increase in high-risk sexual behavior, sexual dysfunction, and mental health disorders. High-risk sexual behavior, such as CAI, can lead to an increase in transmission of HIV and other STIs. Though MSM may have higher numbers of sexual partners than MSW, being in a stable relationship has a positive effect on sexual dysfunction for MSM. Compared to MSW, there are higher rates of ED among MSM, even in young adults. There is no clear relationship between sexual partner preference and PE. Depending on their sexual practices, MSM may experience different forms of sexual dysfunction besides erectile and ejaculatory dysfunction, such as anodyspareunia. They also have different activators of Peyronie's disease and penile fracture, which are both associated with insertive anal intercourse. Prostate cancer treatment in MSM can have a debilitating effect on sexual function, disease-specific quality of life, and psychological well-being. ED and anodyspareunia from treatment can cause MSM to change sexual roles and practices or abstain from sexual activity altogether. Anejaculation can be particularly distressing for MSM given the eroticization of semen by some men.

Prostate cancer is an example of how disparities in research negatively impact the health of MSM. Sexual medicine studies have historically neglected MSM and few validated questionnaires are able to adequately assess sexual function in MSM, such as insertive and receptive anal intercourse. There is an abundance of research on HIV transmission among MSM, but otherwise, there are very few studies that evaluate other aspects of sexual health in this underserved population. Many of the studies described in this review are small qualitative studies, and the quantitative studies that have compared MSM with MSW or GBM with heterosexual men often consist of small numbers of MSM or GBM. In the studies that do have comparison groups, it is important to highlight that there is significant heterogeneity among these studies; some studies focus on self-identified sexual orientation while others focus on sexual practices; some studies include bisexual men while others exclude them. There is a necessity for further research on sexual dysfunction among MSM as a whole and specifically on MSM who self-identify as different sexual orientations in order to evaluate differences among these groups. For instance, MSM who identify as gay may have differences in sexual and mental health parameters compared to MSM who identify as heterosexual and MSM who identify as bisexual. In order to better evaluate this specific population in research studies and in clinical practice, new validated instruments are warranted.

Healthcare practitioners need better education and training in treating MSM patients, as culturally competent care for sexual minority patients is part of medical professionalism. Providers are often unprepared to address the unique needs of MSM, a problem compounded by the fact that they often do not ask patients about their sexual preferences and practices. Providers should ask about the diversity of sexual practices that their patients engage in instead of focusing solely on penetrative intercourse. When counseling patients, it is important to avoid assumptions and be self-aware of biases. Tailored resources and tools for MSM are also necessary for patient education, which can hopefully lead to improvement in health care outcomes and quality of life.

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