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## Pleasure and PrEP: A Systematic Review of Studies Examining Pleasure, Sexual Satisfaction, and PrEP

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### Abstract

Pre-exposure prophylaxis (PrEP), is an effective form of Human Immunodeficiency Virus (HIV) prevention for people at potential risk for exposure. Despite its demonstrated efficacy, PrEP uptake and adherence have been discouraging, especially among groups most vulnerable to HIV transmission. A primary message to persons who are at elevated risk for HIV has been to focus on risk reduction, sexual risk behaviors, and continued condom use, rarely capitalizing on the positive impact on sexuality, intimacy, and relationships that PrEP affords. This systematic review synthesizes the findings and themes from 16 quantitative, qualitative, and mixed methods studies examining PrEP motivations and outcomes focused on sexual satisfaction, sexual pleasure, sexual quality, and sexual intimacy. Significant themes emerged around PrEP as increasing emotional intimacy, closeness, and connectedness; PrEP as increasing sexual options and opportunities; PrEP as removing barriers to physical closeness and physical pleasure; and PrEP as reducing sexual anxiety and fears. It is argued that positive sexual pleasure motivations should be integrated into messaging to encourage PrEP uptake and adherence, as well as to destigmatize sexual pleasure and sexual activities of MSM.

### Keywords

PrEP; pre-exposure prophylaxis; pleasure; sexual satisfaction

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## Introduction

Advances in research and treatment for Human Immunodeficiency Virus (HIV) have transformed an HIV diagnosis from a death sentence to a manageable chronic illness for those with access to testing, treatment, and adherence to antiretroviral therapy (ART), with the HIV-related death rate in the United States (U.S.) falling by half between 2010 and 2018 (Bosh et al., 2020). Globally, new HIV diagnoses have dropped 30% in the past ten years, with AIDS-related deaths nearly cut in half since 2010 (UNAIDS, 2021). However, despite medical advances and broadened knowledge about HIV transmission, HIV incidence has remained stagnant in much of the world, with new global HIV infections ranging from 1.5 million to 1.8 million annually (UNAIDS, 2021), and new HIV infections in the U.S. ranging from 37,000–40,000 annually (Centers for Disease Control and Prevention [CDC], 2020). These facts remain troubling for HIV researchers, health care practitioners, and individuals at risk of exposure to HIV.

The tools for HIV prevention dramatically expanded in 2012 when the U.S. Food & Drug Administration (FDA) approved the pre-exposure prophylaxis (PrEP) drug Truvada for men who have sex with men (MSM), which effectively lowered the risk of HIV seroconversion among HIV-negative persons (FDA, 2012). PrEP is a pill taken by individuals who are HIV-negative that reduces the risk of contracting HIV by 99% when taken as prescribed (CDC, 2021b). Since 2012, PrEP has become available in hundreds of countries, contributing to a global increase in PrEP use, and PrEP eligibility in the U.S. has expanded to include a wider range of people at risk for HIV, including persons who report any acts of condomless sex (Schaefer et al., 2021). A subsequent iteration of PrEP has aimed to reduce side-effects and improve efficacy when a daily dose has been missed (FDA, 2019).

There are several other efficacious HIV prevention methods including Post-Exposure Prophylaxis (PEP), a medication taken after potential exposure to HIV, but it is only recommended for use in emergency situations (CDC, 2021a). The U=U campaign (Undetectable = Untransmittable) and Treatment as Prevention (TasP) conceptualize that when an individual who is HIV-positive initiates and adheres to ART to lower their viral load to undetectable levels, they are actively preventing HIV transmission (Kalichman, 2013; Rendina et al., 2020). Negotiated safety is an additional HIV prevention method, in which there is an explicit agreement with established boundaries regarding condom use or exclusivity in the partnership (Kippax et al., 1993, 1997; Leblanc et al., 2017). These methods can be highly effective tools for HIV risk reduction even when engaging in condomless anal sex (Kippax & Holt, 2016), although each method requires reliance and trust on a sexual partner to be aware of their HIV-positive status, to be adherent to ART to achieve an undetectable viral load, or to have open communication about their sexual behaviors with others. These methods may pose further challenges in the U.S., as many MSM living with HIV are unaware of their positive status, and ART adherence remains difficult for many individuals receiving treatment (CDC, 2018).

PrEP is not without challenges, as there are several structural, financial, and social stigma barriers to PrEP uptake and adherence (Guyonvarch et al., 2021; Mayer et al., 2020; Sullivan & Siegler, 2018), the scope of which vary across sociodemographics, risk factors,

jurisdictions, and location. However, this review focuses primarily on PrEP, as PrEP has several notable benefits including long-term use, allowing individuals on PrEP to advocate and be responsible for their own sexual health without reliance on negotiations with a partner, and freedom to engage in sexual activities without knowing the HIV status of their sexual partners.

While PrEP's efficacy when taken correctly has been demonstrated, PrEP uptake and adherence has lagged worldwide (Owens et al., 2019; Sidebottom et al., 2018). Although the World Health Organization (WHO) reported a 70% increase in PrEP users from 2018 to 2019, the total number of individuals who received at least one dose of oral PrEP in 2019 was only 630,000, with most in the U.S. (37%) and Africa (36%) (WHO, 2021). This figure falls considerably short of the number of persons at high risk for HIV who are recommended to begin PrEP based upon WHO guidelines.

Campaigns promoting PrEP have predominately focused on HIV prevention and reducing the risk of HIV to motivate individuals at elevated risk for HIV to adopt PrEP as a risk reduction strategy (Owens et al., 2019). This risk-focused messaging often fails to acknowledge studies on motivations for PrEP uptake which have found that greater sexual freedom, not merely minimization of sexual risk, may underlie decisions to seek PrEP (Ranjit et al., 2019, 2020; Zimmerman et al., 2019). Ranjit et al. (2019, 2020) have posited a dual motivation model to increase PrEP uptake, outlining a Protection Motivation Pathway derived from a desire to protect oneself from risk, often in the context of safe sex fatigue; and the Expectancy Motivation Pathway, derived from a desire for more satisfying and pleasurable sexual experiences. Ranjit et al. (2020) and Zimmerman et al. (2019) found that among samples in both the U.S. and Ukraine, persons may possess a mixture of motivations, both personal and contextual, such as self-efficacy for adherence, individual risk profile, sexual situations, and desire for improved physical and mental well-being. Similarly, Zimmerman et al. (2019) found that these motivations may shift based upon relationship status and other contextual factors. These studies support the rationale that in addition to sexual health motivations, embracing the pursuit of sexual pleasure as a motivator for PrEP uptake may positively influence PrEP adoption.

Paradoxically, PrEP messages that target greater sexual pleasure and sexual freedom may collide with PrEP stigma, as PrEP stigma is grounded in large part in moralization against sexual pleasure, casual sexual encounters, and sexual exploration as being inherently negative (Calabrese & Underhill, 2015). Research examining barriers to PrEP adoption by MSM has found PrEP stigma to be a predominant impediment to willingness to adopt PrEP, as PrEP stigma incorporates stigma toward sexual minorities, social stigma pertaining to certain sexual behaviors and stigma against sexual promiscuity (Eaton et al., 2017; Girard et al., 2019; Grace et al., 2018; Peng et al., 2018; Quinn et al., 2020). Qualitative interviews and focus groups of MSM reflect persistent stigma experienced within gay communities themselves, as opposed to wider societal views. Responses from the focus groups were organized around concepts of social risk, immoral promiscuity, responsibility, and perceived irresponsibility (Girard et al., 2019; Quinn et al., 2020). Unfortunately, focus on stigma has often overshadowed the sexual benefits of using PrEP; namely, less sexual anxiety, more sexual pleasure, and increased sexual intimacy. In some respects, PrEP stigma has

translated to stigmatizing sexual pleasure, which undermines the positive health and well-being benefits of sexuality.

Sexual satisfaction, distinct from sexual function, frequency, and orgasm, has been found to correlate with measures of well-being as well as physical health (Diamond & Huebner, 2012; Flynn, et al., 2016; Laumann et al., 2006; Rosen & Bachmann, 2008; Stephenson & Meston, 2015). In these studies, sexual satisfaction is a subjective concept, rather than an objective counting of sexual behaviors or function, such that sexual satisfaction equates with “an individual’s subjective evaluation of their sexuality” (Castañeda, 2013, p. 25), or as defined by Lawrance and Byers (1995) as, “an affective response arising from one’s subjective evaluation of the positive and negative dimensions associated with one’s sexual relationship” (p. 268). Global endorsements of sexual pleasure as an important component of sexual health and overall well-being have emerged as well (Ford et al., 2019), framing sexual pleasure as a matter of public health, thus expanding sexuality discourse beyond disease prevention or sexual dysfunction. However, despite calls for greater coordination of sexual health initiatives by the U.S. Surgeon General (U.S. Department of Health and Human Services, 2002; Satcher, 2013), progress towards sexual positivity and sexuality as a component of well-being has been hampered by social constraints, stigma, and moralistic concerns (Ford et al., 2017). Further, as articulated in the WHO’s current working definition, sexual health is:

...a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, *as well as the possibility of having pleasurable and safe sexual experiences*, free of coercion, discrimination and violence. (WHO, 2002) (Emphasis added).

The World Association for Sexual Health (WAS) elevated the importance of sex positivity and pleasure even higher, officially declaring sexual pleasure integral to sexual health, holistic health, and overall well-being (WAS, 2019).

Remarkably, HIV prevention research and discussions of sexual pleasure do not ordinarily intersect, despite this substantial body of research connecting sexual satisfaction with overall well-being and improved health outcomes. The medicalization of HIV prevention has been soundly criticized by some as bereft of sexuality and pleasure, framing sexual behavior in terms of risk and barely considering sexual acts themselves as part of the human drive for pleasure, connection, intimacy, self-discovery, and even adventure (Auerbach & Hoppe, 2015; Calabrese & Underhill, 2015; Race, 2015). Public health researchers have endorsed advocating for rights to sexual pleasure as a matter of well-being for all sexual orientations (Boone & Bowleg, 2020; Gruskin & Kismodi, 2020; Landers & Kapadia, 2020; Pitts & Greene, 2020). The right to sexual pleasure includes being “sex positive,” acknowledging broad sexual diversity in activities, orientation, and practices. In short, sexual pleasure in and of itself, distinct from the biological effects of physical stimulation, may improve well-being psychologically, mentally, and physically. Entitlement to sexual pleasure should be recognized as a right of sexual minority men, which can be substantially benefited by access to PrEP (Boone & Bowleg, 2020).

To assess the state of the science and guide future research, we conducted a systematic review of research examining sexual pleasure as it relates to PrEP use. Our aim was to synthesize qualitative and quantitative studies examining PrEP motivations and benefits, focusing on enhanced sexuality, sexual pleasure, sexual quality, sexual satisfaction, and sexual experiences. Our approach was directed toward gaining a broader understanding of the extent to which sexual pleasure and PrEP are related, and to better understand the extent to which framing messages about sexual pleasure and PrEP could increase both uptake and adherence.

## Method

### Search Strategy

A systematic literature review was conducted by searching PubMed, Academic Search Premier, American Psychological Association (APA) PsycINFO, and CINAHL databases to identify peer-reviewed articles examining PrEP use and sexual pleasure in accordance with updated PRISMA guidelines (Page et al., 2020). Searches combined the following terms: PrEP OR preexposure prophylaxis OR pre-exposure prophylaxis AND pleasure OR satisfaction OR sexual quality OR sexual well-being OR sexual wellbeing OR intimacy OR intimate relationships. Our search was limited to English language articles involving human participants. Articles were located through September 15, 2020, with no publication date restriction in order to conduct the most comprehensive review possible. References in articles selected for potential inclusion were also reviewed, and the Google Scholar database was used to check citations for additional articles. The combined search of the databases and additional sources yielded 505 records. The 505 records found were screened by title for inclusionary criteria, resulting in 110 abstracts to be reviewed. Inclusion criteria were as follows: English language, peer reviewed studies, PrEP and sexual pleasure specifically or substantively examined in the results analyzed. Review of the 112 abstracts resulted in 45 records excluded either because they were literature reviews, essays, or commentaries (9); stigma focused (6); or pleasure was not a significant focus (30). Thereafter, 67 articles were fully reviewed, resulting in 16 articles being chosen for final inclusion; one study of women was excluded from formal review as the themes were distinct from those expressed by men. Reasons for exclusion of 51 full text articles were: essays, theoretical, commentary or not peer-reviewed (18); not substantively focused on pleasure (18); stigma focused (9); non-English (1); not PrEP (2); examined drug use with sex (2); and no male participants (1). A revised version of the PRISMA 2009 Flow Diagram was used to illustrate the search, review, inclusion, and exclusion process (Moher et al., 2009) (Figure 1).

Because most of the included studies were either qualitative or mixed methods, the initial stage of data extraction involved discerning themes emerging across studies and then assessing those themes with the quantitative data, undertaken by the first author, and confirmed after independent analysis by the second first author. Table 1 synthesizes the data from all of the studies to examine study and participant characteristics, design, emergent themes, and findings. The studies were reviewed by both first authors for quality using the MMAT for coding purposes (Hong et al., 2018); all of the included studies were determined

to range from excellent to acceptable quality, with no studies falling into the low-quality category.

## Results

### Study Characteristics

Table 1 describes the study and participant characteristics, design, recurring themes regarding PrEP, and main findings. Two of the studies were exclusively quantitative; 10 studies were exclusively qualitative, involving interviews (7), focus groups (1), a combination (1), or text analysis (1); and four studies used mixed methods. Studies were conducted in eight countries: U.S., Canada, Eswatini, France, Uganda, England, Australia, and Belgium. The majority of studies elicited the experiences of gay or bisexual MSM (14), whereas two studies analyzed text or interviewed both men and women. There were 2,658 unique participants; 2,612 men (2 identified as transgender), 512 who were qualitatively assessed; 43 women, all qualitatively assessed; and 3 transgender women. Most of the studies had racially diverse participants (11); two studies only enrolled individuals identifying as Black, and three studies did not report racial or ethnic information. All 16 studies collected sexual orientation information and had a majority of gay or bisexual MSM participants. Five studies were conducted as part of larger PrEP demonstration projects. Seven studies examined only PrEP users, three studies examined only non-PrEP users, and the remainder (6) included a mix of PrEP adopters and non-PrEP adopters. Five studies specifically examined MSM in partnered relationships; however, only two studies (Malone et al., 2018; Nakku-Joloba et al., 2019), assessed both partners in a couple.

In the aggregate, both the quantitative and qualitative studies reviewed lend support for viewing the interaction between PrEP and sexual pleasure through two lenses: what PrEP has added to the sexual lives of persons on PrEP or can potentially add, and what PrEP has taken away. Using these lenses, several common themes emerged across the studies which we present in our results: PrEP as increasing intimacy, PrEP as increasing sexual options, PrEP as removing barriers to physical closeness, and PrEP as reducing sexual anxiety and fears.

### PrEP as Increasing Intimacy

Studies involving primarily partnered individuals (Gamarel & Golub, 2015; Malone et al., 2018; Nakku-Joloba et al., 2019) as well as studies including MSM engaging in casual sexual encounters (Collins et al., 2017) found that desire for greater intimacy motivated willingness to adopt PrEP, distinct from simply removing a physical barrier (e.g., condom) to closeness. In Gamarel and Golub's (2015) surveys of HIV-negative MSM in New York City in committed relationships, motivations to improve intimacy predicted PrEP adoption willingness. Indeed, the hypothesized association between the physical motivation for condomless sex and willingness to use PrEP was not supported in the Gamarel and Golub (2015) study. Notably, in a subsequent study, Gamarel and Golub (2019) found individuals who desired more closeness in their relationship were more likely to adopt PrEP. Intimacy motivations were also expressed by single men, with one participant commenting, "[I]t's

also just not having a condom on – it’s just so much more intimate that I’m actually giving my body to somebody and letting them cum inside me” (Collins et al., 2017, p. 59).

### **PrEP as Increasing Sexual Options**

Many participants referred to PrEP as sexually liberating, allowing a broader possibility of sexual partners, including HIV positive persons (Collins et al., 2017; Quinn et al., 2020), alleviating fear around receptive sexual positions (Hughes et al., 2018; Mabire et al., 2019; Reyniers et al., 2020), and expanding the range of sexual activities that can be engaged in at clubs and parties (Grace et al., 2018; Harrington et al., 2020). As one MSM participant reflected, “Sex isn’t meant to be something you’re ashamed or fearful of...now that I can have bareback sex again, it’s just fantastic. Sex has been liberating again thanks to PrEP” (Grace et al., 2018, p. 26). Another Black MSM spoke of his new sexual freedom on PrEP as a “get out of jail free card” making him feel sexier as a partner (Quinn et al., 2020, p. 1382). Akin to liberation is the sexual empowerment expressed by MSM on PrEP, allowing individuals to define their own levels of acceptable risk and to responsibly practice safety in the context of sexual behaviors (DaSilva-Brandao & Iannni, 2020; Hughes et al., 2018; Malone et al., 2018; Philpot et al., 2020; Skinta et al., 2020).

### **PrEP as Removing Barriers to Physical Closeness**

Sexual pleasure can be separated into physical pleasure and emotional intimacy. Likewise, sexual satisfaction goals include satisfying both physical and emotional needs and desires (Gamarel & Golub, 2020). Condom use is still often recommended for people using PrEP, as it does not protect against sexually transmitted infections (STIs). However, condoms may not always be utilized as for many, HIV prevention is the primary concern, particularly for HIV serodiscordant couples in committed monogamous relationships. In the literal sense, by eliminating the necessity to use condoms to protect against HIV transmission, PrEP removes a physical barrier to sexual pleasure, thereby increasing physical sexual satisfaction (Mabire et al., 2019). Condoms are experienced as “totally different from skin,” skin being preferred (p. 6). Men also discussed the awkwardness of condoms; including putting them on, maintaining an erection, and worry over whether a condom stayed on and intact during sexual intercourse. Several remarked how PrEP removed these negative thoughts when engaging in sexual activities. Couples in committed relationships referred to PrEP as allowing them to return to “live sex”, despite being in a serodiscordant relationship (Nakku-Joloba et al., 2019). Comments culled from a Facebook discussion group of gay and bisexual MSM reflected that sex on PrEP was seen as more natural, providing deeper sensation than sex with condoms (DaSilva-Brandao & Iannni, 2020). In one study, PrEP adoption was associated with higher sexual satisfaction scores for MSM in relationships (Gamarel & Golub, 2020).

### **PrEP as Reducing Sexual Anxiety and Fears**

Hand in hand with sexual satisfaction, reducing sexual anxiety and fear was expressed by many participants as a motivation for PrEP use, as a specter of HIV risk hovered over many sexual encounters, inhibiting the sexual experience (Collins et al., 2017; Harrington et al., 2020; Hughes et al., 2018; Philpot et al., 2020; Quinn et al., 2020). In a longitudinal study of gay and bisexual MSM (Whitfield et al., 2019), PrEP status significantly predicted lower

sexual anxiety compared to periods when not on PrEP. Although this study did not find PrEP status predicted sexual satisfaction, PrEP's role in relieving the psychological barriers to sexual pleasure cannot be underestimated, as it threaded through most of the studies and reflections of PrEP users. As one MSM said, "You know, sexuality is your core, and it only makes sense that when that's freer – I kind of refer to it as a second coming out" (Collins et al., 2017, p. 60). An older gay man reflected, "Who wants to be intimate with somebody and be in a state of terror? You know? You're not giving your all" (Hughes et al., 2018, p. 394). For heterosexual couples, PrEP reduced fear in their relationships, making sexual intercourse less fraught with risk for the couple and opening the door to having children (Nakku-Joloba et al., 2019). In short, PrEP can transform "sex=risk" to "sex=pleasure" (DaSilva-Brandao & Ianni, 2020).

## Discussion

Our systematic review of 16 studies examining PrEP use and sexual pleasure found that among MSM, PrEP use increased intimacy and options for sexual partners, sexual positions, and sexual activities; and reduced barriers to physical closeness, and anxiety and fears surrounding HIV transmission during intercourse. In HIV prevention, PrEP's role in improving sexual health has been to reduce risk of HIV transmission; however, sexual health is much more than protecting against risk. Gamarel and Golub (2020) suggested that intimacy goals and sexual health goals are often intertwined, as connection achieved through sexual experience while on PrEP can enhance the relationship. These findings are in line with WHO's current working definition of sexual health as encompassing "*the possibility of having pleasurable and safe sexual experiences,*" (WHO, 2002; emphasis added) and WAS's recognition that sexual pleasure is integral to sexual health, holistic health, and overall well-being (WAS, 2019). A recent essay published in *The Lancet* (Mitchell et al., 2021) has echoed these sentiments, calling sexual pleasure "distinctly relevant" to public health as it impacts diverse physical, psychological, and cultural outcomes. The reviewed studies reveal that MSM and other PrEP users experience their sexuality holistically as well, expressing the sexual freedom afforded by PrEP, whether by increasing intimacy or sexual diversity, reducing barriers to physical closeness, or reducing anxiety. PrEP messages to encourage uptake and adherence should consider these findings.

One theme in many of the reviewed studies was the control that PrEP affords over pleasure, and not solely over risk, whether framed as increasing options or reducing HIV anxiety. The synthesized findings in this review are consistent with studies finding that the use of PrEP was associated with reduced anxiety in MSM (Keen et al., 2020). As Race (2016) remarked, HIV prevention efforts have failed to acknowledge that sexual activities are intended to be pleasurable, targeting sexual risk behaviors as if sex is merely an activity like climbing, and evaluated based on risk rather than sexual connection between human beings with needs and desires. Defining sexual behaviors between MSM using terms such as sexual risk ignores the right to sexual pleasure, the desire for which was evident in the reviewed studies (Granta & Koesterb, 2016; Snowden et al., 2016). This right to sexual pleasure goes hand in hand with a right to sexual intimacy, as many participants in MSM relationships valued connection and closeness at least as much as physical pleasure.



A pertinent clarification emerging from the data was the extent to which PrEP has opened the door to risk compensation and whether the potential of risk compensation behaviors would offset gains to PrEP uptake through promoting sexual pleasure. Before PrEP and other recent biomedical advances, condoms were the most effective means of preventing HIV transmission during intercourse, and are still the most effective means of STI prevention. However, consistent with our results, research has found decreases in condom use as many feel that condoms act as a physical barrier to closeness with their sexual partners (Paz-Bailey et al., 2016; Smith et al., 2015) diminishing feelings of intimacy and pleasure (Fennell, 2014; Mabire et al., 2019), despite recent advances in condom technology creating more pleasurable condom designs. Although MSM reported associating PrEP with a desire for condomless anal sex (CAS), these statements were often made against the backdrop of persons acknowledging inconsistent condom use, viewing PrEP as making CAS less risky and not necessarily increasing the occurrence of CAS when on PrEP (Collins et al., 2017; Hughes et al., 2018). For many persons, although condom use behaviors changed to some degree, PrEP was not seen as a means to eliminate condoms entirely (Harrington et al., 2020). Other PrEP users stated that for them “HIV is the only significant STI”, and that they evaluated the risk of CAS as acceptable in certain situations, since “funerals are not held for chlamydia” (DaSilva-Brandao & Iannni, 2020, p. 1408). For many PrEP users, the decision to engage in CAS was a reflection of their individual risk perception toward other STIs, seen as extremely prevalent while at the same time easily treatable (Reyniers et al., 2020). Although engaging in CAS or more “adventurous” sexual behaviors while on PrEP may increase risk of STIs, the greater perception of sexual pleasure without condoms is a substantial motivator for PrEP adoption and thus may increase uptake and adherence (Prestage et al., 2019). In addition, open sexual agreements allowing casual sex with outside partners can increase HIV risk for the partnered couple, potentially negatively impacting trust and intimacy. Although negotiated safety agreements have been found to be effective for some partnered MSM (Jin et al., 2009), for those not diligently practicing HIV prevention techniques such as negotiated safety, U=U, or TasP, this risk can be obviated when PrEP is adopted, as PrEP mitigates risk when an agreement is broken or a “slip up” happens (Malone et al., 2018).

Pleasure-focused PrEP messaging could improve the sex lives of MSM by blunting the stigma around the sexual behaviors of sexual minorities (Grace et al., 2018; Sun et al., 2019). Although not the focus of this review, HIV and PrEP stigma were referenced in many of the studies, notably in the qualitative responses of MSM (Collins, 2017; Philpott, 2020; Quinn et al., 2020). Openly promoting PrEP as enhancing sexual pleasure and positively depicting sex among MSM could chip away at the social norms that sanction only heterosexual sex or sex with condoms, which negatively stereotypes casual sex, club sex, and barebacking (Dubov et al., 2018; Knight et al., 2016; Marcus & Gillis, 2017; Schnarrs et al., 2018). In short, shifting the language surrounding PrEP from risk to pleasure has the potential to erase the line between “acceptable” and “unacceptable” consensual sex, reduce the negativity surrounding promiscuity, and stamp all sex - whether casual or committed - as equally safe (Auerbach & Hoppe, 2015; Marcus & Snowden, 2020). While framing safe sex using a pleasure-focused lens is not new, as evidenced by Knerr and Philpott’s work

on the Pleasure Project (2006, 2009), PrEP's effectiveness provides a unique opportunity to simultaneously reduce HIV risk and increase pleasure.

This review systematically examined the relationship between PrEP and pleasure, including both quantitative and qualitative studies, enabling a richer understanding of personal experiences and perceptions which provides support for novel ideas for effective messaging to increase PrEP uptake among sexual minorities. Notably, one limitation of this review was the small number of included studies that directly examined sexual satisfaction, sexual quality, or sexual pleasure. However, in several of the reviewed studies, themes of sexual pleasure were included among many topics discussed by participants. Moreover, while the results of this review can be generalizable to a wide variety of individuals who are on or interested in PrEP, it's results may not be applicable to individuals who use other effective HIV prevention methods, including negotiated safety, U=U, or TasP. We chose to focus exclusively on PrEP for this review as each of the other strategies have their own limitations, often requiring negotiation or trusted open communication with sexual partners, whereas PrEP allows individuals to protect themselves from HIV whether partnered or engaging in casual sex. Included studies in this review examining PrEP and intimacy involved individuals who were not in relationships, thus considering intimacy outside of partnered or committed relationships.

Several studies outside of the time parameters of this review have recently been published that confirm that sexual satisfaction and sexual pleasure messaging could provide an effective avenue for increasing PrEP uptake and adherence. In their large online survey of 7,639 sexually active respondents, Marcus et al. (2021) found that PrEP users reported higher sexual satisfaction generally, with higher scores on specific components such as sexual sensations, sexual presence, and sexual variety. In their clinic-based study of PrEP users in Providence and Boston, Montgomery et al. (2021) found that sexual satisfaction scores significantly increased for MSM after PrEP uptake. In a focus group study conducted in France by Puppo et al. (2020), all 38 participants expressed increased sexual quality after being on PrEP. Zimmerman et al.'s (2021) interviews of 64 participants who were part of the larger AMPREP demonstration project similarly found that PrEP users experienced more sexual diversity and sexual quality, although some persons reported increased preoccupation with sex and drug use. The psychological benefits of improved sexual quality and sexual expression after PrEP uptake was found by Van Dijk et al. (2021) in their survey of PrEP users in the Netherlands.

Further, while several authors have discussed incorporating sexual pleasure in HIV prevention messaging, the effectiveness of this messaging has yet to be tested beyond the #PrEP4Love campaign targeted at a younger population (Dehlin et al., 2019; Keene et al., 2020). Pleasure-oriented messaging should target middle and older adults, as contrary to social presumptions of asexuality, these populations remain sexually active well into late adulthood (Sinkovic & Towler, 2019). In addition, more studies should interview all partners in relationships; whether in dyads, triads, or other configurations, to better understand receptivity to overt pleasure messaging in terms of physical sensation, intimacy, sexual exploration, and reduced sexual anxiety. Finally, a systematic review studying the barriers and facilitators of PrEP among MSM conducted by Hannaford et al. (2017) included search

terms such as stigma, social stigma, and awareness and attitudes, but not sexual pleasure, sexual satisfaction or sexual quality, thus making this work a unique contribution to the field.

In conclusion, the present review adds to the understanding of a potential facilitator of PrEP uptake: sexual pleasure. Advocating for sexual pleasure in the lives of persons at risk for HIV may require the re-education of health care professionals, whose stigmatized views toward PrEP and PrEP users have also been cited as barriers to PrEP access and uptake (Calabrese et al., 2019; Devarajan et al., 2020). The results from this review suggest that future research should explore receptiveness toward explicit pleasure-based messages within sexual minorities, single MSM, couples, other relationship dynamics, and health care professionals. It is high time for HIV researchers to frame sex, sexual satisfaction, and sexual pleasure as valid objectives for persons of all sexual orientations and identities.

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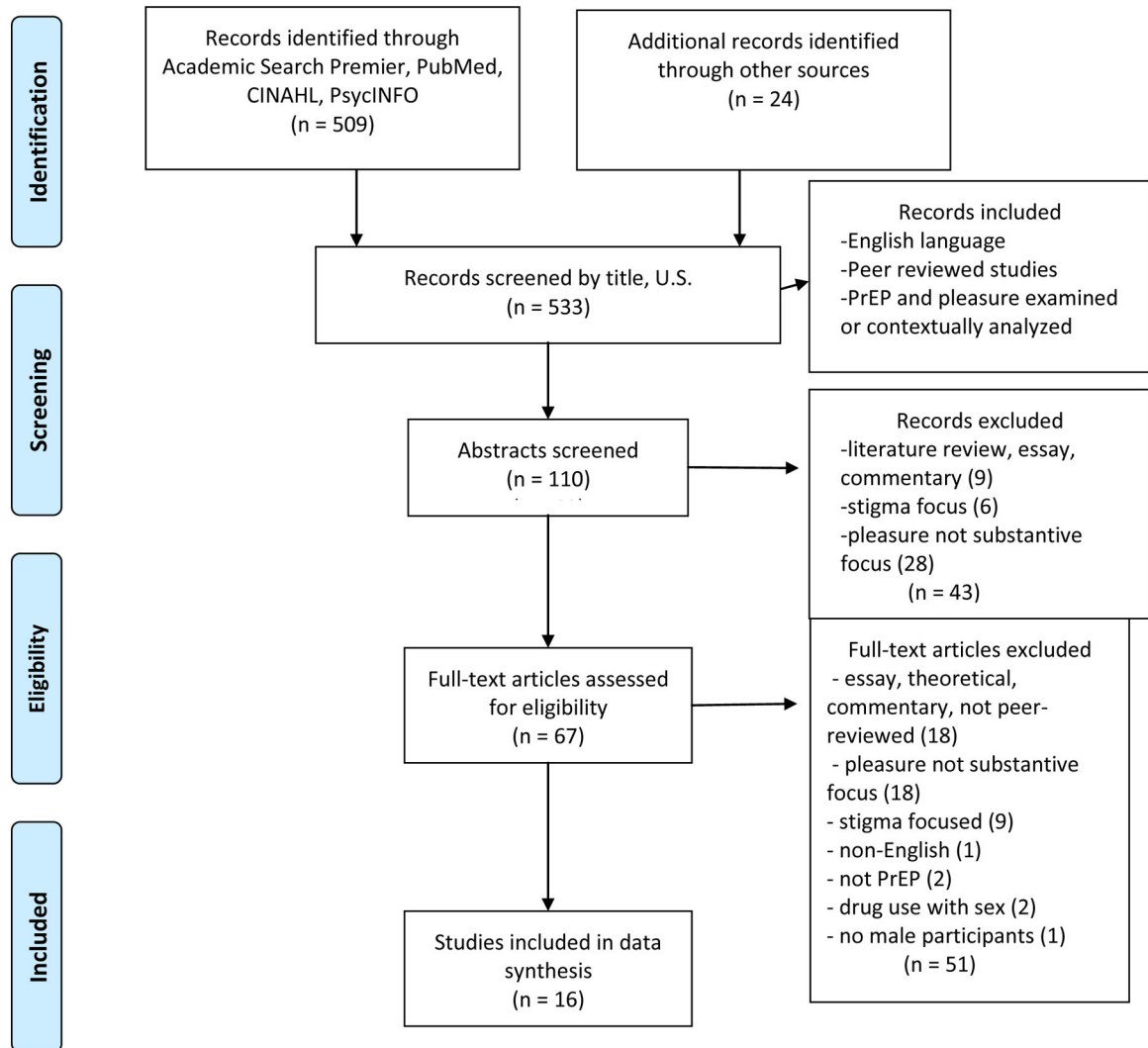


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**Figure 1.**  
PRISMA Flow Diagram of Studies Examining Pleasure, Sexual Satisfaction, and PrEP.

**Table 1:**

Overview of Reviewed Studies

Study	Location	Recruitment	Participant Characteristics*	Sexual Orientation	HIV Status	PrEP Status	Study Design	Themes Regarding PrEP Use	Main Findings
1. Gamarel & Golub (2015)	New York, NY; USA	Flyers, outreach, participant referral January 2012 - October 2013	1. N=164 2. 18-61; M=32.49 (SD=10.32) 3. Men=100% 4. White=66; Black=50; Latino=36; Other=12 5. 100% Partnered	100% MSM; Gay=114; Bisexual=38; Other=12	HIV-negative: 100% Partner Status: unknown=17; think positive=124; positive=23	Not on PrEP: 100%	Cross-sectional surveys and in-person interviews (verbal quantitative data collection) (Quantitative)	Perceived HIV risk HIV testing behavior Sexual risk and substance use behavior Condom use motivation PrEP adoption intentions	Intimacy Intimacy interference Motivations predicted willingness to adopt PrEP; physical pleasure interference motivations did not. Intimacy interference motivations improved model fit over CAS with outside partners and HIV risk perception with PrEP adoption intentions. Intimacy motivations were not found among single MSM.
2. Collins et al. (2017)	Seattle, WA; USA	Flyers with local PrEP providers July - August 2014	1. N=14 2. 26-66 3. Men=13; Transgender=1 4. White=12; Black=1; Latino=1 5. NR	100% MSM	HIV-negative: 100%	On PrEP: 100%	Semi-structured interviews (Qualitative)	Desire for safer CAS Reduced anxiety and shame Improved sexual satisfaction Stigma of PrEP use within gay community (e.g., promiscuous, irresponsible, risk taker) Stigma of PrEP use in healthcare settings	Intimacy Those in committed serodiscordant relationships more likely to use PrEP to improve intimacy. PrEP relieved psychological Sexual Anxiety and Fears burden of HIV risk and improved self-efficacy and body control. On PrEP, participants reported: less fear, anxiety, panic; more satisfaction, connectivity, sexual liberation, peace of mind.
3. Grace et al. (2018)	Toronto; Canada	PrEP users from Canadian demonstration project November 2014 - June 2016 (PrEP approved in Canada February 2016)	1. N=16 2. 20-60; M=37.6 (SD=NR) 3. Men=15; Transgender=1 4. White=11; Black=1; Asian=1; Indigenous=1; Other=2 5. NR	100% MSM or Gay	HIV-negative: 100%	On PrEP: 100%	Focus groups, In-depth interviews (N=5) (Qualitative)	PrEP use as sexually liberating Equal access to healthy pleasurable sex PrEP-related stigma HIV-related stigma PrEP as revealing structural stigma	Sexual Options "Equality of access to healthy sex that straight people already have" Empowering with HIV-positive partner. Sexual Anxiety and Fears Liberation from fear of CAS. Sex allowed to be enjoyable again. Other Reduced stigma around sex with HIV-positive gay men;

Study	Location	Recruitment	Participant Characteristics*	Sexual Orientation	HIV Status	PrEP Status	Study Design	Themes Regarding PrEP Use	Main Findings
4. Hughes et al. (2018)	San Francisco, CA; Miami, FL; USA	Sub-study of multi-site PrEP demonstration project May 2014 - August 2015	1. N=32 (N=15, San Francisco; N=17, Miami) 2. 24-66; M=40 (SD=NR) 3. Men=100% 4. White=13; Black=5; Latino=12; Asian=1; Mixed=1 5. NR	100% MSM	NR	On PrEP: 100%	Semi-structured interviews (Qualitative)	Scheper-Hughes & Locke's (1987) "Three bodies" concept Individual body/selves Social bodies on PrEP Perspectives from the body politic Integration of sexuality and self	no need to ask about HIV status.  Sexual Options PrEP use allowed for sexual liberation and greater self-efficacy. Sexual Anxiety and Fears Influence of PrEP on sexual behaviors may be indirect by reducing anxiety around CAS. Meanings attributed to PrEP use often emotionally charged, bittersweet, reduced fear. Other Sexual decision making as part of social interactions within and outside of relationships. PrEP as a way to prevent HIV understood differently across ages.
5. Malone et al. (2018)	Boston, MA; USA	Urban health center and community-based organizations	1. N=40 (20 couples) 2. 29-45; M=33 (SD=NR) 3. Men=100% 4. White=32; Black=5; Other=3 5. 100% Partnered (M=5.5 years)	100% MSM	HIV-negative: 16 couples HIV-discordant: 4 couples	On PrEP: 52.5% (N=21)	Semi-structured interviews (Qualitative)	Foundation for sexual agreements and improving communication Emotional monogamy PrEP and sexual agreements PrEP and risk mitigation of consequences of partner's risk behaviors	Sexual Options PrEP to reduce HIV risk individually and for their committed relationship. PrEP helping relationships to be sexually open/lower risk of sexual agreements. Anxiety and Fears PrEP helped to restore trust, confidence, and safety in relationships. Using PrEP for reduced anxiety/peace of mind. Other Using PrEP highlighted risk awareness and did not result in risk compensation. Prioritizing HIV-prevention.
6. Gamarel & Golub (2019)	New York, NY; USA	Flyers, outreach, participant referral, SPARK PrEP demonstration project April 2013 - October 2013	[Study 1/Study 2] 1. N=51/145 2. 19-61; M=32.14 (SD=NR)/21-63; M=34.30 (SD=NR) 3. Men=41/145 4. White=20/77; Black=18/16 5. 100% Partnered	100% Gay or Bisexual	HIV-negative: 100%	Not on PrEP: 100%/ 66.9% (N=97)	Both Studies: Computer-assisted interview surveys (Quantitative)	Study 1: Closeness discrepancy (IOS) Condom intimacy interference Perceived HIV risk Sexual risk behavior PrEP adoption intentions Study 2: Relationship quality	Intimacy Majority in both samples desired more closeness in their relationships. Study 1: Closeness discrepancy scores and intimacy interference positively associated with PrEP intentions. Study 2: Desiring more closeness predicted PrEP

Study	Location	Recruitment	Participant Characteristics*	Sexual Orientation	HIV Status	PrEP Status	Study Design	Themes Regarding PrEP Use	Main Findings
7. Mabire et al. (2019)	France	Men from ANRS-IPERGAY PrEP trial 2014	1. N=45 2. 20-67; M=35 (SD=NR) 3. Men=100% 4. NR 5. Partnered=17	100% MSM; Gay=40; Undefined=5	HIV-negative: 100%	On PrEP: 100%	Semi-structured interviews (Qualitative)	Sexual satisfaction PrEP uptake  Relationship with condoms Intimacy and pleasure Achieving better sexual quality of life	uptake. Study 2: Actual closeness and intimacy interference predicted PrEP uptake, but no interaction (separate motives). Other Study 2: Open sexual agreements not inherently risky.  Intimacy PrEP allows greater physical and psychological intimacy. Ending condom use a sign of intimacy. Sexual Options PrEP allows choice of sexual position. Physical Closeness Condoms as reducing sexual pleasure, in terms of activity and putting them on (reduced "fear of loss of performance"). Sexual "fulfillment as opposed to frustration". Other Sexual agency and control over risk.
8. Nakkuloba et al. (2019)	Uganda	Partners Demonstration Project (PrEP)	1. N=186 (93 couples) 2. 25-37 3. Men=143; Women=43 4. Black=100% 5. 100% Partnered	MSM, Heterosexual (number NR)	HIV-serodiscordant couples: 100%	On PrEP: 79.5% (N=148)	Interviews (274 total; 148 couples; 126 individuals) (Qualitative)	PrEP alleviated threat to relationships PrEP as a way to stop using condoms PrEP allows serodiscordant relationships to continue	Intimacy/Physical Closeness PrEP to make it "safe" for "live sex" to increase intimacy and closeness. Reluctance to use PrEP and condoms together, as undermining intimacy. Sexual Options/Sexual Anxiety and Fears PrEP reduced fear and brought back hope in making future plans for family. Other PrEP increased sexual desire. PrEP restores hope in relationships.
9. Whitfield et al. (2019)	National Cohort; USA	Cohort of Gay Black men from the "One Thousand Strong"	1. N=137 2. 18-45+; M=35.98 (SD=NR) 3. Men=100% 4. White=96; Black=15;	100% MSM, Gay, Bisexual	HIV-negative: 100%	Baseline: 0% (entire sample never used PrEP)	Survey data (Quantitative)	Multidimensional sexual self-concept Measured sexual satisfaction, esteem, and anxiety PrEP use	Physical Closeness CAS with casual partners and being in a relationship predicted sexual satisfaction. Sexual Anxiety and Fears PrEP use predicted lower

Study	Location	Recruitment	Participant Characteristics *	Sexual Orientation	HIV Status	PrEP Status	Study Design	Themes Regarding PrEP Use	Main Findings
		longitudinal study	Latino=15; Other/Multiracial=11 5. Partnered=63			Final Follow-up: Currently on PrEP: 88.3%			sexual anxiety, greater for older age participants. Other PrEP use did not predict sexual esteem or sexual satisfaction ( <i>Note: sexual satisfaction scale did not directly assess physical pleasure</i> ).
<b>10.</b> da Silva-Brandeo & Zollner Ianni (2020)	Facebook posts; primarily USA	PrEP users in Facebook discussion group	1. NR 2. NR 3. NR, mainly men 4. NR 5. NR	100% MSM, Gay, Bisexual	NR	On PrEP: 100%	Analysis of Facebook posts (Qualitative)	Experience of individuals on PrEP Production of sexual desires and/or pleasures User individuation and identity expression Social context of PrEP	Sexual Options CAS is a possibility; change in forms of pleasure; bareback sex can be responsible, not libertarian. Sexual choices not framed by risk. Physical Closeness Allows experience of natural skin on skin sex, as opposed to "unnatural" (some caution with the term as inferring deviant sex). Other Potential for greater positivity towards sex: sex equaling pleasure instead of risk.
<b>11.</b> Gamarel & Golub (2020) **	New York, NY; USA	Community-based service organizations, support groups, drug treatment centers, SPARK PrEP demonstration project January 2014 - October 2015	1. N=145 2. 21-63; M=34,30 (SD=NR) 3. Men=100% 4. White=77; Black=16; Latino=29; Other=23 5. Partnered=79 (at follow-up)	100% MSM: Gay=110; Bisexual=19; Other=15	HIV-negative: 100% Partner Status: HIV-negative: 84 HIV-positive: 48 Unknown: 13	On PrEP: 66.9% (N=97)	Open-ended survey questions, survey data (Mixed)	PrEP adoption Perceptions of goal congruence Relationship quality Sexual satisfaction Risk perception Sexual behavior and goals and priorities Relation focused vs. self-focused	Intimacy Intimacy goals to be connected to partner more relationship focused; intimacy goals included sexual freedom in relationships. Sexual Options Satisfaction goals more self-focused: "to explore all types of pleasure". Other Higher goal congruence, HIV-positive status of partner, higher sexual satisfaction predicted PrEP adoption. Prevention goals of sexual health more self-focused, some for protection of partner.
<b>12.</b> Harrington et al. (2020)	London; United Kingdom	Social media advertisement on a United-Kingdom-based	1. N=13 2. 26-56; M=37 (SD=NR) 3. Men=100%	100% MSM	HIV-negative: 100%	On PrEP: 100%	Semi-structured interviews (Qualitative)	PrEP and condom use Lessened anxiety around HIV Increased intimacy	Sexual Options Reduction of risk of CAS; less emphasis on condom use; condom use at request

Study	Location	Recruitment	Participant Characteristics *	Sexual Orientation	HIV Status	PrEP Status	Study Design	Themes Regarding PrEP Use	Main Findings
13. Philpot et al. (2020)	Australia	non-profit community group	4. White=9; Black=2; Indian=1; Other=1 5. NR	100% MSM	HIV-negative or untested: 100%	Mixed (number NR)	Survey/online longitudinal study, free text responses (Mixed)	and pleasure Sense of sexual liberation Ease of using PrEP Activism by early adopters of PrEP	of non-PrEP partner. PrEP increased sexual agency, more freedom to explore sexuality, less inhibited. <u>Sexual Anxiety and Fears</u> Sexual encounters more pleasurable with less anxiety, more intimacy and physical pleasure. <u>Closeness</u> More "natural" sex, more sexual pleasure, more sexual options. <u>Sexual Anxiety and Fears</u> Concern for increase in CAS; false sense of security around STIs. Other Redefining safe sex and potential to reduce HIV stigma. Lessening sexual inhibitions. Potential impacts on gay community to be seen as irresponsible or lazy; encouraged promiscuity. Pressure to engage in socially undesirable sexual behavior.
14. Quinn et al. (2020)	Milwaukee, WI; Minneapolis, MN; Detroit, MI; Kansas City, MO; USA	Community organizations in study cities (e.g., flyers in clinics, HIV testing centers, LGBT community centers, local hangout locations), targeted Facebook ads 2018	1. N=36 2. 20-30; M=25.9 (SD=NR) 3. Men=100% 4. Black=36 5. Partnered=15	100% MSM: Gay=25; Bisexual=5; Other=6	HIV-negative: 100%	Current PrEP user: 75% (N=27) Former PrEP user: 25% (N=9)	Focus groups (Qualitative)	Reduced sexual and HIV anxiety Increased sexual freedom Facilitated sexual relationships with PLWH	<u>Sexual Options</u> Freedom to consider new sexual positions, less risk when bottoming. <u>Sexual Anxiety and Fears</u> PrEP reduced anxiety around having sex, which existed even with condoms. PrEP safety net includes increased HIV testing, can explore sexuality. Positive sero-discordant relationships, reduced HIV stigma, increased comfort. Other CAS viewed as "sexier". Increased control over sexual risk, not having to rely on partner. PrEP as showing love for HIV-positive partners.



Study	Location	Recruitment	Participant Characteristics*	Sexual Orientation	HIV Status	PrEP Status	Study Design	Themes Regarding PrEP Use	Main Findings
15. Reyniers et al. (2020)	Belgium	PrEP demonstration project October 2015 - May 2018	Surveys/ Interviews 1. N=200/22 2. M=38/37 3. Men=197; Transgender Women=3/Men=22 4. White=178/19; Arabic/Latino=22/3 5. Partnered=90/4	100% MSM; Gay=144/17	HIV-negative: 100%	On PrEP: 100%	Surveys, interviews (Mixed)	Evaluation of sex life Healthy sexuality Sexual risk behavior Feeling better protected against HIV Improved sexual health Reduced condom use More sex and more anal sex Experimentation with new sexual behaviors	Sexual Options Ability to seek out more enjoyable sex. More sex, more anal sex, sexual experimentation. Increased group sex in qualitative but not quantitative data. Physical Closeness PrEP reduced psychological barriers to having sex (staying erect). Sexual Anxiety and Fears Better sex due to less anxiety Other No significant change in mean sexual satisfaction.
16. Skinta et al. (2020)	San Francisco, CA; USA	Flyers, billboards in historically gay neighborhood, participant- driven recruitment February 2016	1. N=6 2. Mid 20's-late 30's 3. Men=100% 4. White=3; Latino=3 5. NR	100% MSM/Gay	HIV-positive: 100%	Not on PrEP; 100%	Semi- structured interviews (Qualitative)	Desire for intimate connection Remembered experiences of stigma Men who do not take PrEP are suspect Awareness of the changing meaning of HIV	Intimacy Greater experience of sexual intimacy. PrEP as a sign of commitment to a partner. Sexual Options More sexual openness. PrEP requirement for some when using dating applications. Easier for HIV-positive men to find partners. Other PrEP allowed greater agency over self-protection.

\* 1. N=# of participants; 2. Age range, Mean (standard deviation) if reported; 3. Gender; 4. Race/ethnicity; 5. Partnered status.

\*\* Same study sample as Gamarel & Golub (2019) Study 2

NR: Not Reported; MSM: men who have sex with men; IOS: inclusion of self in others; CAS: condomless anal sex; PLWH: people living with HIV