
Faculty of Human and Social Development

Faculty Publications

This is a post-print version of the following article:

Exchanging a “Gnawing Thought for “Taking a Pill Once a Day”: Examining Sexual Minority Men's Experiences With PrEP and Mental Health in a Universal PrEP Access Context

Nick Gagliano, Stéphanie Black, Caroline Mniszak, Jeffrey Morgan, Nathan Lachowsky and Rod Knight

2021

This article is distributed under the terms of the Creative Commons Attribution License. <https://creativecommons.org/licenses/by-nc-nd/4.0>

The final publication is available at:
<https://doi.org/10.1521/aeap.2021.33.5.411>

Citation for this paper:

Gagliano, N., Black, S., Mniszak, C., Morgan, J. D., Lachowsky, N. J., & Knight, R. (2021). Exchanging a “Gnawing Thought for “Taking a Pill Once a Day”: Examining Sexual Minority Men’s Experiences With PrEP and Mental Health in a Universal PrEP Access Context. *AIDS Education and Prevention*, 33(5), 411–423. <https://doi.org/10.1521/aeap.2021.33.5.411>

Exchanging a “gnawing thought” for “taking a pill once a day”: Examining sexual minority men’s experiences with PrEP and mental health in a universal PrEP access context

Nick Gagliano [3], Stéphanie Black [1], Caroline Mniszak [1,2], Jeffrey Morgan [1,3], Nathan Lachowsky [3,4], Rod Knight [1,2]§*

1. British Columbia Centre on Substance Use, Vancouver, Canada
2. Department of Medicine, University of British Columbia, Vancouver, Canada
3. Community-Based Research Centre, Vancouver, Canada
4. School of Public Health and Social Policy, University of Victoria, Victoria, Canada

§ *Corresponding Author:* Rod Knight, PhD

British Columbia Centre on Substance Use

400-1045 Howe St, Vancouver, BC V6Z 2A9

Email: bccsu-rk@bccsu.ubc.ca

Running Head: Mental health and sexual minority men’s experiences with PrEP in Vancouver, Canada.

Acknowledgements

This study was supported by the Canadian Institutes of Health Research [CTW-155550]. RK and NJL are supported by Scholar Awards from the Michael Smith Foundation for Health Research. This work was supported in part by an Innovation Research Grant from CANFAR, the Canadian Foundation for AIDS Research.

We want to thank our study participants for sharing their stories and experiences with us. Thank you to the Investigaytors Team, who were involved in many stages of the research process as community partners. We also want to acknowledge the contributions of staff members who aided with data collection, coding and other stages of the research cycle, including Anna Carson, Michelle Pang, Leslie Szeto, Natasha Parent, Victoria Panwala, and Rodney Stehr.

Abstract

Introduction: This study explores how universal access to and taking no-cost Pre-Exposure Prophylaxis (PrEP), which effectively prevents HIV acquisition, may impact the mental health-related experiences of sexual minority men, including HIV-related anxiety.

Methods: We employed community-based and participatory methods to conduct and analyze 27 interviews with sexual minority men in British Columbia (BC), Canada.

Results: Before starting PrEP, participants' experiences with sex were highly associated with HIV-related anxiety. Participants stated they did not explicitly initiate PrEP to reduce HIV-related anxiety, yet many described significant reductions of HIV-related anxiety after starting PrEP. Participants described feeling that the sex they were having was “safer” following their initiation of PrEP, which resulted in increased ability to access heightened experiences of pleasure, desire and intimacy.

Conclusion: PrEP's capacity to impact HIV stigma and health broadly should continue to be explored, particularly given the mental health inequities faced by those who may acquire HIV.

Keywords: HIV, PrEP, mental health, anxiety, sexual minority men

Introduction

Sexual minority men, including gay, bisexual and other men who have sex with men, experience disproportionate rates of HIV in Canada. In 2016, sexual minority men were estimated to comprise 49.1% of all people living with HIV and 52.5% of all incident HIV infections in Canada, despite representing only 4% the adult male population (Public Health Agency of Canada, 2018). HIV susceptibility experienced by sexual minority men is shaped by sexual behaviour, including higher per-act transmission during anal sex compared with vaginal sex, and social and structural factors, including homophobia, and discrimination within health care services that can perpetuate internalized homophobia (Batchelder et al., 2017; Hamilton & Mahalik, 2009; Hatzenbuehler et al., 2008; Mahalik et al., 2006; Meyer & Dean, 1998). This discrimination and the associated stigma can lead to significant barriers to HIV-related education, prevention, and care (Hottes et al., 2012; Knight et al., 2014; Knight et al., 2019; Lachowsky et al., 2019).

In addition to HIV-related inequities, sexual minority men also experience disproportionate rates of mental health issues. For example, it is estimated that between 20-50% of sexual minority men experience anxiety and depressive disorders (Brogan et al., 2019; Cochran & Mays, 2000; King et al., 2008; Meyer, 2003; Mills et al., 2004; O’Cleirigh et al., 2015), rates which are 1.5 to 2 times higher than those for heterosexual men (Batchelder et al., 2017; Bolton & Sareen, 2011). Research indicates that mental and sexual health outcomes are often co-occurring, including the relationship between mental health disorders, sexually transmitted and blood-borne infections (STBBIs), and HIV (Batchelder et al., 2017). For example, studies of co-occurring psychosocial problems show that there is a multiplicative

chance of HIV with each clinically relevant psychiatric comorbidity (e.g., anxiety or depressive disorders) (Salway et al., 2019). Unfortunately, co-occurring disorders also function as a barrier to care and treatment for young sexual minority men, including barriers to both sexual and mental health care. As such, interventions that can concurrently address both HIV susceptibility and the corresponding negative mental health outcomes are needed (Ferlatte et al., 2017; Salway et al., 2019).

HIV Pre-Exposure Prophylaxis (PrEP) is highly effective (>95%) at preventing HIV acquisition among seronegative individuals when adhered to consistently (Centers for Disease Control and Prevention, 2020; Grant et al., 2010; Grant et al., 2014). Although the evidence demonstrating HIV harm reduction is unequivocal, an emerging body of literature indicates that PrEP use can also have positive mental health associations, including lower levels of HIV-related anxiety, increased feelings of safety during sex, and enhanced sexual satisfaction (Collins et al., 2017; Grant & Koester, 2019; Hammack et al., 2019; Hughes et al., 2018; Koester et al., 2017; Moeller et al., 2020; Whitfield et al., 2019). The evidence documenting the relationships between PrEP and mental health has primarily been quantitative (Centers for Disease, 2020; Grant et al., 2010; Keen et al., 2020) and/or conducted in settings where PrEP is not universally accessible. However, there is limited research exploring how PrEP may impact the mental health-related experiences of sexual minority men in settings like the Canadian province of British Columbia (BC), where PrEP is universally accessible (Gaspar et al., 2019).

Confidential – Please do not distribute

Since its approval by the US Food and Drug Administration in 2012 and Health Canada in 2016 (Challacombe, 2018), PrEP has been widely used as a HIV prevention strategy among sexual minority men in many settings, including in BC, where PrEP has been available at no-cost for Indigenous individuals with non-insured health benefits since federal approval in 2016 and for all other residents who are clinically recommended for PrEP since January 2018 (BC-CfE, 2020; Jollimore, 2019; Smith et al., 2012). Our research activities described herein began approximately six months after the January 2018 rollout of publicly-funded PrEP. Between 2016 and 2018, PrEP was available to prescription holders at cost, by private insurance, or via the Davie Buyer's Club, which assisted people with importing PrEP from foreign pharmacies (Davie Buyers Club, n.d.). Indigenous peoples in Canada gained access to PrEP in 2016, but this information was not transmitted to these communities nor were health systems adapted to provide access pathways, in what has been described as “a remarkable missed opportunity that may mirror other unmet needs along the HIV cascade of care” (Morgan et al., 2020; Watson, 2019). We include this information to explicitly emphasize this ‘implementation failure’, as this piece is often overlooked or missing from descriptions about the history of PrEP roll out in Canada.

In the current study, we drew on data collected from a community-based research study that focused on the experiences of PrEP-using sexual minority men in BC. The objective of the analysis was to examine a subset of the data regarding mental health-related experiences of sexual minority men before and after accessing PrEP, with a specific focus on experiences with HIV-related anxiety.

Methods

Study Setting

This study was conducted in Metro Vancouver, BC. This study was driven by community-based research methods (variously called collaborative or centered-research) wherein community stakeholders (in our case, young sexual minority men) are actively involved in all stages of the research process, and researchers are committed to conducting research that will benefit the community by using the results to inform interventions and policy (Israel et al., 1998). This study was conducted in collaboration between the “Investigaytors” program (Morgan et al., 2020), a community-based research and capacity-building program of the Community-Based Research Centre (CBRC), and academic researchers affiliated with the CBRC. The Investigaytors is a group of young (under 30) gay, bisexual and queer men who conduct community-based research focused on the health and wellbeing of sexual minority men. The Vancouver site of the Investigaytors program co-designed and implemented this study with the university-based researchers. Investigaytors participants were involved at every step of the research process, including designing the study protocol, developing the semi-structured interview guide, co-conducting primary data collection, verbatim transcribing interviews, coding interview transcripts, analyzing data and manuscript writing. They also completed a variety of knowledge translation activities, including the development of the current analysis. The Investigaytors received training and support from CBRC staff as well as university-based researchers to develop their various research skills and competencies throughout the process (Morgan et al., 2020). Lead author NG is an Investigaytor and this analysis stems from his positionality of being a young sexual minority man and having lived experience with anxiety. The other authors (SB,

CM, JM, NL, RK) are researchers with experience working with sexual minority populations on topics related to sexual health.

Data collection

This study received ethical approval from the institutional research ethics boards at University of British Columbia (H18-01083) and the University of Victoria (H18-00529). The study team recruited sexual minority men in Vancouver, BC, from July 2018 to March 2019, to participate in semi-structured, in-depth interviews. Recruitment strategies included online approaches (including Facebook and Instagram ads as well as posting on these social media by our local community-based organizational partners) and posters at sexual health clinics serving sexual and gender minorities in Vancouver. Prospective participants were eligible if they met the following inclusion criteria: identified as a sexual minority man (e.g., gay, bisexual, queer; cis or trans man); were either currently taking PrEP or were in the process of trying to access publicly funded PrEP; and were able to conduct the interview in English. All eligible participants were interviewed. Each interview lasted between 30 to 90 minutes, and took place in private rooms at our research offices, community libraries, or partner organizations. All interviews included an experienced interviewer from our research team, and, when possible, included a co-interviewer from the *Investigaytors* program. Participants provided written informed consent and completed a brief socio-demographic questionnaire prior to beginning the interview. Semi-structured interview guides were used to elicit detailed descriptions of factors influencing participants' experiences and perceptions of using and accessing PrEP. Topics in the interview guide covered the intersections of PrEP and PrEP access with questions about sexual health, access to care (including PrEP), stigma, substance use and mental health. In BC, the HIV Incidence Risk Index

or HIRI-MSM (see: <https://smartsexresource.com/health-providers/provider-tools/calculate-hiri-msm-score>), a six item threshold questionnaire, was used to determine eligibility for PrEP. The interview guide included and expanded on the concepts incorporated in this tool.

Data analysis

Interviews were audio-recorded, transcribed verbatim, anonymized, accuracy checked, and uploaded to QSR NVivo 10™ for data analysis. The code book was developed in collaboration with the *Investigaytors* team and members of the university-based research teams. Coding was completed by members of the *Investigaytors* and university-based teams, who received feedback at regular team meetings. This process included coding the raw data line-by-line and developing interpretations about recurring, converging and contradictory codes or ideas within and across the interview data. Next, coding was organised into trees to group the open codes into more abstract conceptual categories related to the objectives of this analysis, and during this process, we compared how these findings related with previous research pertaining to PrEP, sexual minority men and mental health. This approach allowed data-driven themes to emerge, providing a rich description of the participants' points of view (Braun & Clarke, 2006). This manuscript focuses on an emergent theme that arose from our analytic process: the positive shifts in mental health that our participants described in accessing PrEP.

Results

We interviewed a total of 27 participants, including those from a variety of ethno-cultural, sexual and gender identities. Participants were anonymized through the creation of self-chosen pseudonyms. See Table I for socio-demographic characteristics of the sample.

Table I: Sample’s socio-demographics

Participants	N=27
Age: average (range)	29.6 (Range 20-54) years
Ethno-cultural identity¹	
<i>Chinese</i>	3 (7%)
<i>Filipino</i>	2 (11%)
<i>South Asian</i>	1 (4%)
<i>South-East Asian</i>	3 (11%)
<i>White</i>	20 (74%)
Gender Identity²	
<i>Cis-man</i>	25 (93%)
<i>Queer</i>	1 (4%)
<i>Gender non-binary/-conforming</i>	2 (7%)
Sexual Identity³	
<i>Gay</i>	25 (93%)
<i>Queer</i>	1 (4%)
<i>Bisexual</i>	1 (4%)
<i>Grey-sexual⁴</i>	1 (4%)
Level of Education completed	
<i>Secondary (high school)</i>	4 (15%)
<i>University, college, trade school</i>	17 (63%)
<i>Graduate education</i>	6 (22%)

PrEP status	
<i>Currently taking PrEP</i>	25 (92%)
<i>Seeking a prescription</i>	1 (4%)
<i>Stopped taking PrEP</i>	1 (4%)

¹Two participants selected more than one ethno-cultural identity.
²One participant selected more than one gender identity.
³One participant selected more than one sexual identity.
⁴Grey-sexuality is defined here as the spectrum between asexuality and sexuality.

Below, we offer our findings in two thematic sections: (1) HIV-related anxiety before initiating PrEP; and (2) HIV-related anxiety after initiating PrEP. We present quotations from participant transcripts to highlight key features of each sub-theme.

HIV-related Anxiety Before Initiating PrEP: ‘I was thinking about the possibility of being infected with HIV on a daily basis.’

Participants reflected on their experiences navigating HIV before PrEP became available to them. They described how, before initiating PrEP, they used a variety of other HIV prevention strategies to mitigate their likelihood of acquiring HIV (e.g., seropositioning, monogamy, HIV testing, condoms). As these discussions unfolded, fear and anxiety featured as the primary motivation for sexual prevention practices broadly, and condom use specifically. For example, among those who favoured condoms before PrEP as their primary prevention strategy, most described that their motivation was largely underpinned by the fear and anxiety of acquiring HIV. ‘Kevin,’ a 23-year-old gay, gender non-conforming participant explained: ‘*[M]y biggest reason why I was using condoms was the fear.*’

Confidential – Please do not distribute

Several participants described how, before starting PrEP, they tended to link HIV-related anxiety to an overall fear of sex that often resulted in devastating consequences to various facets of their sexual, romantic, and intimate lives. For these participants, HIV-related anxiety frequently prevented them from engaging in meaningful sexual experiences that they associated with desire, pleasure and intimacy. For example, ‘Rudy,’ a 28-year-old, gay and grey-sexual, non-binary participant described the fears they associated with HIV and the kinds of sex they wanted to enjoy:

I remember having sex before PrEP was publicly funded, and in that kind of environment, there was such a fear of disease, of illness, and catching anything. And so there was a fear of bodily liquids. Like there was a fear of having oral sex. There was a fear of rimming. There was a fear of cumming inside another person – always checking the condom. So there was just like this fear around sex, and the possibility of catching HIV.

Several participants described how the HIV-related anxiety they experienced before PrEP became available was either constant or could last days or months after a sexual encounter. Some had greatly considered how acquiring HIV would affect them. These reflections and corresponding anxieties became highly associated with internalized fears about sex and how they thought of sex generally. For example, ‘Salvador,’ a 32-year-old, cis gay man described how anxieties about HIV were pervasive in his daily thoughts since his sexual debut:

Honestly, from the first time I had sex which was in my late teens, until like six months ago before I was on PrEP, I was thinking about the possibility of being infected with HIV probably on a daily basis.

Confidential – Please do not distribute

Despite living in a setting with universally available and highly effective HIV treatment, many participants still associated living with HIV with severe outcomes, including death. For several participants, the fear of acquiring HIV before initiating PrEP featured obsessive tendencies. Others described mistakenly identifying what they believed to be the physical symptoms of HIV seroconversion. For example, ‘Dexter,’ a 23-year-old cis gay man described one recent event in which he experienced mild common flu symptoms (even in the absence of any potential exposures) that led him to believe he was terminally ill from HIV/AIDS:

I get like crazy in my head about things... I got like a flu, and I was like “Well, this it. This is the seroconversion.”

HIV-related anxiety after initiating PrEP: ‘Having the fear of HIV being removed, you’re able to have sex that is messy and dirty, wet and juicy.’

Although participants did not directly relate their decision to initiate PrEP as an anxiety-reduction strategy, all of the participants who initiated PrEP described significant reductions in – and in some cases, the elimination of – HIV-related anxiety as a result. For example, ‘Salvador,’ described:

[T]he mental load of generalized HIV anxiety has kind of been lifted. I’ve exchanged taking a pill once a day for the cost of having this gnawing thought at the back of my head all the time, which seems like a pretty fair trade off to me.

Confidential – Please do not distribute

As participants continued to reflect on how their experiences with HIV-related anxiety had changed due to PrEP, several described how they were now able to both live without fears about acquiring HIV and have the capacity to engage in the kinds of sex they wanted to have. For example, ‘Kevin’, a participant who had always used condoms because of his intense fear about acquiring HIV, described how he no longer used condoms. For ‘Kevin’, it became clear that PrEP confers both protection from HIV, while also providing opportunities to have fun and enjoy sex, facilitated by fewer fears around passing HIV:

I'll just go to town and not worry about anything. Every sexual interaction since [PrEP initiation] has been without a condom [...] [I]f I'm at a bar and I think a guy's cute [...] I will just embrace it and go ahead and have fun[.]

For some, the ‘obsessive worrying’ after a sexual encounter had effectively disappeared after initiating PrEP. For example, ‘Dexter’, a participant who previously described intense fears in mistaking common flu symptoms for physical symptoms of HIV seroconversion, described how PrEP allowed him to rationalize and dispel his HIV-related anxiety and fears:

So I'm glad I'm on PrEP so that I can be just like "Wait. Reflect. It's impossible. Like I can't have this [HIV]. It's just not possible" [...] It just makes me way less anxious.

In the absence of this fear, participants described how PrEP facilitated new opportunities for them to experience sexual pleasure they had previously thought to be unattainable to them. Many participants explicitly linked their ability to have enhanced sexual pleasure and intimacy with improvements to their mental health. For example, ‘Rudy’ described feeling confident to

Confidential – Please do not distribute

explore and expand his sexuality in ways previously prevented by HIV-related anxiety before initiating PrEP:

With PrEP now being so readily available, I think the act of having condom-less sex and, like, having the fear of HIV being removed makes the experience much richer. Because you're able to really just enjoy each other's company, and I think to have sex in the way that... in like all the good ways that it is messy, dirty, wet and juicy, and like enjoying that without needing to be afraid.

A sub-set of participants indicated that while PrEP had facilitated important reductions in HIV-related anxiety, there existed situations that PrEP status could make conversations about other harm-reduction practices difficult to have. For example, with regards to other STBBIs, some participants described how having conversations about condom use in a 'post-PrEP' era presented new challenges and, at times, participants described these discussions could be potentially anxiety-inducing. For example, 'Dillard,' a participant identifying as a 30-year-old, gay and cis man, described how discussions about condom use has changed for him since initiating PrEP:

It doesn't mean that I'm saying 'I'm on PrEP, let's just not think about anything else.' [...] If you meet guys online or anything and they say, 'Oh, I'm not using a condom', well then you know what, I'm not going to have sex period. [...] It's too risky for me right now to make that call, I don't know you, I don't know who you are. So PrEP fits in there once we get to the point that it is without a condom then I can enjoy, it's my pleasure too.

Confidential – Please do not distribute

Despite several concerns being surfaced about STBBIs, others were less concerned about how STBBI transmission featured within their experiences of anxiety while on PrEP. Some felt that other STBBIs were not as significant as HIV, because most STBBIs are perceived as “treatable,” as ‘Dexter’ described:

I think there’s just like a general lower level of concern about other STIs. Whether that’s founded or not, I couldn’t say, but I think there’s just less concern about the other ones. It was just that [HIV], and now that they’re immune to that [HIV], it’s like, ‘Oh, it doesn’t really matter.’

Due to the multiple mental health benefits that study participants experienced by being on PrEP, many study participants expressed strong support for PrEP being publicly funded. Some participants described experiencing some anxiety about losing access if PrEP was no longer funded or available, e.g., if they moved outside of the province. ‘Kevin,’ contemplated what it may be like to lose access to PrEP:

I’d feel like a person who’s had clean drinking water and then had to go boil his water before drinking it.

Discussion

These findings provide an important glimpse into experiences of HIV-related anxiety before and after initiating PrEP. Specifically, participants described how prior to starting PrEP, their experiences with sex were highly associated with anxiety related to acquiring HIV, and for some, these experiences negatively impacted their overall quality of life. Although participants

did not describe HIV-related anxiety reduction as a motivating factor in initiating PrEP, participants described experiencing reduced or eliminated HIV-related anxiety after starting PrEP. Participants attributed overall improvements in mental health and quality of life to two interrelated factors: (i) their ability to access heightened experiences of pleasure, desire, and intimacy that improved their overall mental health; and (ii) decreased anxieties about acquiring HIV, because the sex they were having felt safer. Nevertheless, a sub-set of participants described how negotiating and maintaining condom use in the era of PrEP had become particularly difficult, and how that could have corresponding negative impacts on their mental health. Furthermore, some participants expressed worries about the impact of losing access to PrEP.

Findings from our study regarding sexual minority men's experiences with HIV-related anxiety before initiating PrEP align with previous research identifying how HIV-related anxiety can be longstanding and deeply affect various facets of one's overall quality of life, including both sexual experiences and mental health (Koester et al., 2017). Previous qualitative research in this area has also identified how experiences with HIV-related anxiety can last for many months after a given sexual encounter, including in the absence of a potential exposure during a sexual encounter (Godfrey, 2015; Koester et al., 2017). Previous research has also identified that, even in settings with effective and available HIV treatments, there still remains a substantial yet unsubstantiated fear of dying from HIV among some sexual minority men (Collins et al., 2017; Hammack et al., 2019; Hojilla et al., 2016; Hughes et al., 2018). Previous research highlights how nearly two-thirds of sexual minority men's sexual function is impacted by these HIV-related fears (Hughes et al., 2018; Rosser et al., 1997). Indeed, previous research has identified how intense fears and anxieties associated with HIV seroconversion among sexual minority men

result in complex relationships with stigma, mental health and HIV (Ferlatte et al., 2017; Hibbert et al., 2018; R. Knight et al., 2016; Phelan et al., 2014; Yan et al., 2019).

Our findings add to the growing body of evidence indicating that PrEP can reduce experiences of HIV-related anxiety. Similar to previous research, which described PrEP acting like an “antidote” to seroconversion-related fears (Collins et al., 2017; Grant et al., 2010; Koester et al., 2017), participants in the current study reported almost no HIV-related anxiety after initiating PrEP. Based on these kinds of findings, there is the potential that the indirect mental health benefits may be as useful to the user as PrEP’s physical capacity to reduce HIV transmission in sexual minority men (Grant et al., 2010; Keen et al., 2020). While only a few participants expressed concerns about sexually transmitted and bloodborne infections (STBBIs) in relation to PrEP, the lacking consensus of the literature remains ambiguous about whether there are increases in STBBI rates as a result of PrEP use (Chen et al., 2016; Hoornenborg et al., 2018; Jenness et al., 2017; Lal et al., 2017). Our findings complement those of Pantalone et al, who carried out a similar study with a much larger sample in New York City, but did not focus on mental health outcomes associated with accessing PrEP (Pantalone et al., 2020)

These findings have important implications for policy and service provision. Given the high rates of mental health inequities experienced by sexual minority men, PrEP may aid efforts to improve sexual minority men’s mental health. These findings provide significant public health rationale to continue and improve access to PrEP for sexual minority populations. Research focusing on how PrEP can impact the broader health of other priority populations, including sex workers, trans people, Indigenous and ethno-racial minoritized people and people who use drugs, is needed at this time. Future cost-benefit analyses about PrEP need to account for the mental

health-related improvements experienced by those using PrEP. Finally, more research work is needed to understand the long-term mental health impacts of PrEP, the interplay of PrEP and HIV stigma, and the sustainability of PrEP as a mental health intervention for HIV-related anxieties. Nevertheless, given that sexual minority men experience high rates of mental health problems, including a variety of problems not associated with or featuring HIV anxiety, PrEP will always already have limited effects at reducing the burden of mental health among this population (Lee et al., 2017). Ongoing efforts to enhance and improve mental health care access for sexual minority men are needed, and our future efforts at examining PrEP as a pharmacological strategy should fulsomely engage with social science literature regarding the pharmacologicalization of sexual minority men's health (Gaspar et al., 2019; Handlovsky et al., 2018; Lee et al., 2017).

This study has several strengths and limitations. The findings are not generalizable to all sexual minority men who use PrEP. Despite some diversity in the sample, we did not have the capacity to identify how various intersecting identities (including, sexual or gender identity, ethno-racial identity, immigrant/undocumented/student statuses) influence these experiences. Specifically, our sample did not include Indigenous representation. However, the study's community-based research perspective brought to light perspectives deemed important by represented community members and provided important insights into the factors influencing HIV-related anxiety, sexual behaviour, and intimacy.

Conclusions

Our findings clearly demonstrate how PrEP is attributed to improved mental health among sexual minority men. After initiating PrEP, participants reported reduction in deep-seated HIV-related anxieties, improvements to their overall sexual satisfaction, and a greater sense of intimacy. We recommend ongoing research to identify PrEP's capacity to impact health outcomes broadly as well as HIV stigma, including among other priority populations, particularly given the mental health inequities faced by those who may acquire HIV.

References

- Batchelder, A. W., Safren, S., Mitchell, A. D., Ivardic, I., & O’Cleirigh, C. (2017). Mental health in 2020 for men who have sex with men in the United States. *Sexual Health, 14*(1), 59–71. <https://doi.org/10.1071/SH16083>
- BC-CfE. (2020). *Guidance for the use of Pre-Exposure Prophylaxis (PrEP) for the prevention of HIV acquisition in British Columbia. Version 17*, 1–20.
- Bolton, S.-L., & Sareen, J. (2011). Sexual Orientation and Its Relation to Mental Disorders and Suicide Attempts: Findings From a Nationally Representative Sample. *The Canadian Journal of Psychiatry / La Revue Canadienne de Psychiatrie, 56*(1), 35–43.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Brogan, N., Paquette, D. M., Lachowsky, N. J., Blais, M., Brennan, D. J., Hart, T. A., & Adam, B. (2019). Canadian results from the European Men-who-have-sex-with-men Internet survey (EMIS-2017). *Can Commun Dis Rep, 45*(11), 271–282. <https://doi.org/10.14745/ccdr.v45i11a01>
- Centers for Disease Control and Prevention. (2020). *PrEP. HIV Basics*. <https://www.cdc.gov/hiv/basics/prep.html>
- Challacombe, L. (2018). *The epidemiology HIV in Canada*. CATIE - Canada’s source for HIV and hepatitis C information. <https://www.catie.ca/en/fact-sheets/epidemiology/epidemiology-hiv-canada>
- Chen, Y. H., Snowden, J. M., McFarland, W., & Raymond, H. F. (2016). Pre-exposure Prophylaxis (PrEP) Use, Seroadaptation, and Sexual Behavior Among Men Who Have Sex

with Men, San Francisco, 2004–2014. *AIDS and Behavior*, 20(12), 2791–2797.

<https://doi.org/10.1007/s10461-016-1357-2>

Cochran, S. D., & Mays, V. M. (2000). Lifetime Prevalence of Suicide Symptoms and Affective Disorders Among Men Reporting Same-Sex Sexual Partners: Results from NHANES III. *American Journal of Public Health*, 90(4).

Collins, S. P., McMahan, V. M., & Stekler, J. D. (2017). The Impact of HIV Pre-exposure Prophylaxis (PrEP) Use on the Sexual Health of Men Who Have Sex with Men: A Qualitative Study in Seattle, WA. *International Journal of Sexual Health ISSN:*, 29(1), 55–68. <https://doi.org/10.1080/19317611.2016.1206051>

Davie Buyers Club. (n.d.). *How to Access PrEP Without Insurance in Canada (for \$45 CAD Per Month)*. Davie Buyers Club. Retrieved February 11, 2021, from <https://daviebuyersclub.wordpress.com/>

Ferlatte, O., Salway, T., Oliffe, J. L., & Trussler, T. (2017). Stigma and suicide among gay and bisexual men living with HIV. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*, 29(11), 1346–1350. <https://doi.org/10.1080/09540121.2017.1290762>

Gaspar, M., Marshall, Z., Rodrigues, R., Adam, B. D., Brennan, D. J., Hart, T. A., & Grace, D. (2019). A tale of two epidemics: gay men’s mental health and the biomedicalisation of HIV prevention and care in Toronto. *Sociol Health Illn*, 41(6), 1056–1070. <https://doi.org/10.1111/1467-9566.12884>

Godfrey, C. (2015). Why we need PrEP - Four gay men share their views on the HIV prevention drug. *The Independent*.

- Grant, R. et al. (2010). Preexposure Chemoprophylaxis for HIV Prevention in Men Who Have Sex with Men. *The New England Journal of Medicine*, 363(27), 2587–2599.
<https://doi.org/10.1056/NEJMoa1011205>
- Grant, R., & Koester, K. (2019). What People Want from Sex and PrEP. *Current Opinions in HIV/AIDS*, 11(1), 3–9. <https://doi.org/10.1097/COH.0000000000000216>
- Grant, R., Anderson, P. L., McMahan, V., Liu, A., Amico, K. R., Mehrotra, M., Hosek, S., Mosquera, C., Casapia, M., Montoya, O., Buchbinder, S., Veloso, V. G., Mayer, K., Chariyalertsak, S., Bekker, L.-G., Kallas, E. G., Schechter, M., Guanira, J., Bushman, L., ... Glidden, D. V. (2014). Uptake of pre-exposure prophylaxis, sexual practices, and HIV incidence in men and transgender women who have sex with men: a cohort study. *The Lancet Infectious Diseases*, 14, 820–829. [https://doi.org/10.1016/s1473-3099\(14\)70847-3](https://doi.org/10.1016/s1473-3099(14)70847-3)
- Hamilton, C. J., & Mahalik, J. R. (2009). Minority stress, masculinity, and social norms predicting gay men’s health risk behaviors. *Journal of Counseling Psychology*, 56(1), 132–141. <https://doi.org/10.1037/a0014440>
- Hammack, P. L., Toolis, E. E., Wilson, B. D. M., Clark, R. C., & Frost, D. M. (2019). Making Meaning of the Impact of Pre-Exposure Prophylaxis (PrEP) on Public Health and Sexual Culture: Narratives of Three Generations of Gay and Bisexual Men. *Archives of Sexual Behavior*, 48(4), 1041–1058. <https://doi.org/10.1007/s10508-019-1417-6>
- Handlovsky, I., Bungay, V., Oliffe, J., & Johnson, J. (2018). Developing Resilience: Gay Men’s Response to Systemic Discrimination. In *American journal of men’s health* (Vol. 12, Issue 5, pp. 1473–1485). SAGE Publications. <https://doi.org/10.1177/1557988318768607>
- Hatzenbuehler, M. L., Nolen-Hoeksema, S., & Erickson, S. J. (2008). Minority Stress Predictors of HIV Risk Behavior, Substance Use, and Depressive Symptoms: Results From a

Prospective Study of Bereaved Gay Men. *Health Psychology*, 27(4), 455–462.

<https://doi.org/10.1037/0278-6133.27.4.455>

Hibbert, M., Crenna-Jennings, W., Kirwan, P., Benton, L., Lut, I., Okala, S., Asboe, D., Jeffries, J., Kunda, C., Mbewe, R., Morris, S., Morton, J., Nelson, M., Thorley, L., Paterson, H., Ross, M., Reeves, I., Sharp, L., Sseruma, W., ... Delpech, V. (2018). The people living with HIV stigma survey UK 2015: HIV-related sexual rejection and other experiences of stigma and discrimination among gay and heterosexual men. *AIDS Care*, 30(9), 1189–1196.

<https://doi.org/10.1080/09540121.2018.1479027>

Hojilla, J. C., Koester, K. A., Cohen, S. E., Buchbinder, S., Ladzekpo, D., Matheson, T., & Liu, A. Y. (2016). Sexual Behavior, Risk Compensation, and HIV Prevention Strategies Among Participants in the San Francisco PrEP Demonstration Project: A Qualitative Analysis of Counseling Notes. *AIDS and Behavior*, 20(7), 1461–1469. <https://doi.org/10.1007/s10461-015-1055-5>

Hoorneborg, E., Coyer, L., Van Laarhoven, A., Achterbergh, R., De Vries, H., Prins, M., & Van Der Loeff, M. S. (2018). Change in sexual risk behaviour after 6 months of pre-exposure prophylaxis use: Results from the Amsterdam pre-exposure prophylaxis demonstration project. *Aids*, 32(11), 1527–1532.

<https://doi.org/10.1097/QAD.0000000000001874>

Hottes, T. S., Farrell, J., Bondyra, M., Haag, D., Shoveller, J., & Gilbert, M. (2012). Internet-Based HIV and Sexually Transmitted Infection Testing in British Columbia, Canada: Opinions and Expectations of Prospective Clients. *Journal of Medical Internet Research*, 14(2), e41. <https://doi.org/10.2196/jmir.1948>

Hughes, S. D., Sheon, N., Andrew, E. V. W., Cohen, S. E., Doblecki-Lewis, S., & Liu, A. Y.

(2018). Body/Selves and Beyond: Men's Narratives of Sexual Behavior on PrEP. *Medical Anthropology: Cross Cultural Studies in Health and Illness*, 37(5), 387–400.

<https://doi.org/10.1080/01459740.2017.1416608>

Israel, B. A., Schulz, A. J., Parker, E. A., & Becker, A. B. (1998). REVIEW OF COMMUNITY-BASED RESEARCH: Assessing Partnership Approaches to Improve Public Health. *Annual Review of Public Health*, 19(1). <https://doi.org/10.1146/annurev.publhealth.19.1.173>

Jenness, S. M., Weiss, K. M., Goodreau, S. M., Gift, T., Chesson, H., Hoover, K. W., Smith, D. K., Liu, A. Y., Sullivan, P. S., & Rosenberg, E. S. (2017). Incidence of gonorrhea and chlamydia following human immunodeficiency virus preexposure prophylaxis among men who have sex with men: A modeling study. *Clinical Infectious Diseases*, 65(5), 712–718.

<https://doi.org/10.1093/cid/cix439>

Jollimore, J. (2019). *Acknowledging Missed Opportunities for Truth and Reconciliation*.

Community-Based Research Centre.

https://www.cbrc.net/acknowledging_missed_opportunities_for_truth_and_reconciliation

Keen, P., Hammoud, M. A., Bourne, A., Bavinton, B. R., Holt, M., Vaccher, S., Haire, B.,

Saxton, P., Jin, F., Maher, L., Grulich, A. E., & Prestage, G. (2020). Use of HIV Pre-exposure Prophylaxis (PrEP) Associated With Lower HIV Anxiety Among Gay and

Bisexual Men in Australia Who Are at High Risk of HIV Infection: Results From the Flux Study. *Journal of Acquired Immune Deficiency Syndromes (1999)*, 83(2), 119–125.

<https://doi.org/10.1097/QAI.0000000000002232>

- King, M., Semlyen, J., Tai, S. S., Killaspy, H., Osborn, D., Popelyuk, D., & Nazareth, I. (2008). A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people. *BMC Psychiatry*, 8(1), 70. <https://doi.org/10.1186/1471-244x-8-70>
- Knight, R., Shoveller, J. A., Carson, A. M., & Contreras-Whitney, J. G. (2014). Examining clinicians' experiences providing sexual health services for LGBTQ youth: Considering social and structural determinants of health in clinical practice. *Health Education Research*, 29(4), 662–670. <https://doi.org/10.1093/her/cyt116>
- Knight, R., Small, W., & Shoveller, J. A. (2016). HIV stigma and the experiences of young men with voluntary and routine HIV testing. *Sociology of Health & Illness*, 38(1), 153–167. <https://doi.org/10.1111/1467-9566.12345>
- Knight, R., Chabot, C., Carson, A., Thomson, K., Haag, D., Gilbert, M., & Shoveller, J. (2019). Qualitative analysis of the experiences of gay, bisexual and other men who have sex with men who use GetCheckedOnline.com: A comprehensive internet-based diagnostic service for HIV and other STIs. *Sexually Transmitted Infections*, 95(2), 145–150. <https://doi.org/10.1136/sextrans-2018-053645>
- Koester, K., Amico, R. K., Gilmore, H., Liu, A., McMahan, V., Mayer, K., Hosek, S., & Grant, R. (2017). Risk, safety and sex among male PrEP users: time for a new understanding. *Culture, Health & Sexuality*, 19(12), 1301–1313. <https://doi.org/10.1080/13691058.2017.1310927>
- Lachowsky, N. J., Lawson Tattersall, T., Sereda, P., Wang, C., Edwards, J., & Hull, M. (2019). Community awareness of, use of and attitudes towards HIV pre-exposure prophylaxis (PrEP) among men who have sex with men in Vancouver, Canada: Preparing health

promotion for a publicly funded PrEP program. *Sexual Health*, 16(2), 180–186.

<https://doi.org/10.1071/SH18115>

Lal, L., Audsley, J., Murphy, D. A., Fairley, C. K., Stoove, M., Roth, N., Moore, R., Tee, B. K., Puratmaja, N., Anderson, P. L., Leslie, D., Grant, R. M., De Wit, J., Wright, E., & VicPr, E. P. S. T. (2017). Medication adherence, condom use and sexually transmitted infections in Australian preexposure prophylaxis users. *AIDS*, 31(12), 1709–1714.

<https://doi.org/10.1097/QAD.0000000000001519>

Lee, C., Oliffe, J. L., Kelly, M. T., & Ferlatte, O. (2017). Depression and Suicidality in Gay Men: Implications for Health Care Providers. In *American journal of men's health* (Vol. 11, Issue 4, pp. 910–919). SAGE Publications. <https://doi.org/10.1177/1557988316685492>

Mahalik, J. R., Lagan, H. D., & Morrison, J. A. (2006). Health behaviors and masculinity in Kenyan and U.S. male college students. *Psychology of Men and Masculinity*, 7(4), 191–202.

<https://doi.org/10.1037/1524-9220.7.4.191>

Meyer, Ilan H. (2003). Prejudice, Social Stress, and Mental Health in Lesbian, Gay, and Bisexual Populations: Conceptual Issues and Research Evidence. *Psychological Bulletin*, 129(5), 674–697. <https://doi.org/10.1037/0033-2909.129.5.674>

Meyer, Ilhan H., & Dean, L. (1998). Internalized Homophobia, Intimacy, and Sexual Behavior among Gay and Bisexual Men Contributors: In G. M. Herek (Ed.), *Stigma and Sexual Orientation: Understanding Prejudice against Lesbians, Gay Men and Bisexuals* (pp. 160–186). SAGE Publications. <https://doi.org/10.2307/2654854>

Mills, T. C., Paul, J., Stall, R., Pollack, L., Canchola, J., Chang, Y. J., Moskowitz, J. T., & Catania, J. A. (2004). Distress and Depression in Men Who Have Sex With Men: The

Urban Men's Health Study. *American Journal of Psychiatry*, 161(2), 278–285.

<https://doi.org/10.1176/appi.ajp.161.2.278>

Moeller, R. W., Seehuus, M., Wahl, L., & Gratch, I. (2020). Use of PrEP, sexual behaviors and mental health correlates in a sample of gay, bisexual and other men who have sex with men. *Journal of Gay and Lesbian Mental Health*, 24(1), 94–111.

<https://doi.org/10.1080/19359705.2019.1688216>

Morgan, J., Schwartz, C., Ferlatte, O., Mnzszak, C., Lachowsky, N., Jollimore, J., Hull, M., & Knight, R. (2020). Community-Based Participatory Approaches to Knowledge Translation: HIV Prevention Case Study of the Investigaytors Program. *Archives of Sexual Behavior*, SPECIAL SE. <https://doi.org/10.1007/s10508-020-01789-6>

O'Cleirigh, C., Magidson, J. F., Skeer, M. R., Mayer, K. H., & Safren, S. A. (2015). *Prevalence of Psychiatric and Substance Abuse Symptomatology Among HIV-Infected Gay and Bisexual Men in HIV Primary Care*. 56(5), 470–478.

<https://doi.org/10.1016/j.psych.2014.08.004>

Pantalone, D. W., Holloway, I. W., Goldblatt, A. E. A., Gorman, K. R., Herbitter, C., & Grov, C. (2020). The Impact of Pre-Exposure Prophylaxis on Sexual Communication and Sexual Behavior of Urban Gay and Bisexual Men. *Archives of Sexual Behavior*, 49(1).

<https://doi.org/10.1007/s10508-019-01478-z>

Phelan, J. C., Lucas, J. W., Ridgeway, C. L., & Taylor, C. J. (2014). Stigma, status, and population health. *Social Science & Medicine* (1982), 103, 15–23.

<https://doi.org/10.1016/j.socscimed.2013.10.004>

Public Health Agency of Canada. (2018). *Summary: Estimates of HIV Incidence, Prevalence, and Canada's Progress on Meeting the 90-90-90 HIV Targets, 2016*.

- Salway, T., Ferlatte, O., Shoveller, J., Purdie, A., Grennan, T., Tan, D. H. S., Consolacion, T., Rich, A. J., Dove, N., Samji, H., Scott, K., Blackwell, E., Mirau, D., Holgerson, N., Wong, J., & Gilbert, M. (2019). The Need and Desire for Mental Health and Substance Use-Related Services Among Clients of Publicly Funded Sexually Transmitted Infection Clinics in Vancouver, Canada. *Journal of Public Health Management & Practice*, 25(3), E1–E10. <https://doi.org/10.1097/PHH.0000000000000904>
- Rosser, B. R., Metz, M. E., Bockting, W. O., & Buroker, T. (1997). *Sexual difficulties, concerns, and satisfaction in homosexual men: An empirical study with implications for HIV prevention*. 23(1), 61–73. <https://doi.org/10.1080/00926239708404418>
- Smith, D. K., Pals, S. L., Herbst, J. H., Shinde, S., & Carey, J. W. (2012). Development of a clinical screening index predictive of incident HIV infection among men who have sex with men in the United States. *Journal of Acquired Immune Deficiency Syndromes*, 60(4), 421–427. <https://doi.org/10.1097/QAI.0b013e318256b2f6>
- Watson, B. (2019). B.C. organization sorry for not telling Indigenous people about free HIV drug. *CBC News*. <https://www.cbc.ca/news/canada/british-columbia/b-c-organization-sorry-for-not-telling-indigenous-people-about-free-hiv-drug-1.5402395>
- Whitfield, T. H. F., Jones, S. S., Wachman, M., Grov, C., Parsons, J. T., & Rendina, H. J. (2019). The Impact of Pre-Exposure Prophylaxis (PrEP) Use on Sexual Anxiety, Satisfaction, and Esteem Among Gay and Bisexual Men. *The Journal of Sex Research*, 56(9), 1128–1135. <https://doi.org/10.1080/00224499.2019.1572064>
- Yan, H., Li, X., Li, J., Wang, W., Yang, Y., Yao, X., Yang, N., & Li, S. (2019). Association between perceived HIV stigma, social support, resilience, self-esteem, and depressive

Confidential – Please do not distribute

symptoms among HIV-positive men who have sex with men (MSM) in Nanjing, China.

AIDS Care, 31(9), 1069–1076. <https://doi.org/10.1080/09540121.2019.1601677>