

Contrasting the Perceived Severity of COVID-19 and HIV Infection in an Online Survey of Gay, Bisexual, and Other Men Who Have Sex With Men During the U.S. COVID-19 Epidemic

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Abstract

While there is evidence of variations in the risk perceptions of COVID-19 and that they are linked to both engagement in health-protective behaviors and poor mental health outcomes, there has been a lack of attention to how individuals perceive the risk of COVID-19 relative to other infectious diseases. This paper examines the relative perceptions of the severity of COVID-19 and HIV among a sample of U.S. gay, bisexual, and other men who have sex with men (GBMSMs). The “Love and Sex in the Time of COVID-19” survey was conducted online from April 2020 to May 2020. GBMSMs were recruited through paid banner advertisements featured on social networking platforms, resulting in a sample size of 696. The analysis considers differences in responses to two scales: the Perceived Severity of HIV Infection and the Perceived Severity of COVID-19 Infection. Participants perceived greater seriousness for HIV infection (mean 46.67, range 17–65) than for COVID-19 infection (mean 38.81, range 13–62). Some items reflecting more proximal impacts of infection (anxiety, loss of sleep, and impact on employment) were similar for HIV and COVID-19. Those aged over 25 and those who perceived higher prevalence of COVID-19 in the United States or their state were more likely to report COVID-19 as more severe than HIV. There is a need to develop nuanced public health messages for GBMSMs that convey the ongoing simultaneous health threats of both HIV and COVID-19.

Keywords

COVID-19, HIV, gay and bisexual men, health threat

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Since the initial case of COVID-19 was identified in the United States in March 2020, COVID-19 has spread to all 50 states, reaching 2,789,678 confirmed cases and resulting in 129,305 deaths by June 2020 (Centers for Disease Control and Prevention, 2020). The primary response to the epidemic has been stay-at-home orders, which limit social mobility as a mechanism for limiting the spread of COVID-19 infection. These stay-at-home orders—rolled out at varying time points since March across the United States—mean that approximately 316 million people in 42 states, 10 cities, the District of Columbia, and Puerto Rico are being urged to stay home (Mervosh et al., 2020). As states move out of

lockdown, there has been a resurgence in COVID-19 cases in many states in the south (particularly Arizona, Florida, and Texas) and in California, with these four

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states accounting for 197,101 cases of COVID-19 in the last week of June 2020 (Centers for Disease Control and Prevention, 2020).

Central to successfully controlling the COVID-19 epidemic, or “flattening the curve” as it has become known, is the widespread implementation of social distancing measures. The United States has experienced significant resistance to social distancing measures, with widespread protests linked to perceptions that lockdown measures are impinging on civil liberties. The rise of “anti-maskers,” those who refute the scientific evidence base that wearing a mask over the nose and mouth will reduce the spread of COVID-19, has further limited abilities to control the epidemic. Foundational to adherence to social distancing measures—with nonadherence taking the form of small, forgetful slip-ups in mask-wearing to total denial of the need to adhere—are beliefs in the seriousness of COVID-19 infection and variations in perceptions of individual risks of infection.

Previous studies examining how perceptions of risk shape health behaviors during pandemics have largely focused on either the periods before or after a pandemic. Bish et al. (2010) note that it is crucial to assess psychological and behavioral responses in pandemic situations as a means to understand how perceived risk shapes engagement in health-protective behaviors, as this information can inform the content and tone of public health messaging. The few studies that have surveyed individuals during the early stages of a pandemic have noted that the perceived personal risk of infection and the health effects of infection are linked to engagement in protective behaviors (Liao et al., 2019). *Optimism bias* demonstrates that individuals are often poor judges of the risk of experiencing negative health conditions and tend to underestimate their likelihood of infection relative to the average person (Sharot, 2011).

Evidence relating perceptions of risk of infection with adherence to health-protective behaviors during infectious disease outbreaks comes from studies of recent pandemics including the H1N1 swine flu pandemic in 2009 (Fischhoff, 1995; Prati et al., 2011; Rudisill, 2013), the Ebola outbreak (Prati & Pietrantonio, 2016), and the SARS and Avian influenza (bird flu; Leppin & Aro, 2009) epidemics. In the first study to examine risk perceptions and engagement in health-protective behaviors for the COVID-19 pandemic, Dryhurst et al. (2020) surveyed 6991 adults from 10 countries across Europe, America, and Asia. Pooled across countries, they reported that personal experience with the virus, individualistic and prosocial values, hearing about the virus from friends and family, trust in government, science, and medical professionals, personal knowledge of government strategy, and personal and collective efficacy were all significant predictors of COVID-19 risk perception. In other studies conducted since the emergence of

COVID-19, feeling personally at risk of COVID-19 infection has been reported to be associated with a greater propensity to engage in handwashing and social distancing behaviors in the early stages of the pandemic (Wise et al., 2020). Kuper-Smith et al. (2020) identified that respondents from the United States, UK, and Germany underestimated their likelihood of both becoming infected and transmitting COVID-19 in comparison with estimates about the “average” member of the public (optimism bias), and identified negative correlations between self-perceived likelihood of infecting others and engaging in health-protective behaviors, suggesting that increasing fears about contracting the virus are associated with less risky social behaviors. In a sample of 324 adults in the UK, Harper et al. (2020) measured self-perceived risk of contracting COVID-19, fear of the virus, moral foundations, political orientation, and behavior change in response to the pandemic, finding that the only predictor of positive behavior change (e.g., social distancing) was fear of COVID-19, with no effect of politically relevant variables.

While there is evidence of variations in the risk perception of COVID-19, and that they are linked to both engagement in health-protective behaviors and poor mental health outcomes (including high levels of COVID-19 related anxiety; Brooks et al., 2020), there has been a lack of attention to how individuals perceive the risk of COVID-19 relative to other infectious diseases. Gay, bisexual, and other men who have sex with men (GBMSMs) continue to be the risk group most severely affected by HIV in the United States (Centers for Disease Control and Prevention, 2016, 2018). GBMSMs accounted for 68% of all new HIV infections, or an estimated 26,400 infections in 2016 (Centers for Disease Control and Prevention, 2016, 2018). Studies on GBMSMs have found that accurate perceptions of HIV risk are associated with increased engagement in HIV prevention behaviors (i.e., HIV testing; Koku & Felsher, 2020). Studies consistently report that people tend to underestimate their own risk for HIV, even if they report engaging in high-risk behaviors (optimism bias). In a 2020 sample of 1051 U.S. GBMSMs, Sanchez et al. (2020) identified that the majority of survey participants reported fewer sex partners and opportunities to have sex due to COVID-19. Approximately half (48%) of their survey participants reported no change in their number of sex partners, and 10% of participants reported an increase in their use of nonprescription drugs (Sanchez et al., 2020). GBMSMs represent a group for whom the risks of two infectious diseases—COVID-19 and HIV—exist simultaneously.

In this paper, we contrast the perceived severity of COVID-19 and of HIV infection among an online sample of U.S. GBMSMs. Understanding how individuals perceive the severity of two very different infectious disease

threats has the potential to inform the development of content for public health messages that promote protective health behaviors for both COVID-19 and HIV. We adapted the Perceived Severity of HIV Infection Scale (Salazar et al., 2013) for use with COVID-19, with the aim of providing a measure of perceived severity of COVID-19 that can be employed in other studies of COVID-19-related health behaviors.

Methods

Between April 2020 and May 2020, an online survey was conducted with GBMSM residents of the United States, with the aim of examining sexual behaviors and engagement in HIV prevention and care during the COVID-19 lockdown. Participants for the survey (advertised as the “Love and Sex in the Time of COVID-19” survey) were recruited through paid banner advertisements featured on social networking platforms Facebook and Instagram, and on the Grindr app. For recruitment via Facebook and Instagram, advertisements were targeted to user profiles that were over the age of 18, identified as men, currently resided in the United States, and had a variety of gay- or bisexual-related interests. Designing our advertising distribution network to capture male-identified Facebook/Instagram users specifically interested in celebrities, film, television, social media influencers, and music that have a sizable LGBTQ+ following, allowed for the possibility of recruiting men who were not out to their friends and family on social media. For recruitment via Grindr, advertisements consisted of a combination of banner and interstitial design formats. The ads displayed photos of men at their homes and on their phones, with the caption “Still getting those DMs during quarantine? Take this survey about COVID-19 and sexual behaviors.” Men who clicked on the advertisements were taken to a landing page explaining the survey, and were then taken to an electronic consent page: men could click on “consent” to indicate their consent for the survey. Men who clicked that they did not consent were taken to a page thanking them for their interest. Ethical approval for this study was obtained from the University of Michigan.

To be eligible for the survey, participants had to be: over the age of 18, current residents of the United States and its dependent areas, assigned male sex at birth and currently identify as a cis-gender male, and reporting any type of sex in the past 12 months. A 12-month period for sexual activity was used for eligibility as it was felt that many men may not be having sex during the lockdown period. Over a 6-week period, 34,930 participants clicked on the ads, 3864 people entered the survey portal, and 1789 (46.3%) started the survey. Of those who started, 11 (0.6%) reported living outside the United States, 136 reported a gender other than male (7.6%), 5 reported

being younger than 18 years of age (0.3%), and 283 had not had sex with a man in the past 12 months (15.8%), resulting in 1354 eligible participants. In total, 696 (51.4%) of those who started the survey completed the survey, resulting in a final sample size of 696 GBMSMs.

The survey collected data on participant demographics; age, race and ethnicity, employment status, educational attainment, sexual orientation, gender identity, relationship status, and recent experience of indicators of structural vulnerability (incarceration and homelessness). The survey assessed participant’s experience of COVID-19, including loss or reduction in employment, housing instability, and food insecurity. Participants reported their recent use of nonprescription drugs and alcohol using the Alcohol, Smoking and Substance Use Involvement Screening Test (ASSIST) (15) and the Alcohol Use Disorders Identification Test (AUDIT) (Saunders et al., 1993), which collect information on the use of nonprescription substance and the frequency of use of each substance. Participants were asked whether they felt their substance use or binge drinking (episodes of more than five alcoholic drinks) had increased during the COVID-19 lockdown. Participants were asked to report their experience of COVID-19 testing (and test results) in the past 3 months, and participation in social distancing practices. To assess perceptions of the prevalence of COVID-19, participants were asked “Thinking of the U.S. as a whole, what percentage of the population has tested positive for COVID-19?” and were asked to record their response on a sliding scale from 0 to 100. This question was repeated for the perceived prevalence of COVID-19 in the participant’s state and among their friends (also on scales from 0 to 100). Participants were asked whether they believed they could contract HIV through sex (scale 1–5: *not at all possible to very probable*).

Two scales measured the perceived seriousness of contracting HIV and COVID-19. To measure the perceived seriousness of contracting HIV, we used the Perceived Severity of HIV Infection Scale developed by Salazar et al. (2011). The scale measures the perception of the personal, psychosocial, and physical consequences of contracting HIV, and was based on the Perceived Severity of Breast Cancer instrument (Champion, 1984). The scale consists of 13 items across three domains: *Personal*: (1) Contracting HIV would be very serious to me. (2) The thought of contracting HIV scares me. (3) When I think about contracting HIV, I feel nauseous. (4) If I contracted HIV, my career would be endangered. (5) When I think about contracting HIV, it makes me very anxious. (6) Contracting HIV would be more serious than other diseases. (7) If I contracted HIV, my whole life would change. *Psychosocial*: (8) Contracting HIV would jeopardize my relationship with my partner. (9) Contracting HIV would jeopardize my relationships with my family. (10) My

views of myself would change dramatically if I contracted HIV. (11) My financial security would be greatly endangered if I contracted HIV. *Physical*: (12) Thinking about contracting HIV stops me from sleeping. (13) Thinking about contracting HIV stops me from enjoying sex with my partner. The response format was a five-point bipolar Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Thus, the scale had a potential range of 13–65, with higher scores indicating more severity of HIV infection. The scale demonstrates strong reliability, with a Cronbach α of 0.83 (Salazar et al., 2011).

To measure the perceived seriousness of contracting COVID-19, the Perceived Severity of HIV Infection Scale was adapted by simply replacing the word “HIV” with “COVID-19.” The original intent of the survey was not to develop a new scale, but rather to collect preliminary data on the perceived seriousness of COVID-19 infection among a group at high risk of HIV (GBMSMs). Given the urgent need to collect such data—to inform programming around the allocation of HIV and COVID-19 services—there was insufficient time to conduct full assessments of the psychometric properties of the scale.

The analysis focused on the differential reporting on the two scales: the Perceived Severity of HIV Infection and the Perceived Severity of COVID-19 Infection. Of the 696 survey responses, 40 participants self-reported living with HIV, and were excluded from analysis (as the questions focus on the severity of contracting HIV). A further 138 participants had missing data for HIV serostatus, and the scales for perceived severity of HIV and COVID-19. There were no differences in demographic (i.e., age, race, education, or employment), behavioral (i.e., substance and alcohol use), or COVID-19 (participation in social distancing or COVID-19 testing) between those with and without missing data for these variables. The final analysis sample was 518 GBMSMs.

The first phase of the analysis examined the factor structure of the perceived severity of the COVID-19 infection scale using principal components analysis with oblique rotation using a promax solution. Reliability of the scale was assessed using two procedures: internal consistency and the split-half method. Cronbach's α was calculated to assess the internal consistency of the items; then, the scale items were randomly divided into two sets of scores and the Spearman–Brown correlation was calculated between these two total scores. Adequate reliability was indicated if Cronbach's α and the split-half correlation coefficients were $>.70$. The second phase of the analysis compared the reports for each of the items in the two scales. The third phase modeled the difference in the reporting on the two scales. Each of the scales were summed, and then a difference variable was created by subtracting the total response to the perceived severity of HIV scale from the total response to the perceived severity of

COVID-19 scale. A positive number on the difference scale indicates that the participant perceives greater seriousness of contracting COVID-19 than HIV. A regression model was fit for the difference in scales measure, including demographic characteristics (age, education, employment, race, and relationship), behaviors experienced during the COVID-19 epidemic (increases in substance use or alcohol, increases in food insecurity, or homelessness), and experience with social distancing and perceptions of the prevalence of COVID-19.

Results

The majority of the sample was aged between 25 and 44 years old, although almost one in five were aged 18–24 (Table 1). The sample was largely White ($n = 391$, 75.5%), educated ($n = 383$, 73.9% reporting at least some college education or higher), identifying as gay ($n = 429$, 82.8%), and currently employed ($n = 409$, 79.0%). Approximately half of the sample reported being single, 37.1% ($n = 192$) reported being in a relationship, and 14.3% ($n = 74$) reported being married to a male partner. One in 10 participants reported that they had to skip meals more frequently during the period of lockdown, and 4.1% ($n = 24$) reported experiencing homelessness during the lockdown period. A significant number reported increases in substance and alcohol use during lockdown: 20.5% ($n = 106$) reported their substance use had increased, and 29.5% ($n = 153$) reported their binge drinking had increased. Approximately two-thirds believed it was possible to contract COVID-19 through sex. While participants almost universally reported participating in social distancing ($n = 508$, 98.1%), only 7.9% ($n = 41$) reported receiving a test for COVID-19 (and only 1% reported a positive COVID-19 test [$n = 5$]). Just under half of the sample ($n = 233$, 44.9%) reported testing for HIV in the past 12 months.

The solution for the Perceived Severity of COVID-19 Infection Scale yielded three factors with eigenvalues >1 , accounting for 65% of the variance. These factors were named after the same three domains as the Perceived Severity of HIV Infection Scale: personal consequences (Factor 1), psychosocial consequences (Factor 2), and physical consequences (Factor 3). An examination of the pattern matrix confirmed a three-factor solution. The items and factor loadings for the factors are presented in Table 2. All items had factor loadings $>.40$. Cronbach's α for the scale was 0.73.

Responses to both the scales are presented in Table 3. Overall, participants perceived greater seriousness for HIV infection (mean 46.67, reported range 17–65) than for COVID-19 infection (mean 38.81, reported range 13–62). The scale items for which participants reported more concern for HIV than COVID-19 were: “Contracting {x} would jeopardize my relationship with my partner”;

Table 1. Demographic and Behavioral Characteristics of an Online Sample of Gay, Bisexual, and Other Men Who Have Sex With Men (GBMSMs, $n = 518$).

Characteristic	% (N)
Age	
18–24	18.6 (91)
25–34	49.2 (255)
35–44	23.8 (123)
>45	9.5 (49)
Education	
High school	26.1 (135)
Some college	41.3 (214)
College graduate or graduate school	32.6 (169)
Employed	
Yes	79.0 (409)
No	21.0 (109)
Race	
Black/African American	4.3 (22)
White	75.5 (391)
Other	20.3 (105)
Sexual identity	
Gay/homosexual	82.8 (429)
Bisexual	11.6 (60)
Other	5.6 (29)
HIV sero-status	
HIV-negative	91.4 (473)
HIV-positive	8.6 (45)
Relationship status	
Single	48.7 (252)
Has partner (i.e., boyfriend)	37.1 (192)
Married to male partner	14.3 (74)
Substance has increased during lockdown	
Yes	20.5 (106)
No	79.5 (412)
Binge drinking has increased during lockdown	
Yes	29.5 (153)
No	70.5 (365)
Has skipped meals due to COVID-19	
Yes	11.8 (61)
No	88.2 (456)
Has experienced homelessness during COVID-19	
Yes	4.1 (24)
No	95.9 (494)
Has practiced social distancing	
No	1.8 (10)
Yes	98.1 (508)
Has tested for COVID-19 in past 3 months	
No	92.1 (477)
Yes	7.9 (41)
Believes can contract COVID-19 from sex	
No	33.1 (171)
Yes	66.9 (347)

(continued)

Table 1. (continued)

Characteristic	% (N)
Tested for HIV in the past 12 months	
No	55.1 (285)
Yes	44.9 (233)

“My views of myself would change dramatically if I contracted {x}”; and “If I contracted {x}, my whole life would change.” There was only one scale item for which participants reported greater seriousness for COVID-19 than HIV: “Thinking about contracting {x} stops me from enjoying sex with my partner.” The items for which there were the smallest differences in the reporting for HIV and COVID-19 were: “If I contracted {x}, my career would be endangered”; “When I think about contracting {x}, it makes me very anxious”; and “Thinking about contracting {x} stops me from sleeping.”

Table 4 presents the results of the modeling of differences in the reporting of perceived seriousness for COVID-19 and HIV: positive coefficients indicate that participants reported contracting COVID-19 was more serious than contracting HIV. Relative to those aged 18–24, all other age groups were more likely to perceive COVID-19 infection as being more serious than HIV infection. Other characteristics significantly associated with perceiving COVID-19 infection to be more serious than HIV infection were being unemployed, reporting having to skip meals during the lockdown period, and perceiving higher prevalence of COVID-19 at the U.S. national and state levels. The only characteristics that were associated with reporting that HIV infection was more serious than COVID-19 infection were reporting practicing social distance measures and higher levels of education.

Discussion

The results presented here provide a first insight into the perceptions of the severity of two contrasting infectious diseases: COVID-19 and HIV. Among this online sample of GBMSMs, HIV was perceived as being more severe (mean 46.67) than COVID-19 (mean 38.81). The perceived severity of COVID-19 was not insignificant, with only an 8-point difference on the two scales measuring the perceived severity of HIV and COVID-19. While participants rated the perceived severity of each disease separately, and were not asked to report on the relative severity of the two diseases, the data do provide some interesting insights into how GBMSMs are conceptualizing, and hence responding to, the ongoing simultaneous threats of COVID-19 and HIV.

The factor structure for the Perceived Severity of COVID-19 Infection Scale was the same as that for the Perceived Severity of HIV Infection Scale, with the 13

Table 2. Factor Analysis of Perceived Severity of COVID-19 Infection Scale.

Item	Factor Loading
<i>Factor 1: Personal consequences (34% of variance)</i>	
Contracting COVID-19 would be very serious to me:	0.75
The thought of contracting COVID-19 scares me:	0.81
When I think about contracting COVID-19, I feel nauseous:	0.56
When I think about contracting COVID-19, it makes me very anxious:	0.74
Contracting COVID-19 would be more serious than other diseases:	0.49
If I contracted COVID-19, my whole life would change:	0.53
<i>Factor 2: Psychosocial consequences (21% of the variance)</i>	
If I contracted COVID-19, my career would be endangered:	0.66
Contracting COVID-19 would jeopardize my relationship with my partner:	0.72
Contracting COVID-19 would jeopardize my relationships with my family:	0.58
My views of myself would change dramatically if I contracted COVID-19:	0.51
My financial security would be greatly endangered if I contracted COVID-19:	0.81
<i>Factor 3: Physical consequences (10% of the variance)</i>	
Thinking about contracting COVID-19 stops me from sleeping:	0.71
Thinking about COVID-19 stops me from enjoying sex with my partner:	0.83

Table 3. Reporting on Scales Measuring Perceived Seriousness of Contracting HIV or COVID-19 in an Online Sample of HIV-Negative Gay, Bisexual, and Other Men Who Have Sex With Men ($n = 518$).

	HIV (Range 1–5)	COVID-19 (Range 1–5)	Mean Difference
Contracting {x} would be very serious to me.	4.87	4.32	0.55
The thought of contracting {x} scares me.	4.44	4.10	0.34
When I think about contracting {x}, I feel nauseous.	3.53	2.75	0.78
If I contracted {x}, my career would be endangered.	2.59	2.59	0.00
When I think about contracting {x}, it makes me very anxious.	3.95	3.79	0.16
Contracting {x} would jeopardize my relationship with my partner.	3.77	2.18	1.59
Contracting {x} would jeopardize my relationships with my family.	3.09	2.03	1.06
My views of myself would change dramatically if I contracted {x}.	3.88	2.17	1.71
My financial security would be greatly endangered if I contracted {x}.	3.18	2.90	0.28
Contracting {x} would be more serious than other diseases.	4.36	3.38	0.98
If I contracted {x}, my whole life would change.	4.31	2.93	1.38
Thinking about contracting {x} stops me from sleeping.	2.16	2.08	0.08
Thinking about contracting {x} stops me from enjoying sex with my partner.	2.47	3.53	-1.06
Total	46.67 (17–65)	38.81 (13–62)	7.86

items falling under three domains: personal, psychosocial, and physical. The similarity in structure obviously reflects the use of the same 13 items, and different, more varied scale items may be identified with further qualitative investigation into the concerns that individuals have around COVID-19 infection. As a preliminary step toward the creation of a scale to measure perceived severity of COVID-19, the scale showed high reliability (Cronbach α 0.73) for this sample of GBMSMs. There is

a need to further test the reliability of the scale with more varied populations, who may have different concerns around COVID-19 infection. While GBMSMs generally rated HIV as more severe than COVID-19, three items stood out as rating much higher in terms of perceived severity for HIV than COVID-19. Men reported greater perceived severity for HIV on items that referred to macro-level impacts on the individual—how the disease would change their sense of self, their relationship with

Table 4. Regression Model for Differences in Reported Seriousness of Contracting COVID-19 Versus HIV in an Online Sample of HIV-Negative Gay, Bisexual, and Other Men Who Have Sex With Men (GBMSMs, $n = 478$).

Characteristic	Difference in Reporting of Seriousness of COVID-19 Versus HIV	
	Beta (SE), p value	
Age (18–24)		
25–34	3.856 (1.453),	.008
35–44	7.624 (1.685),	.000
>45	11.061 (2.152),	.00
Education (High school)		
Some college	–2.518 (1.211),	.012
College graduate or graduate school	–3.172 (1.267),	.037
Employed (Yes)		
No	2.784 (1.341),	.039
Race (Black/African American)		
White	–0.305 (3.382),	.928
Other	0.708 (3.527),	.834
Sexual identity (Gay/homosexual)		
Bisexual	–0.297 (1.553),	.861
Other	2.271 (2.384),	.340
Relationship status (Single)		
Has partner (i.e., boyfriend)	0.821 (1.156),	.473
Married to male partner	–1.049 (1.621),	.518
Substance has increased during lockdown (No)		
Yes	0.805 (1.387),	.561
Binge drinking has increased during lockdown (No)		
Yes	–0.537 (1.209),	.565
Has skipped meals due to COVID-19 (No)		
Yes	4.421 (1.901),	.021
Has experienced homelessness during COVID-19 (No)		
Yes	–1.181 (2.691),	.458
Perceived prevalence of COVID-19 among U.S. population	0.196 (0.092),	.003
Perceived prevalence of COVID-19 among state population	0.180 (0.091),	.041
Perceived prevalence of COVID-19 among friends	–0.021 (0.081),	.288
Has practiced social distancing (No)		
Yes	–11.451 (4.163),	.006
Has tested for COVID-19 in past 3 months (No)		
Yes	–1.864 (1.825),	.308
Believes can contract COVID-19 from sex	0.260 (0.341),	.445
Tested for HIV in the past 12 months (No)		
Yes	–0.641 (1.084),	.558

Note. Positive coefficients indicate the participant reported that contracting COVID-19 would be more serious than contracting HIV.

their partner, and their whole life—suggesting that HIV is perceived as a greater, more long-term threat. These results also note the role of stigma in shaping the perceived severity of infectious disease. Much has been written about the actual and anticipated stigma associated with HIV infection (Crockett et al., 2019; Earnshaw et al., 2020; Turan et al., 2017), and these stigmas—which do not exist to the same degree for COVID-19 and do not disproportionately impact a particular stigmatized

group as HIV does—likely shape perceptions that HIV is more severe on how it impacts the whole being. The HIV epidemic is now in its fifth decade, while COVID-19 is a new, emerging threat. Reactions to the severity of HIV among GBMSMs are shaped by decades of stigma and public health messaging aimed at GBMSMs and the known availability of prevention and care options, whereas reactions to COVID-19 are not only new, but exist in a perhaps unprecedented global panic. Further

research is warranted to understand the emergent stigma around COVID-19, and the extent to which this stigma differentially affects population subgroups.

There were smaller differences in perceived severity for items that dealt with the mental health impacts of disease (anxiety and loss of sleep) and more immediate life events (effects on career). Respondents rated COVID-19 as more severe than HIV for how it impacted their ability to enjoy sex with their partners, likely driven by perceptions of transmission potential through close physical contact. News of the COVID-19 is almost impossible to avoid, and respondents are likely surrounded by updates on the pandemic. As such, it makes sense that effects of COVID-19 are manifested as high perceived impacts on the respondent's immediate life.

Respondents aged over 25 reported COVID-19 to be more severe than HIV relative to those aged 18–24. News stories have been replete recently with images of young people defying lockdown and social distancing recommendations, and it may be that younger participants have a greater sense of optimism bias and do not feel at risk of COVID-19 infection. Conversely, it is possible that those aged 18–25 are targeted with a greater degree of HIV prevention messages—given that the greatest increase in HIV in the United States is among young GBMSMs—and therefore may be internalizing messages about the risks of HIV infection. Respondents who were unemployed and reported having to skip meals during the lockdown period reported COVID-19 to be more severe than HIV. These respondents may be more vulnerable to the health and economic effects of COVID-19, lacking the resources to isolate or access health care, and may therefore be experiencing high levels of immediate impact of COVID-19. Those who perceived a higher prevalence of COVID-19 at the national and state levels reported COVID-19 to be more severe than HIV. Here we may be observing a worry-well effect, the opposite in some ways to optimism bias. Respondents who feel that the prevalence is high may be seeing themselves at high risk of infection, and hence perceive a greater severity of COVID-19 infection.

Interestingly, those who practiced social distancing measures reported HIV to be more severe than COVID-19, suggesting that by practicing social distancing, they felt they had mediated the risk of COVID-19. The survey did not collect data on adherence to social distancing measures, and it is possible that there is wide variation in adherence; further work is needed to establish whether perceptions of the severity of COVID-19 are associated with the correct implementation of social distancing measures. Those with higher levels of education perceived HIV to be more severe than COVID-19, perhaps reflecting their greater availability of social and economic resources (i.e., employment in jobs that allowed them to work fully from home) that reduced their perceptions of the threat of COVID-19.

There are several limitations to the current study. The data were collected online, and therefore represent only those with access to the internet. Loss of resources (i.e., employment) during COVID-19 may have restricted access to the internet for many vulnerable groups. There was a large degree of missing data, although those with missing data were not demographically or behaviorally different to those with complete data. The sample is predominantly White and highly educated. With a more racially and economically diverse sample, we may expect to observe greater variation in the negative experiences of COVID-19 (in terms of increases in structural vulnerability).

Results from this online sample of U.S. GBMSMs illustrate that although GBMSMs perceive HIV to be a significantly more severe threat than COVID-19, the difference in perceived severity between the two diseases was not large, and there were some proximal domains in which the severity of HIV and COVID-19 were very similar (i.e., mental health effects). There is a need to continue to develop messages specifically for young GBMSMs that highlight the risks of COVID-19 and HIV, as they continue social engagement in contexts in which HIV prevention services may not yet be available due to service closures. The similarly high levels of anxiety and sleep loss for HIV and COVID-19 point to the need to pay critical attention to the mental health needs of those living in lockdown, with telehealth support services offering a viable mechanism for providing vital support services. Public health messaging around COVID-19 risks could look to the messaging that has been used for HIV prevention over the past 20 years (not the stigmatizing messaging of the 1980s and 1990s) for ideas of how to increase awareness and positive public discourse around disease threat and prevention. Further work is warranted to understand the extent to which these patterns of concern around COVID-19 exist in other populations, particularly those who do not experience a simultaneous infectious disease threat such as HIV.

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