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Sexual Minority Disparities in Health and Well-Being as a Consequence of the COVID-19 Pandemic Differ by Sexual Identity

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Abstract

Purpose: The coronavirus disease 2019 (COVID-19) pandemic has accentuated long-standing population health disparities in the United States. We examined how the pandemic and its social consequences may differentially impact sexual minority adults, relative to heterosexual adults.
Methods: Data are from a U.S. national sample of adults ($n = 2996$; 18.06%) collected from online panels from April to May 2020. We used eight indicators of well-being—mental health, physical health, quality of life, stress, loneliness, psychological distress, alcohol use, and fatigue—to assess the degree to which sexual identity subgroups (i.e., heterosexual, gay/lesbian, bisexual, and ''other'' sexual minority) varied in retrospective pre- and postpandemic onset indicators of well-being and whether groups varied in their rate of change from pre- and postpandemic onset.
Results: The results showed consistent patterns of decline in well-being across sexual identity subgroups, although changes in mental health, physical health, quality of life, stress, and psychological distress were more robust among sexual minority adults in general, relative to heterosexual adults. Adjusted multivariate models testing differences in change in retrospective pre- and postpandemic onset found that well-being among bisexual men and women was most negatively impacted by the pandemic.
Conclusion: The COVID-19 pandemic may have distinct health consequences for sexual minority adults in the United States. Our findings support and further legitimize calls for more comprehensive surveillance and cultural responsiveness in emergency preparedness as it relates to sexual minority people and the COVID-19 pandemic.

Keywords: coronavirus, COVID-19, health disparities, LGB, mental health, sexual minority

Introduction

The coronavirus disease 2019 (COVID-19) pandemic has impacted the lives of millions across the United States, including more than 27 million positive cases and 500,000 deaths.[1] Recent data also demonstrate that COVID-19 has led to a sequelae of factors impacting the mental health of the U.S. population,[2–4] including increased substance use, suicidal ideation, anxiety, and depression.[5–7] Emerging research shows the disproportionate impact of COVID-19 on the health and mental health of racial and ethnic minority populations, as well as other socially disadvantaged populations (e.g., rural and low socioeconomic status populations).[5,8,9] However, the impact of the COVID-19 pandemic on sexual minority (e.g., lesbian, gay, bisexual, and other nonheterosexual) youth and adults has garnered much less public and empirical attention.[10–13]

Sexual orientation disparities in health and well-being are well established, including anxiety, depression, suicidality, substance use disorder, sleep, and chronic health conditions.[14–19] These disparities are empirically linked to experiences with minority stressors (e.g., stigma, discrimination,

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and rejection).[19–24] Sexual minority populations also face a disproportionate burden of social inequalities, including poverty, unstable housing, unemployment, and lack of access to health insurance and health care.[25–27] Existing evidence suggests that sexual minority persons are facing increased social inequality during the COVID-19 pandemic, including food insecurity, job loss, and reduced wages, as well as elevated rates of depression, loneliness, and lack of social support.[28–30] Pandemic-related trauma may intersect with existing mental health, minority stress, and substance use challenges and dimensions of social inequality among sexual minority persons, compounding their risks for mental health burdens in the current context.[12,31]

The current study seeks to expand understanding of disproportionate health and well-being risks among sexual minority adults during the COVID-19 pandemic. We used data from a national sample of adults collected at the height of physical distancing orders in the United States to assess disparities in eight indicators of mental, behavioral, and physical health and well-being both before, and during the pandemic. We also tested whether the difference in indicators of well-being from pre- to postpandemic onset differed across groups defined by sexual identity. These findings extend current conceptual and empirical writings on the health vulnerabilities of sexual minority people during the COVID-19 pandemic in the hopes of supporting the need for urgent action on behalf of sexual minority populations.

Methods

Data source and sample

Data are from the baseline survey of the Assessing the Social Consequences of COVID-19 (ASCC) study ($n = 3108$). The ASCC is an ongoing multiwave U.S.-based survey and web-based 24-hour time diary study designed to assess the social consequences of the COVID-19 pandemic. Data for this article were collected in April and May 2020 from Prolific Academic, an online labor market connecting workers with tasks, including scientific research. The survey collected a host of sociodemographic characteristics along with several measures of mental health, physical health, and other indicators of well-being.[32] Participants were prompted to report retrospective assessments of well-being directly before and then following the onset of the pandemic in the United States. Specifically, the pre-COVID-19 outbreak prompt stated ''For these questions, we are interested in your life just prior to the outbreak of the novel coronavirus/COVID-19 in the United States. Please answer the following questions regarding your life immediately before this outbreak, prior to March 1, 2020.'' Postpandemic onset questions were introduced with the prompt, ''We are now interested in things as they are right now, after the novel coronavirus/COVID-19 outbreak in the United States around March 1, 2020.'' All pre-COVID-19 questions were adapted to start with the phrase ''Before the novel coronavirus/COVID-19…'' The current analytic sample was limited to participants who responded to both pre- and post-COVID outbreak assessments of well-being and sexual orientation ($n = 2996$; 18.06% sexual minority). The current study was approved by the University of Maryland Institutional Review Board and participants accessed the survey through a click-to-consent page. Sample demographic characteristics are presented in Table 1.

Measures

Self-reported mental health, physical health, and quality of life were each assessed using a single item adapted from the Centers for Disease Control and Prevention's ''Healthy Days Measure.''[33,34] Participants were asked to rate their ''mental health, including your mood and your ability to think,'' ''physical health,'' and their ''quality of life'' with response options of excellent = 5, very good = 4, good = 3, fair = 2, and poor = 1.

Participant stress was assessed with the question, ''On a scale of 0 to 10, with 0 being no stress and 10 being the worst stress possible, what number best describes your level of stress.''

Psychological distress was assessed using the Kessler 6,[35] which assesses the presence of depression and anxiety symptoms (e.g., feeling ''hopeless,'' ''restless or fidgety,'' ''worthless'') from none of the time = 1 to all of the time = 5. Items were summed and averaged (pre- and post-alpha = 0.91).

Loneliness was assessed using four items from the UCLA Loneliness Scale,[36] which captures feelings of loneliness and social isolation (e.g., How often do you feel that no one really knows you well? and How often do you feel you can find companionship when you want it?). Response options range from never = 1 to often = 4. Scores were summed and averaged (alpha pre = 0.77, post = 0.75).

Alcohol use was assessed with two items. First, participants were asked to report how many days in a 7-day period they consumed alcohol (range: 0–7 days); followed by a question asking, ''On the days you consumed alcohol, how many drinks did you have on average?'' (range: 0–10 drinks). Scores were multiplied to assess average weekly alcohol consumption before and following the COVID-19 outbreak (range: 0–70).[37]

Participants were asked to report on their fatigue; ''how would you rate your fatigue on average?'' (none = 1, mild = 2, moderate = 3, and severe = 4).

Sexual identity was assessed by asking participants, ''Do you think of yourself as,'' with response options of, ''lesbian or gay,'' ''bisexual,'' ''straight, that is, not lesbian or gay,'' and ''a sexual orientation not listed here.''

Multivariate models were adjusted for gender (man [reference (ref)], woman; in nongender-stratified models), race/ethnicity (White [ref], Black or African American, Latino/a/x, Asian American, and Multiracial/Multiethnic/Other), age, income (<$10,000, $10,000–$14,999, $15,000–$24,999, $25,000–$34,999, $35,000–$49,999, $50,000–$74,999, and ≥$75,000), region (Northeast, South, Midwest, and West), relationship status (married [ref], partnered [nonmarried], or single), and parental status (no [ref], yes).

Analytic approach

We started by providing sample demographic characteristic information, stratified by sexual identity. Next, we assessed sexual identity differences in each of the eight well-being indicators both pre- and postpandemic onset. We then estimated paired-sample *t*-tests to assess change between pre- and postassessments of well-being across sexual identity

Table 1. Sample Demographic Characteristics: Assessing the Social Consequences of Covid-19 ($N = 2996$)

	Total sample	*Heterosexual* (n = *2455*)	*Lesbian/gay* (n = *111*)	*Bisexual* (n = *347*)	*Other* (n = *83*)		
	%/M (SD)	*%/M (SD)*	*%/M (SD)*	*%/M (SD)*	*%/M (SD)*	χ^2/F	p
Gender						**70.61**	**<0.001**
Man	42.26	45.54	40.54	23.05	27.71		
Woman	57.74	54.46	59.46	76.95	72.29		
Race/ethnicity						**39.24**	**0.001**
White	64.49	64.93	62.16	64.84	60.24		
Latina/o/x	6.58	6.80	6.31	5.48	4.82		
Black or African American	7.08	6.97	11.71	6.05	8.43		
Asian American	11.95	12.83	7.21	7.20	12.05		
Multiracial, Multiethnic, or Other	9.71	8.47	12.61	16.43	14.45		
Region						**17.59**	**0.040**
Northeast	24.83	24.15	25.23	28.24	30.12		
Midwest	21.73	22.08	18.92	21.33	16.87		
South	35.18	34.95	45.05	31.70	43.37		
West	18.26	18.82	10.81	18.73	9.64		
Children						**72.74**	**<0.001**
Yes	30.14	33.44	9.91	17.29	13.25		
No	69.86	66.56	90.09	82.71	86.75		
Relationship status						**66.77**	**<0.001**
Single	39.85	28.82	45.95	42.94	49.40		
Partnered	27.74	25.66	35.14	38.33	34.94		
Married	32.41	35.52	18.92	18.73	15.66		
Household income						**58.54**	**<0.001**
<10,000	7.41	11.28	5.75	11.54	6.59		
10,000–14,999	6.48	5.93	3.51	3.85	3.91		
15,000–24,999	7.41	12.17	7.85	11.54	8.43		
25,000–34,999	11.11	13.65	9.01	11.54	9.69		
35,000–49,999	14.81	11.87	11.66	12.82	11.83		
50,000–74,999	24.07	16.02	22.36	14.10	21.48		
75,000+	28.70	29.08	39.85	34.62	38.07		
Age	32.20 (11.52)	33.03 (11.85)	30.69 (10.69)	27.96 (8.39)	27.66 (8.77)	**25.37**	**<0.001**

Statistically significant associations at $p < 0.05$ are bolded.

subgroups. Finally, to test sexual identity differences in rate of change, we regressed post-COVID well-being scores on sexual identity, adjusting for pre-COVID scores and other sociodemographic covariates. Multiple imputation was used ($m = 50$) to address missing data (<2% across variables) in multivariate models. All data management and analyses were conducted in Stata 15.1.[38]

Results

Sexual identity differences in well-being pre- and postpandemic onset

Sexual identity disparities in well-being pre- and postpandemic onset are presented in Table 2. Due to space limitations, we focus on gender-stratified models. Gay men, when compared to heterosexual men, showed poorer mental health, physical health, and quality of life before the start of the pandemic, and poorer mental health postpandemic onset. Relative to heterosexual men, bisexual men reported poorer mental and physical health, and more stress, loneliness, psychological distress, and fatigue before and after the pandemic started. Before the start of the pandemic, ''other'' sexual minority men reported poorer mental and physical health, and greater psychological distress and fatigue; however, only differences in physical health and psychological distress remained significant at postpandemic onset.

Lesbian/gay women did not differ from heterosexual women on any indicators of well-being, neither at pre- nor post-COVID-19 onset. Compared to heterosexual women, bisexual women reported poorer pre- and postpandemic onset mental health, physical health, and quality of life, as well as greater stress, loneliness, psychological distress, and fatigue. ''Other'' sexual minority women, relative to heterosexual women, had poorer physical health and quality of life before the pandemic. Postpandemic onset, they also experienced poorer mental health, physical health, quality of life, and greater psychological distress.

We also conducted several additional adjusted regression models to test the difference between gay/lesbian and bisexual subgroups. Among men, bisexual men had higher psychological distress than gay men both pre- and postpandemic onset. Among women, bisexual women had poorer mental and physical health and greater loneliness and psychological

Table 2. Sexual Identity Differences in Indicators of Well-being Pre- and Postpandemic Onset

	All				*Men*				*Women*			
	Pre-		*Post-*		*Pre-*		*Post-*		*Pre-*		*Post-*	
	b	p	b	p	b	p	b	p	b	p	b	p
Mental health												
Lesbian/gay	−0.09	0.359	**−0.21**	**0.047**	**−0.43**	**0.006**	**−0.36**	**0.029**	0.15	0.242	−0.08	0.557
Bisexual	**−0.42**	**<0.001**	−0.41	−0.410	**−0.39**	**0.001**	**−0.46**	**<0.001**	**−0.41**	**<0.001**	**−0.38**	**<0.001**
Other	**−0.36**	**0.002**	−0.32	−0.320	**−0.70**	**0.002**	−0.19	0.395	−0.20	0.131	**−0.34**	**0.015**
Physical health												
Lesbian/gay	−0.09	0.320	−0.13	0.175	**−0.29**	**0.046**	−0.26	0.097	0.06	0.650	−0.03	0.813
Bisexual	**−0.30**	**<0.001**	−0.32	−0.320	**−0.35**	**0.002**	**−0.25**	**0.032**	**−0.27**	**<0.001**	**−0.34**	**<0.001**
Other	**−0.45**	**<0.001**	−0.48	−0.480	**−0.60**	**0.002**	**−0.46**	**0.032**	**−0.40**	**0.003**	**−0.48**	**<0.001**
Quality of life												
Lesbian/gay	**−0.23**	**0.006**	−0.17	0.055	**−0.33**	**0.013**	−0.24	0.096	−0.16	0.140	−0.10	0.371
Bisexual	**−0.29**	**<0.001**	−0.34	−0.340	−0.16	0.102	**−0.26**	**0.016**	**−0.33**	**<0.001**	**−0.36**	**<0.001**
Other	**−0.27**	**0.006**	−0.30	−0.300	−0.30	0.071	−0.07	0.704	**−0.20**	**0.046**	**−0.36**	**0.003**
Stress												
Lesbian/gay	0.21	0.321	0.40	0.091	0.48	0.142	0.32	0.383	0.00	0.990	0.41	0.181
Bisexual	**0.56**	**<0.001**	0.72	0.720	**0.88**	**<0.001**	**1.19**	**<0.001**	**0.39**	**0.012**	**0.52**	**0.002**
Other	0.10	0.669	0.15	0.150	0.70	0.135	0.25	0.621	−0.20	0.460	0.03	0.933
Loneliness												
Lesbian/gay	−0.02	0.798	−0.04	0.504	0.03	0.776	0.03	0.788	−0.06	0.508	−0.10	0.241
Bisexual	**0.22**	**<0.001**	0.23	0.230	**0.19**	**0.014**	**0.26**	**0.001**	**0.22**	**<0.001**	**0.20**	**<0.001**
Other	0.11	0.148	0.11	0.110	0.10	0.651	0.14	0.323	0.10	0.177	0.09	0.332
Psychological distress												
Lesbian/gay	**0.17**	**0.034**	**0.22**	**0.018**	0.24	0.062	0.24	0.098	0.12	0.265	0.18	0.132
Bisexual	**0.47**	**<0.001**	0.55	0.550	**0.60**	**<0.001**	**0.70**	**<0.001**	**0.39**	**<0.001**	**0.46**	**<0.001**
Other	**0.38**	**<0.001**	0.40	0.400	**0.70**	**<0.001**	**0.40**	**0.042**	0.20	0.056	**0.34**	**0.006**
Alcohol use												
Lesbian/gay	−0.47	0.469	−0.15	0.844	−0.94	0.461	−0.54	0.703	−0.27	0.681	0.07	0.932
Bisexual	0.56	0.158	0.70	0.700	−0.33	0.733	0.88	0.412	0.64	0.079	0.49	0.297
Other	−0.68	0.370	−0.77	−0.770	−2.00	0.248	−2.67	0.172	−0.40	0.536	−0.21	0.819
Fatigue												
Lesbian/gay	0.06	0.423	**0.17**	**0.027**	0.12	0.257	0.12	0.289	0.01	0.925	0.19	0.064
Bisexual	**0.14**	**0.001**	0.29	0.290	**0.21**	**0.008**	**0.40**	**<0.001**	**0.10**	**0.038**	**0.25**	**<0.001**
Other	**0.22**	**0.006**	0.21	0.210	**0.50**	**<0.001**	0.31	0.053	0.10	0.405	0.17	0.116

All models adjusted for age, race/ethnicity, income, relationship status, parental status, and region. Heterosexual was the referent category for all models. Statistically significant associations at $p < 0.05$ are bolded.

distress than lesbian/gay women both pre- and postpandemic onset; bisexual women also had lower postpandemic onset quality of life.

Changes in self-reported well-being pre-/postpandemic onset

Changes in pre-/postpandemic onset scores of health and well-being across sexual identity subgroups are presented in Table 3. Again, we focus on gender-stratified results. Heterosexual men showed significant declines in mental and physical health as well as quality of life and increases in stress, loneliness, psychological distress, and fatigue. Comparatively, gay men experienced decreased physical health and quality of life, and bisexual men had significant reductions in mental health and quality of life, and higher stress, loneliness, psychological distress, alcohol use, and fatigue. With one exception (i.e., physical health), the degree of pre- and postpandemic onset change (ΔM) was largest among bisexual men. ''Other'' sexual minority men showed no pre-/postpandemic onset change across all indicators.

Among women, changes in pre-/postpandemic onset scores were fairly uniform. Heterosexual, lesbian/gay, bisexual, and ''other'' sexual minority women showed significant declines in mental health, physical health, and quality of life, along with statistical increases in stress, psychological distress, and fatigue. Heterosexual and bisexual women experienced increased loneliness; heterosexual and lesbian/gay women showed increased alcohol use. There were no clear sexual identity patterns of pre- and postpandemic onset change (ΔM) among women.

Unadjusted and adjusted multivariate models testing sexual identity differences in the pre- and postpandemic onset changes in indicators of well-being are presented in Table 4. Focusing on gender-stratified models, the unadjusted results suggest that when compared to heterosexual men, gay and bisexual men report greater decreases in mental health, physical health, and quality of life as well as greater increases in psychological distress; bisexual men also showed greater increases in stress, loneliness, and fatigue. ''Other'' sexual minority men showed greater decreases in physical health and larger increases in psychological distress.

Table 3. Paired Sample *t*-test of Pre- and Postpandemic Onset Differences in Indicators of Well-being by Sexual Identity

	All					*Men*					*Women*				
	Mpre	*Mpost*	ΔM	t	p	*Mpre*	*Mpost*	Δ*M*	t	p	*Mpre*	*Mpost*	ΔM	t	p
Mental health															
Heterosexual	**3.38**	**3.02**	**−0.36**	**−19.52**	**<0.001**	**3.45**	**3.15**	**−0.30**	**−11.79**	**<0.001**	**3.32**	**2.91**	**−0.41**	**−15.61**	**<0.001**
Lesbian/gay	**3.18**	**2.69**	**−0.49**	**−5.00**	**<0.001**	2.96	2.69	−0.27	−1.77	0.083	**3.33**	**2.70**	**−0.64**	**−5.08**	**<0.001**
Bisexual	**2.79**	**2.39**	**−0.40**	**−6.78**	**<0.001**	**2.95**	**2.58**	**−0.38**	**−3.65**	**<0.001**	**2.74**	**2.33**	**−0.41**	**−5.79**	**<0.001**
Other	**2.84**	**2.48**	**−0.36**	**−3.31**	**0.001**	2.74	2.91	0.17	0.81	0.426	**2.88**	**2.32**	**−0.57**	**−4.83**	**<0.001**
Physical health															
Heterosexual	**3.33**	**3.10**	**−0.23**	**−14.76**	**<0.001**	**3.38**	**3.13**	**−0.25**	**−11.05**	**<0.001**	**3.29**	**3.08**	**−0.21**	**−9.94**	**<0.001**
Lesbian/gay	**3.21**	**2.91**	**−0.30**	**−4.13**	**<0.001**	**3.04**	**2.80**	**−0.24**	**−2.12**	**0.040**	**3.32**	**2.98**	**−0.33**	**−3.61**	**0.001**
Bisexual	**2.99**	**2.69**	**−0.30**	**−6.46**	**<0.001**	3.00	2.83	−0.17	−1.98	0.052	**2.99**	**2.65**	**−0.34**	**−6.24**	**<0.001**
Other	**2.86**	**2.54**	**−0.31**	**−3.09**	**0.003**	2.74	2.65	−0.09	−0.36	0.724	**2.90**	**2.50**	**−0.40**	**−3.84**	**<0.001**
Quality of life															
Heterosexual	**3.46**	**3.05**	**−0.41**	**−24.47**	**<0.001**	**3.43**	**3.09**	**−0.34**	**−13.97**	**<0.001**	**3.48**	**3.01**	**−0.47**	**−20.41**	**<0.001**
Lesbian/gay	**3.18**	**2.78**	**−0.40**	**−4.88**	**<0.001**	**3.07**	**2.76**	**−0.31**	**−2.10**	**0.042**	**3.26**	**2.80**	**−0.45**	**−4.94**	**<0.001**
Bisexual	**3.11**	**2.56**	**−0.54**	**−11.57**	**<0.001**	**3.19**	**2.74**	**−0.45**	**−4.97**	**<0.001**	**3.09**	**2.51**	**−0.57**	**−10.46**	**<0.001**
Other	**3.13**	**2.61**	**−0.52**	**−5.78**	**<0.001**	3.04	2.96	−0.09	−0.44	0.665	**3.17**	**2.48**	**−0.68**	**−7.55**	**<0.001**
Stress															
Heterosexual	**4.21**	**5.01**	**0.80**	**18.61**	**<0.001**	**3.98**	**4.65**	**0.67**	**12.05**	**<0.001**	**4.40**	**5.31**	**0.91**	**14.27**	**<0.001**
Lesbian/gay	**4.58**	**5.52**	**0.95**	**4.10**	**<0.001**	4.47	5.04	0.58	1.86	0.070	**4.65**	**5.85**	**1.20**	**3.70**	**<0.001**
Bisexual	**5.11**	**6.06**	**0.95**	**7.83**	**<0.001**	**5.00**	**5.98**	**0.97**	**4.68**	**<0.001**	**5.14**	**6.08**	**0.94**	**6.50**	**<0.001**
Other	**4.65**	**5.46**	**0.81**	**4.03**	**<0.001**	4.74	5.00	0.26	0.88	0.388	**4.62**	**5.63**	**1.02**	**4.09**	**<0.001**
Loneliness															
Heterosexual	**2.21**	**2.32**	**0.12**	**11.01**	**<0.001**	**2.24**	**2.33**	**0.10**	**6.82**	**<0.001**	**2.18**	**2.31**	**0.13**	**8.65**	**<0.001**
Lesbian/gay	2.24	2.33	0.09	1.57	0.120	2.31	2.39	0.09	0.86	0.396	2.20	2.29	0.09	1.38	0.173
Bisexual	**2.48**	**2.61**	**0.13**	**4.37**	**<0.001**	**2.50**	**2.65**	**0.15**	**2.66**	**0.010**	**2.47**	**2.59**	**0.12**	**3.57**	**<0.001**
Other	**2.39**	**2.51**	**0.12**	**2.43**	**0.017**	2.32	2.46	0.15	1.97	0.061	2.42	2.53	0.10	1.73	0.088
Psychological distress															
Heterosexual	**1.94**	**2.21**	**0.27**	**20.57**	**<0.001**	**1.94**	**2.13**	**0.19**	**11.11**	**<0.001**	**1.94**	**2.28**	**0.33**	**17.55**	**<0.001**
Lesbian/gay	**2.19**	**2.51**	**0.32**	**4.39**	**<0.001**	2.20	2.43	0.22	1.97	0.056	**2.18**	**2.56**	**0.38**	**4.08**	**<0.001**
Bisexual	**2.53**	**2.92**	**0.39**	**9.29**	**<0.001**	2.61	**2.91**	**0.30**	**4.20**	**<0.001**	**2.51**	**2.92**	**0.41**	**8.31**	**<0.001**
Other	**2.44**	**2.76**	**0.32**	**4.60**	**<0.001**	2.64	2.57	−0.07	−0.89	0.385	**2.37**	**2.83**	**0.47**	**5.64**	**<0.001**
Alcohol use															
Heterosexual	**3.64**	**4.10**	**0.46**	**3.77**	**<0.001**	4.71	4.94	0.23	1.04	0.298	**2.74**	**3.39**	**0.66**	**5.12**	**<0.001**
Lesbian/gay	3.00	3.76	0.75	1.89	0.061	3.74	4.40	0.66	0.81	0.425	**2.50**	**3.32**	**0.82**	**2.15**	**0.035**
Bisexual	3.67	4.24	0.57	1.75	0.081	**4.22**	**5.64**	**1.41**	**2.07**	**0.042**	3.51	3.82	0.31	0.85	0.396
Other	2.35	2.64	0.29	0.54	0.594	2.70	2.39	−0.30	−0.29	0.776	2.22	2.73	0.52	0.82	0.415
Fatigue															
Heterosexual	**2.23**	**2.35**	**0.12**	**7.75**	**<0.001**	**2.13**	**2.23**	**0.10**	**4.80**	**<0.001**	**2.32**	**2.45**	**0.13**	**6.09**	**<0.001**
Lesbian/gay	**2.30**	**2.54**	**0.24**	**3.12**	**0.002**	2.22	2.36	0.13	1.29	0.204	**2.35**	**2.67**	**0.32**	**2.88**	**0.005**
Bisexual	**2.44**	**2.73**	**0.29**	**6.54**	**<0.001**	**2.34**	**2.64**	**0.30**	**3.83**	**<0.001**	**2.47**	**2.76**	**0.28**	**5.44**	**<0.001**
Other	2.49	2.63	0.13	1.44	0.153	2.65	2.52	−0.13	−0.90	0.377	**2.43**	**2.67**	**0.23**	**2.08**	**0.042**

Statistically significant associations at $p < 0.05$ are bolded.
Mpre = mean prepandemic onset.
Mpost = mean postpandemic onset.

Table 4. Adjusted Regression Models Testing Change in Indicators of Well-being by Sexual Identity

	Full sample				*Men*				*Women*			
	Unadjusted		*Adjusted*		*Unadjusted*		*Adjusted*		*Unadjusted*		*Adjusted*	
	b	p	b	p	b	p	b	p	b	p	b	p
Mental health												
Lesbian/gay	**−0.32**	**0.002**	−0.15	0.074	**−0.46**	**0.006**	−0.06	0.608	−0.21	0.127	−0.16	0.150
Bisexual	**−0.63**	**<0.001**	**−0.16**	**0.002**	**−0.57**	**<0.001**	**−0.19**	**0.041**	**−0.58**	**<0.001**	**−0.15**	**0.014**
Other	**−0.53**	**<0.001**	−0.10	0.277	−0.24	0.310	0.27	0.118	**−0.59**	**<0.001**	−0.23	0.055
Physical health												
Lesbian/gay	−0.19	0.051	−0.07	0.353	**−0.33**	**0.034**	−0.04	0.715	−0.10	0.457	−0.07	0.470
Bisexual	**−0.41**	**<0.001**	**−0.11**	**0.013**	**−0.31**	**0.010**	0.00	0.975	**−0.43**	**<0.001**	**−0.15**	**0.004**
Other	**−0.56**	**<0.001**	−0.16	0.057	**−0.48**	**0.027**	−0.01	0.971	**−0.58**	**<0.001**	**−0.22**	**0.028**
Quality of life												
Lesbian/gay	**−0.26**	**0.005**	−0.03	0.655	**−0.33**	**0.024**	−0.03	0.777	−0.20	0.086	−0.01	0.927
Bisexual	**−0.48**	**<0.001**	**−0.17**	**<0.001**	**−0.35**	**0.002**	−0.16	0.075	**−0.49**	**<0.001**	**−0.17**	**0.002**
Other	**−0.43**	**<0.001**	−0.14	0.111	−0.13	0.514	0.13	0.415	**−0.52**	**<0.001**	**−0.23**	**0.023**
Stress												
Lesbian/gay	**0.52**	**0.029**	0.26	0.178	0.39	0.277	−0.04	0.889	0.55	0.076	0.40	0.129
Bisexual	**1.05**	**<0.001**	**0.37**	**0.002**	**1.32**	**<0.001**	**0.54**	**0.009**	**0.78**	**<0.001**	**0.31**	**0.037**
Other	0.45	0.096	0.09	0.694	0.35	0.487	−0.25	0.505	0.33	0.304	0.14	0.610
Loneliness												
Lesbian/gay	0.01	0.873	−0.03	0.476	0.06	0.554	0.01	0.933	−0.02	0.802	−0.07	0.316
Bisexual	**0.29**	**<0.001**	**0.07**	**0.011**	**0.32**	**<0.001**	**0.11**	**0.032**	**0.28**	**<0.001**	0.05	0.152
Other	**0.19**	**0.018**	0.03	0.564	0.13	0.369	0.09	0.327	**0.21**	**0.024**	0.00	0.948
Psychological distress												
Lesbian/gay	**0.30**	**0.001**	0.08	0.233	**0.30**	**0.041**	0.03	0.761	**0.29**	**0.017**	0.09	0.311
Bisexual	**0.71**	**<0.001**	**0.17**	**<0.001**	**0.78**	**<0.001**	**0.18**	**0.009**	**0.64**	**<0.001**	**0.17**	**0.001**
Other	**0.55**	**<0.001**	0.09	0.195	**0.44**	**0.028**	−0.18	0.151	**0.56**	**<0.001**	**0.18**	**0.047**
Alcohol use												
Lesbian/gay	−0.34	0.660	0.22	0.695	−0.54	0.701	0.15	0.888	−0.07	0.934	0.32	0.606
Bisexual	0.14	0.757	0.25	0.473	0.69	0.521	1.12	0.164	0.43	0.345	−0.09	0.801
Other	−1.46	0.102	−0.24	0.718	−2.55	0.194	−1.18	0.421	−0.66	0.465	0.18	0.779
Fatigue												
Lesbian/gay	**0.19**	**0.014**	**0.14**	**0.038**	0.13	0.269	0.06	0.578	**0.21**	**0.036**	**0.19**	**0.045**
Bisexual	**0.38**	**<0.001**	**0.22**	**<0.001**	**0.41**	**<0.001**	**0.28**	**<0.001**	**0.30**	**<0.001**	**0.20**	**<0.001**
Other	**0.28**	**0.002**	0.10	0.204	0.29	0.065	0.02	0.900	**0.21**	**0.045**	0.13	0.179

All models adjusted for age, race/ethnicity, income, relationship status, parental status, and region. Heterosexual was the referent category for all models. Statistically significant associations at $p < 0.05$ are bolded.

When models were adjusted for sociodemographic characteristics, there were no longer statistical differences between gay men or ''other'' sexual minority men and heterosexual men, although differences between heterosexual and bisexual men remained with the exception of physical health and quality of life.

These patterns across unadjusted and adjusted models were more varied among women. Unadjusted models showed that compared to heterosexual women, bisexual and ''other'' sexual minority women had greater decreases in mental health, physical health, and quality of life, alongside greater increases in loneliness, psychological distress, and fatigue. Bisexual women also reported greater increases in stress relative to heterosexual women, and gay/lesbian women had greater increases in psychological distress and fatigue. After adjusting for sociodemographic factors, bisexual women differed from heterosexual women across outcomes (with the exception of loneliness); ''other'' sexual minority women differed from heterosexual women on physical health, quality of life, and psychological distress.

Discussion

Existing evidence and predictions about the negative mental health impacts associated with the COVID-19 pandemic align with past research findings on the psychological consequences of large-scale disasters.[2,39] Consistent with expectations and emerging data,[2,12,40] we observed near universal declines in health and well-being pre- and postpandemic onset. Still, our findings demonstrate the disproportionate impact of the pandemic on the health and well-being of sexual minority adults, particularly bisexual adults. Specifically, using a national sample, we noted substantial changes across several measures of well-being (e.g., mental health, physical health, quality of life, loneliness, and stress) for gay men, bisexual men and women, and ''other'' sexual minority women and that these changes were greater when compared to same-gender heterosexual adults. After adjusting for sociodemographic factors, bisexual adults reported the most consistent and robust changes across all indicators of mental health and well-being when compared to their heterosexual peers.

Consistent with previous work,[14–19] we observed sexual identity disparities across several indicators of well-being both pre- and postpandemic onset, although these differences were mostly observed between heterosexual and bisexual subgroups, even within nongender-stratified models. For example, bisexual men and women were more likely to report poorer mental health and physical health and greater stress, loneliness, psychological distress, and fatigue both before and after the onset of the pandemic. These findings are consistent with the current literature documenting sexual identity-related health disparities: research often finds that bisexual populations show greater disparities in mental health and substance use relative to their gay/lesbian peers.[41] These findings support previous work that documents distinct health risk for bisexual people, relative to heterosexual and monosexual gay/lesbian peers.[42,43] These differences in health risk among sexual minority subpopulations are often attributed to the distinct forms of stigma for bisexual people (e.g., biphobia, denying that bisexuality exists), and also a lack of LGBT community support, which has been shown to be a protective factor for well-being among sexual minority adults.[43]

As expected, pre- and postpandemic onset declines in mental health, physical, health, and quality of life, along with increased stress, loneliness, psychological distress, and fatigue, were robust and consistent across heterosexual and sexual minority subgroups, with some variation. Again, bisexual men and women showed the greatest change across indicators and were the only sexual minority subgroup to consistently show significant pre-/postpandemic onset differences after adjusting for sociodemographic characteristics. Thus, not only did we observe that these sexual identity disparities were present for bisexual men and women, but the degree to which their mental health and other indicators of well-being changed from pre- to postpandemic onset appeared to be uniquely strong relative to their heterosexual, and to a lesser extent their gay and lesbian, peers. Although other sexual minority subgroups showed evidence of greater change relative to heterosexual respondents in *t*-test and unadjusted models (e.g., gay men with mental health, physical health, and quality of life; ''other'' sexual minority women with quality of life and psychological distress), bisexual men and women were the most consistent sexual minority subgroup to show statistically different change scores from heterosexual men and women, respectively, after adjusting for sociodemographic and economic characteristics.

The attenuation of these differences for gay/lesbian and ''other'' sexual minority subgroups in adjusted models suggests that there may be other factors that help to mitigate the social and psychological impacts of the pandemic. For example, bisexual participants in our sample were younger than both heterosexual and lesbian/gay participants, and also more likely to be in lower income brackets than gay/lesbian and ''other'' sexual minority subgroups. These distinctions in economic resources are consistent with previous research highlighting that bisexual men and women tend to experience more economic precarity than their monosexual heterosexual and gay/lesbian peers.[27] Although we adjusted for age and income in our models, it may be that there are other related factors (e.g., job security, health insurance access) that may uniquely compound the stress of the pandemic for this population.

Surprisingly, despite well-documented risk for excessive alcohol use and abuse among sexual minority populations,[23,44,45] we did not observe sexual identity differences in alcohol use, nor differential rates of change in alcohol use between heterosexual and sexual minority subgroups from pre- to postpandemic onset. These distinctions may reflect unique sampling differences, as many of these former studies have been based on probability samples.[15,23]

Overall, our findings echo Phillips II et al.'s recently provided ''priorities for action'' regarding the needs of sexual and gender minority people during the COVID-19 pandemic.[13] Our findings further legitimize calls for more comprehensive and inclusive surveillance and cultural responsiveness in disaster response as it relates to sexual minority people and the COVID-19 pandemic.[10,12,13] Even before the COVID-19 pandemic, mental health, health care, and public health systems were not prepared to address the unique health needs of this population.[46–48] There remain cultural deficits in the medical and mental health workforce when it comes to understanding and addressing the unique needs of sexual minority people. These deficits—which often manifest as stigma and microaggressions[49–51]—will only further exacerbate pandemic-related stressors for sexual minority people who seek professional help.

Outreach and education for medical and mental health providers, including information about the unique effects of the COVID-19 pandemic on sexual minority health, can reduce the harm done by medical and mental health institutions across the life course. Furthermore, public health surveillance systems have lagged in their inclusion of sexual orientation (and gender identity),[10,52] which further stymies efforts to understand, and more importantly address, the health needs of sexual minority and gender minority (e.g., transgender, gender diverse) populations, particularly in times of great need, such as during the COVID-19 pandemic. Collecting information about sexual orientation and gender identity will also allow researchers and policymakers to track potential improvements in health indicators as the United States begins to recover from the current health and financial crises. These calls for action reflect critical areas of research and practice to help address the disproportionate impact of COVID-19 on sexual and gender minority populations and to identify the supports needed to help alleviate these disparities during the COVID-19 pandemic and beyond.

Limitations

We have several limitations to note. First, the data are from a nonprobability sample with relatively small numbers of sexual minority respondents. Representative data would likely reflect a more accurate picture of how COVID-19 is differentially impacting heterosexual and sexual minority communities. Our results invite more investigations on the social consequences of COVID-19 by sexual orientation. Second, our pre-COVID data are based on retrospective reporting and, therefore, likely provide conservative estimates. In the future, large population data sources that are collected annually (e.g., Behavioral Risk Factor Surveillance System, National Survey on Drug Use and Health) will offer the opportunity to examine these effects with a natural experimental design—and with representative data.

Third, research on online-recruitment platforms such as MTurk and Prolific Academic yield quality data, but samples tend to be younger, better educated, and lower income than the general U.S. population.[53,54] Fourth, given our sample size, we were not able to further identify distinct experiences of the COVID-19 pandemic by other social identities and experiences (e.g., sexual minority status and race and ethnicity or socioeconomic status). Given growing research on how COVID-19 operates across axes of inequality,[5,55] there are likely distinct experiences and health vulnerabilities for those at the intersection of multiply marginalized social identities. Finally, given the data source, we were unable to assess why sexual minority adult health is more vulnerable to the stress of the COVID-19 pandemic. The minority stress framework[20] posits that disparate health outcomes for sexual minority people are the result of both elevated everyday stressors alongside minority specific stressors that arise from stigma. Ongoing data collection on the experiences of sexual minority people during the pandemic will be vital to helping us identify the mechanisms that contribute these distinct outcomes, and ultimately the policies and programs that are needed to address them.[12,31]

Conclusion

Despite existent health and mental health disparities faced by sexual minority persons, the COVID-19 pandemic appears to have distinct ramifications for sexual minority adults in the United States. Our findings support and further legitimize calls for more comprehensive surveillance and cultural responsiveness, generally and in emergency preparedness, as it relates to sexual minority people, and for consideration of sexual minority populations in strategies to address the pandemic (e.g., vaccine uptake) and the related economic and social consequences that will likely persist in the years to follow. Finally, there is a salient need to improve cultural responsiveness, data collection, research practice, community outreach, and provider education to address existing health and mental health disparities among sexual minority populations.

Disclaimers

Any interpretations and opinions expressed herein are solely those of the authors and may not reflect those of the National Science Foundation, Centers for Disease Control and Prevention, or the National Institutes of Health.

Authors' Contributions

J.N.F. conceptualized the study, conducted data analysis, and drafted the first iteration of the article. Both J.S. and N.D.W. contributed original writing and offered revisions to the original article. L.D., L.S., R.G.R., K.J.D., and J.N.F. were responsible for the original conceptualization of and data collection for Assessing the Social Consequences of COVID-19 (ASCC). L.D., L.S., R.G.R., and K.J.D. offered extensive feedback on the conceptualization of the current study and on the original draft of the article.

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