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Disproportionate Impact of the COVID-19 Pandemic on Perceived Social Support, Mental Health and Somatic Symptoms in Sexual and Gender Minority Populations

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ABSTRACT

Deaths from COVID-19 continue to rise, and this virus has asymmetric impacts on marginalized communities though specific impacts on sexual and gender minority communities are not well understood. From March 23 to June 20, 2020, in an online cross-sectional survey among 1380 US adults, we assessed physical symptoms, psychological symptoms, rumination, and perceived social support in order to describe differences between sexual and gender minority (n = 290) and cisgender heterosexual (n = 1090) respondents. Sexual and gender minority respondents had more frequent COVID-19-associated physical symptoms and depression and anxiety symptoms. Sexual and gender minorities had a significantly higher proportion of depression and anxiety scores exceeding the clinical concern threshold. Longitudinal studies on the physical and psychological impacts of COVID-19 among sexual and gender minority communities are needed to inform interventions to eliminate these disparities.

KEYWORDS

COVID-19; gender identity; sexual orientation; health disparities; symptoms; rumination; social support

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the novel coronavirus that is responsible for coronavirus disease (COVID-19) which has had an enormous effect on the lives and livelihoods of the US population, with deleterious impacts across age, racial and ethnic groups, and localities; however the impacts on marginalized populations has been especially egregious (Bassett, Chan, & Krieger, 2020; Testa, Krieger, Chen, & Hanage, 2020). Beyond disproportionately poor outcomes from infection, marginalized populations may also be prone to experiencing greater negative impacts from the psychosocial turbulence and economic uncertainty created by interventional and policy responses to the pandemic (Baker, Bloom, Davis, & Terry, 2020). The longer-term effects of the pandemic are yet to be determined, as the uncertainty surrounding the SARS-

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CoV-2 virus and the potential of contracting it has direct and negative impacts on the health care, social, political, and emotional domains.

Based on data from the National Health Interview Survey (NHIS), one out of ten US adults reported experiencing some depression or anxiety symptoms during the January 2019-June 2019 data collection period (United States Department of Health and Human Services USDHHS, Centers for Disease Control and Prevention, National Center for Health Statistics, 2020). Prior to the onset of the COVID-19 pandemic, concerning psychological and physical health disparities between sexual minority and heterosexual populations had been well documented (Operario et al., 2015). Specifically, 2018 NHIS findings indicate that the proportion of lesbian, gay, or bisexual respondents reporting *serious* psychological distress in the past 30 days (8%) is more than double that of heterosexual respondents (USDHHS, Centers for Disease Control and Prevention, National Health Interview Survey, 2018). Sexual and gender minority (SGM) individuals also demonstrate significantly higher rates of suicidal behaviors (e.g. ideation, planning, attempting) and substance use (alcohol, tobacco, and other drug use) compared to their non-SGM counterparts (Dowshen & Ford, 2019; Johns et al., 2019; Kaniuka et al., 2019; Mereish, O'Cleirigh, & Bradford, 2014; Operario et al., 2015; Su et al., 2016). These behavioral health problems may be exacerbated by social isolation, strained familial relationships, and lowered social supports; all of which are potential outcomes of COVID-19 social distancing recommendations.

Minority identity has been linked to negative mental and physical health outcomes that must inform investigation of potential impacts of the COVID-19 pandemic on SGM individuals. How SGM individuals are currently responding to the COVID-19 pandemic, but also, perhaps more importantly, how they may respond as the pandemic continues are key factors to consider. The minority stress model provides an evidence-based framework for understanding how stressors may impact SGM individuals differently, and has been successfully used to explicate disproportionality in mental and physical health outcomes for SGM individuals (Lick, Durso, & Johnson, 2013; Meyer, 2003; Meyer & Frost, 2012; Testa, Habarth, Peta, Balsam, & Bockting, 2015). Thus we utilized the minority stress model and the psychological mediation framework (Hatzenbuehler, 2009) to describe the impact of COVID-19 on psychosomatic symptoms among SGM. We included COVID-19 specific stressors within the adapted framework along with key components and relationships from the two guiding frameworks (see Figure 1).

In addition to the general stress of the pandemic, the additive impacts of minority identity specific stressors on mental health may be heightened. Moreover, SGM-individuals understand, use, and rely on social supports differently than cisgender, heterosexual individuals and the buffering effects of social support may be weakened by social distancing guidelines (Bregman, Malik, Page, Makynen, & Lindahl, 2013; Kraft, Beeker, Stokes, & Peterson, 2000; Phillips et al.,

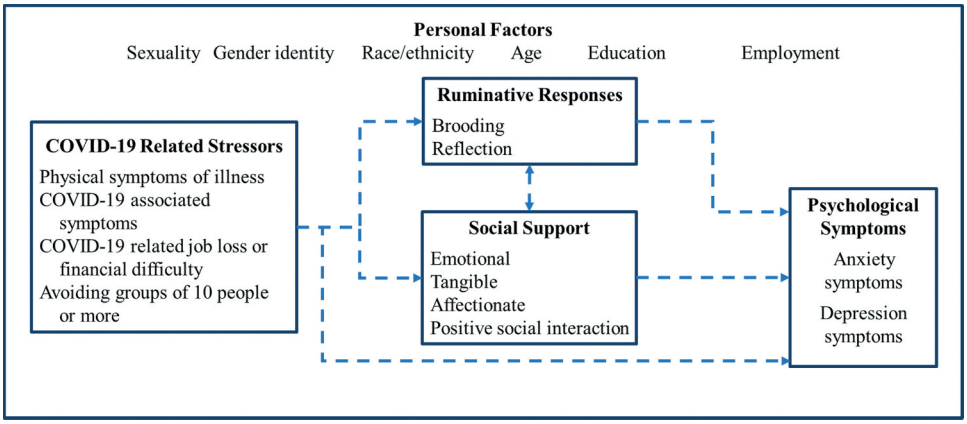

Figure 1. COVID-19 related stressors ans phychological symptoms framework.
The COVID-19 related stressors and psychological symptoms framework is an adaptation of relationships described by the minority stress model (Meyer, 2003; Meyer & Frost, 2012; Testa et al., 2015) and Hatzenbuehler's (2009) psychological mediation framework to represent the framework and hypothesized relationships that may exist over the course of the COVID-19 pandemic period. Personal factors only capture some aspects of minority-identity stressors acting as proxies for structural minority-identity related stressors that were not assessed in the current study. Arrows represent hypothesized relationships that may develop and change over time during the COVID-19 pandemic, but are not the focus of this cross-sectional descriptive manuscript.

2020; Zarwell, Ransome, Barak, Gruber, & Robinson, 2019; Zarwell & Robinson, 2018). The COVID-19 pandemic has resulted in personal, social, and economic devastation for many, but the disproportionate negative impacts of the pandemic continue to reveal racial, social, and financial inequities. In this paper, we characterize and describe similarities and differences between SGM- and cisgender-heterosexual identifying adults' experiences of emotional and physical symptoms, perceived social support, and ruminative responses during the first three months of the COVID-19 pandemic in the US.

Methods

Between March 23 and June 20, 2020, a cross-sectional internet-based survey of adults living across the US (n = 1380) was completed. Participants were recruited using social media and personal networks to complete surveys assessing personal perceptions of the COVID-19 pandemic and important psychosocial factors. Potential participants completed a REDCap survey form indicating that they met the following inclusion criteria: 1) 18 years of age or older, 2) living in the United States, and 3) able to read and understand English. Study participants were able to choose to enter a random drawing to win one of 25 electronic gift cards valued at 25 USD for completing the survey. Participants who did not complete the survey were excluded from this analysis.

All study protocols were reviewed by the Indiana University Institutional Review Board (STUDY2003910440) and considered exempt.

Measures

Self-report demographic variables

Relevant demographic and contextual factors assessed in this study include 1) age in years; 2) sex assigned at birth; 3) gender identity (inclusive of gender non-conforming and affirmed transgender identities); 4) sexual identity; 5) Race; 6) level of educational attainment;7) employment status including working in an essential industry as defined by the United States Department of Homeland Security CIBA (US Department of Homeland Security, Cybersecurity & Infrastructure Security Agency, 2020), p. 8) health insurance status; and 9) living alone or with others.

COVID-19-related self-report items

Respondents were asked to report on two key personal factors related to COVID-19 including: whether they had been avoiding groups of 10 people or more in response to COVID-19, and if they had experienced any COVID-19-related job loss or financial difficulty.

Sexual and gender identity

Natal sex and sexual and gender identities were assessed using the following multiple-choice, self-report items: "What sex were you assigned at birth, on your original birth certificate?" (choices included: male, female, intersex, decline to answer); "Do you identify as transgender or cisgender?" (choices included: transgender, cisgender); "Which of the following is how you describe your gender identity? [Select all that apply]" (choices included: questioning, non-binary, agender, genderqueer/gender nonconforming, woman, man, choose not to identify, gender not listed); and "How do you identify yourself, sexually? [Select all that apply]" (choices included: lesbian, gay, queer, bisexual, heterosexual, asexual, celibate, decline to answer, other). Respondents could select any one or more of the following sexual and gender minority categories regardless of any natal or gender identity categories selected: lesbian, gay, bisexual, asexual, queer, transgender, gender non-binary, questioning, genderqueer, gender non-conforming or intersex. Those individuals who identified as heterosexual and selected any of the listed sexual or gender minority identities were included in the SGM subgroup for these analyses, and the remaining self-identified heterosexual respondents made up the cis-heterosexual subgroup for these analyses.

Physical symptoms

Physical symptoms were assessed using a study-developed 21-item measure asking about a variety of COVID-19 and non-COVID-19 related physical symptoms

experienced within the past 30 days. The data are presented in two ways: one is a count of all respondent endorsed symptoms and the second is a count of those respondent-endorsed symptoms that are among the ones identified by the CDC as potential COVID-19-associated symptoms (i.e. headache, nausea or upset stomach, constipation or diarrhea, muscle soreness, chills, shortness of breath or dyspnea, congestion, sore throat, runny nose, fever, fatigue, dry cough, loss of smell or taste) (Centers for Disease Control and Prevention, 2020).

Symptoms of depression

Symptoms of depression were assessed using the 8-item Patient Health Questionnaire (PHQ-8) with each item having four options to describe frequency of experiencing each symptom in the past two weeks (0 = not at all, 1 = several days, 2 = more than half the days, and 3 = nearly every day), scores are calculated by summing the responses to each of the items (Kroenke et al., 2009). Scores range from 0 to 24 with higher scores indicating worsening symptom severity: a score of 10 or greater indicates the clinical threshold for likely presence of depressive disorders. The Cronbach's α for the scale in this study population is.88.

Symptoms of anxiety

Symptoms of anxiety were assessed using the 7-item Generalized Anxiety Disorder scale (GAD-7) measure of anxiety symptom frequency with each item having four options to describe frequency of experiencing each symptom in the past two weeks (0 = not at all, 1 = several days, 2 = over half the days, and 3 = nearly every day). Scores for the seven items are summed with higher scores indicating more symptom severity, scores range from 0 to 21 points and a score of 10 is used as the clinical threshold for likely presence of anxiety disorders (Spitzer, Kroenke, Williams, & Löwe, 2006). The Cronbach's α for the scale in this study population is .92.

Perceived social support

Perceptions of social support were assessed using the 19-item Medical Outcomes Study Social Support Survey (MOS4) that includes 4 subscales measuring emotional, tangible, affectionate, and positive social interaction social support (Sherbourne & Stewart, 1991). Each item describes some aspect of one of the types of support, asking respondents to select an answer that best describes how often that support is available to them on a scale of 1 (one of the time) to 5 (all of the time). Subscale and overall scores are averages of item ratings transformed to a 0 to 100 scale (Transformed score = [(observed score-minimum possible score)/(maximum possible score-minimum possible score)] x 100). The Cronbach's α for the overall scale in this study population is .97.

Rumination

Rumination was assessed using the 10-item Ruminative Response Scale which uses a 4-point Likert-type scale anchored by "almost never" (1) and "almost always" (4) to evaluate respondents' general thoughts regarding feeling down, sad, or depressed (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). The scale has two subscales with 5 items each measuring Brooding and Reflection ruminative behavior patterns. The Cronbach's α for the scale in this study population is .85.

Analyses

All analyses were conducted using IBM SPSS v 27.0, (Armonk, NY: IBM Corp.) descriptive and exploratory univariate analyses were used to evaluate data distribution, normality, missingness, and outliers. We first examined demographic and descriptive variables by sexual minority and gender minority status, and then combined them into SGM for the remainder of analyses. Then we evaluated the data for differences between SGM and cisgender-heterosexual groups among demographic characteristics and measures of interest using independent samples t-tests or Welch's t-test in situations where equal variances could not be assumed to assess for differences in group means. We also used X^2-tests to determine differences in categorical outcome distribution between SGM and cisgender-heterosexual subgroups, with binary logistic regression used to control for subgroup differences (Table 1) and confirm significant X^2-test findings where appropriate. All bivariate statistical analyses are based on pairwise removal of cases where one or more values were missing, multivariable analyses included only those cases where complete data was available. We set $\alpha = .05$ to indicate statistical significance for all analyses.

Results

Preliminary assessments of differences in demographic characteristics between the sexual minority and gender minority groups showed age was the only trait that differed significantly between the two groups (sexual minority mean age 36.2 years [SD = 13.4], gender minority mean age 28.4 years [SD = 7.2], [$t_{231.82} = 6.36$, $p < .001$]). The two minority identity groups were combined into one SGM-identifying group for all further analyses. Demographic and descriptive variables for the SGM and cisgender-heterosexual identifying subgroups are presented in Table 1. The subgroups had no significant differences among several COVID-19 specific health, symptom experience, and prevention behavior measures. There were no significant differences in the proportions of respondents identifying as "Essential Industry" workers (SGM: n = 145, 50.0%; Non-SGM: n = 589, 54.0%; χ^2 (1) = 1.499, $p = .221$), reported avoidance of groups of 10 people or more (SGM: n = 284, 97.9%; Non-SGM: n = 1,050, 96.3%; χ^2 (1) = 1.806, $p = .237$), or reports of themselves or someone they know

Table 1. Descriptive statistics sociodemographic characteristics of respondents by sexual and gender identity.

	Sexual or Gender Minority[a] (n = 290)		Cis-Heterosexual[a] (n = 1090)		
Characteristic	*M (SD)*	*n (%)*	*M (SD)*	*n (%)*	*p*-value
Age (years)	34.26 (12.57)		46.12 (15.47)		***<.001*** [d]
Sex assigned at birth					***<.001***
Female		207 (71.4)		911 (83.6)	
Male		77 (26.6)		175 (16.1)	
Intersex		2 (0.7)		0 (0.0)	
Decline to answer		3 (1.0)		1 (0.1)	
Gender identity[a, b]					
Transgender		51 (17.6)		0 (0.0)	
Woman		180 (62.1)		903 (82.8)	
Man		77 (26.6)		171 (15.7)	
Gender Non-binary		43 (14.8)		0 (0.0)	
Agender		8 (2.8)		0 (0.0)	
Questioning		10 (3.4)		0 (0.0)	
Genderqueer/Gender nonconforming		33 (11.4)		0 (0.0)	
Gender not listed/Choose not to identify		16 (5.5)		5 (0.5)	
Sexuality [a, b, c]					
Lesbian		44 (15.2)		0 (0.0)	
Gay		53 (18.3)		0 (0.0)	
Bisexual		147 (50.7)		0 (0.0)	
Queer		64 (22.1)		0 (0.0)	
Heterosexual		16 (5.5)		1,037 (95.1)	
Asexual		36 (12.4)		0 (0.0)	
Celibate		2 (0.7)		27 (2.5)	
Decline to answer/other		18 (6.2)		20 (1.8)	
Race [b]					
American Indian or Alaska Native		3 (1.0)		6 (0.6)	.407
Asian		12 (4.1)		50 (4.6)	.756
Black or African American		9 (3.1)		22 (2.0)	.372
Hispanic or Latinx		24 (8.3)		26 (2.4)	***<.001***
Native Hawaiian/Other Pacific Islander		1 (0.3)		5 (0.5)	1.00
White		262 (90.3)		994 (91.2)	.729
Other		5 (1.7)		5 (0.5)	***.039***
Education					***.029***
High School or less		21 (7.2)		53 (4.9)	
Post HS but no graduate education		145 (69.4)		481 (44.1)	
Some Graduate Education or more		124 (42.8)		553 (50.7)	
Unemployed		10 (3.4)		42 (3.9)	.863
Uninsured		19 (6.6)		47 (4.3)	.104
Living with other people		241 (83.1)		911 (83.6)	.833
Avoiding groups of 10 people or more		284 (97.9)		1,050 (96.3)	0.237
COVID-19-related job loss or financial difficulty		102 (35.2)		236 (21.7)	***<.001***

Group differences assessed by χ^2 unless otherwise noted.
[a]self-report gender identity and sexuality items; [b] more than 1 selection allowed for this category; [c] all options were available for all respondents regardless of gender identity; [d] *p*-value produced by independent groups t-test.

being diagnosed with COVID-19 (SGM: n = 74, 25.5%; Non-SGM: n = 268, 24.6%; χ^2 (1) = 0.096, p = .757).

Among the entire sample, 87.9% (n = 1,211) of respondents reported experiencing at least one physical symptom associated with COVID-19 in the prior month. A significantly larger proportion of SGM (n = 234, 94.1%) compared to non-SGM individuals (n = 938, 86.1%; χ^2 (1) = 13.713, $p < .001$; $\varphi = .100$) reported experiencing at least one symptom associated with COVID-19 in the prior month,

Table 2. Means, standard deviations, independent samples t-tests for symptom & social support variables.

	Sexual or Gender Minority	Cis-Heterosexual	Full Sample	*t*-tests		
Variable	*M (SD)*	*M (SD)*	*M (SD)*	*t*	df	*p*
Physical Symptoms						
Number of physical symptoms experienced in the past month	6.43 (4.30)	4.58 (3.52)	4.97 (3.77)	−6.76	397.79	***<.001***
Number of COVID-19-associated Symptoms experienced in past month [a]	4.33 (2.96)	3.27 (2.51)	3.48 (2.64)	−5.61	406.70	***<.001***
Psychological Symptoms						
Anxiety Symptoms (GAD7)	9.27 (5.90)	5.83 (5.23)	6.56 (5.56)	−9.01	417.84	***<.001***
Depression Symptoms (PHQ8)	10.44 (5.87)	6.29 (5.28)	7.16 (5.67)	−10.91	421.68	***<.001***
Ruminative Responses Scale						
Brooding	10.59 (3.65)	8.73 (3.07)	9.12 (3.29)	−7.90	400.56	***<.001***
Reflection	11.48 (3.42)	9.28 (3.14)	9.74 (3.32)	−9.82	421.31	***<.001***
Medical Outcomes Survey Social Support Scale						
Emotional Support	62.79 (25.47)	69.20 (25.37)	67.85 (25.51)	3.82	1377	***<.001***
Tangible Support	68.75 (31.69)	74.87 (29.74)	73.58 (30.26)	2.96	434.16	***.003***
Affectionate Support	70.75 (30.33)	78.84 (28.05)	77.14 (28.72)	4.10	429.73	***<.001***
Positive Social Interaction Support	69.27 (28.01)	74.87 (26.22)	73.69 (26.69)	3.07	433.28	***.002***
Overall Perceived Social Support	66.59 (23.53)	72.94 (23.05)	71.61 (23.29)	4.15	1377	***<.001***

[a]based on Centers for Disease Control and Prevention reports.

indicating a small to moderate effect size. Table 2 contains group differences in symptoms (physical, COVID-19 related, depression, and anxiety), perceived social support, and ruminative responses. SGM respondents also reported significantly higher numbers of depression and anxiety symptoms, with the SGM group having a greater proportion with clinically significant findings on either the PHQ8 (SGM: n = 42, 14.5%; non-SGM: n = 97, 8.9%), GAD7 (SGM: n = 25, 8.6%; non-SGM: n = 77, 7.1%), or both (SGM: n = 110, 37.9%; non-SGM: n = 152, 13.9%; χ^2 (3) = 112.174, $p < .001$; Cramer's V = .285 indicating a moderate effect size). When examined as a dichotomy the odds of having clinically significant scores on either or both the PHQ8 and GAD7 were 3.7 times higher among SGM than non-SGM individuals (SGM: n = 177, 61.0%; non-SGM: n = 326, 29.9%; χ^2 (1) = 92.679, $p < .001$, OR = 3.67, 95% CI [2.8, 4.8]). Further, the odds of having clinically significant scores on either the PHQ8, GAD7, or both remained higher among SGM individuals when controlling for subgroup differences (Table 1) with SGM being 2.6 times more likely to have a clinically significant score than non-SGM (χ^2 (10) = 187.703, $p < .001$, OR = 2.55, 95% CI [1.9, 3.4]).

Discussion

Several subgroup differences deserve acknowledgment including the fact that the SGM sample had a lower mean age, was more racially diverse, and experienced significantly more COVID-19-related job loss or financial difficulty. The significantly higher reporting of COVID-related job loss and financial difficulty among

the SGM population highlights an economic vulnerability and precariousness among SGM populations that predates the pandemic, and the current crisis may magnify the impacts of the disparity significantly and potentially increase risk for worse mental health and well-being outcomes over the life course (Badgett, Choi, & Wilson, 2019).

Symptoms of anxiety and depression

The mean severity of depression and anxiety symptoms was disproportionately higher among SGM than cisgender-heterosexual survey participants. These findings are consistent with pre-pandemic national survey studies that identified that SGM individuals had exhibited a comparatively greater prevalence of serious psychological distress than cisgender-heterosexual individuals (Operario et al., 2015; United States Department of Health and Human Services, Centers for Disease Control and Prevention, National Health Interview Survey, 2018). However, with 61% of SGM respondents having one or both scores for anxiety and depression symptoms exceeding clinical cut-points during the first three months of the pandemic compared with 30% among non-SGM individuals our results also highlight the potentially widening mental health disparities among SGM. The percentage of SGM respondents in our study sample with clinically significant levels of depression and/or anxiety symptom severity represents a 7-fold increase when compared with percentages of lesbian, gay, and bisexual individuals with psychological distress in the 2018 NHIS survey, (USDHHS, Centers for Disease Control and Prevention, National Health Interview Survey, 2018). For further context, during the pandemic from June 24–30, 2020 in a nationally representative web-based survey, 30.9% of all respondents reported having *any* symptom of anxiety or depression (a more than 3-fold increase from the second quarter of 2019; Czeisler et al., 2020). Importantly, Czeisler's results do not differentiate results by SGM-identity and only provide data for reports of *any* anxiety or depression symptom rather than clinically significant anxiety or depression scores (reported in this study). Yet, the notion that among our study sample the proportion of SGM individuals with clinically concerning emotional distress is nearly double the proportion reported by Czeisler who endorsed having any anxiety or depression symptom is jarring and gravely concerning.

While the impacts of this pandemic on mental health are undeniable, the significantly disproportionate burden of anxiety and depression symptom experiences reported among the SGM subgroup, even those not reaching the clinical cut point, indicate a need for longitudinal analyses and deeper assessment of associated factors. Additionally, while we cannot estimate our respondents' experiences of depression or anxiety symptoms prior to the survey, it is important to consider that those with previously unreported or subclinical

symptoms may be experiencing symptom profiles that are amplified by the personal and social turbulence created by the COVID-19 pandemic.

Prior to the pandemic, percentages of SGM individuals reporting mental health service usage were higher than heterosexuals even after controlling for reported symptoms of mental health distress (Platt, Wolf, & Scheitle, 2018). This pre-pandemic pattern taken together with our results indicating disproportionate severe emotional symptom frequency among SGM populations during the early part of the pandemic highlights another potential area of concern—interruptions to health care and other important services. SGM individuals may have an even higher need for mental health services than before with fewer options for safe, private, and affirming psychological evaluation and care. Pre-COVID-19 there were severe limitations in access to mental health related to stigma, finances, and insurance and now those limitations may be compounded further for those living in non-affirming homes during lockdowns or social distancing, or who may not be "out" about their sexuality, gender identity, or mental health status.

Rumination

Ruminative responses were significantly higher among the SGM subgroup in both the brooding and reflection subscales. In a recent Turkish study, uncertainty surrounding the pandemic was amplified by ruminative behaviors and thus boosting their combined negative effects on mental health and well-being (Satici, Saricali, Satici, & Griffiths, 2020). Among SGM individuals this pattern of rumination as an amplifying factor could be even more destructive should ruminative behaviors result in negative thought patterns that reinforce self-stigma, fear, or symptoms of depression and anxiety over time (Hatzenbuehler, 2009). Additionally, if these differences are present in this early cross-sectional data, extant literature suggests that ruminative behaviors are often central in processes of mediation and moderation and may have greater value when these types of interrelationships are examined longitudinally (Hatzenbuehler, 2009; Kaufman, Baams, & Dubas, 2017; O'Laughlin, Martin, & Ferrer, 2018; Sarno, Newcomb, & Mustanski, 2020).

Social support

All measures of perceived social support were lower among SGM respondents, and overall social support was significantly lower among the SGM group when compared to their non-SGM counterparts. Social support is often tied to the relationships among a person's social networks, and SGM identifying individuals often incorporate "chosen family" among the close relationships that make up their social support networks (Fredriksen-Goldsen, Kim, Shui, & Bryan, 2017; Grossman, D'Augelli, & Hershberger, 2000; Neville & Henrickson, 2009; Zarwell et al., 2019). A meta-analysis found that the likelihood for mortality increases by

29% when there is an increase in actual or perceived social isolation (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015). A study of social support among older adults found smaller and more restricted social networks were associated with lower perceptions of social support (Harasemiw, Newall, Shooshtari, Mackenzie, & Menec, 2018). The pandemic may have left many SGM individuals with restricted social networks as a result of living situations that require concealment of sexual orientation or gender identity and thus removing needed affirming social support.

These findings must be evaluated within the proper context, as with most studies involving internet-based recruitment there is limited diversity among the sample specifically with regard to race and socioeconomic factors. Further, the SGM-group mean age is nearly 12 years less than the non-SGM group which may also be a product of minority identity behaviors and internet-based recruitment. Though it is important to note that differences in depression and anxiety symptoms remained significant even when controlling for these personal and social factor differences. While the SGM subgroup is more diverse than the non-SGM subgroup (race, sex, and gender), the findings among this majority woman-identifying and white-identifying SGM-group exhibit important factors that may be even more pronounced when minority identities intersect. Multiply-marginalized SGM individuals including racial/ethnic minorities, low-income and those with less educational attainment are likely even more at risk for poor COVID-19 pandemic outcomes. Another important consideration is the fact that this data reflects a cross-sectional design, and thus cannot be used to estimate changes in symptom experiences, social support, or ruminative responses over time.

Our findings represent a glimpse of the potential aftermath we can expect in the wake of the COVID-19 pandemic; however, the results strongly suggest that the psychosocial health and wellbeing during the first three months of the COVID-19 pandemic were disproportionately worse among SGM than cisgender-heterosexual survey respondents. Further study with longitudinal data collection is imperative to better understand this concerning phenomenon. Additionally, we must marshal extant knowledge and emerging findings to create a broader evidence base for adaptation, development, targeting, tailoring, and implementation of interventional resources. Just as outcomes of SARS-CoV -2 viral infections have resulted in disproportionate deaths of marginalized populations, many public health responses to the pandemic (e.g. physical distancing, "lock down" periods, working from home, video conferencing) have not impacted all groups equally. Our findings indicate that during the first 3 months of the pandemic SGM-identifying respondents experienced markedly disproportional economic and psychosocial impacts. Yet, we must work to expand the scope of inquiry to include a more diverse sampling of SGM individuals, and must engage in purposive partnerships with local, state, and national organizations to increase representation of groups that may be at risk

for or already experiencing even greater psychosocial or economic burdens as the pandemic continues. These findings from the early part of the pandemic must be seen as additional support for the growing calls for accelerated development or adaptation of interventions that build on SGM-specific experiences and capabilities and that are centered around supporting empirically-identified health protective factors like social support and symptom self-management.

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References

Badgett, M. V. L., Choi, S. K., & Wilson, B. D. M. (2019). *LGBT poverty in the United States: A study of differences between sexual orientation and gender identity groups*. Los Angeles, CA: The Williams Institute.

Baker, S., Bloom, N., Davis, S., & Terry, S. (2020). *COVID-induced economic uncertainty* (No. w26983). National Bureau of Economic Research. doi:10.3386/w26983

Bassett, M. T., Chan, J., & Krieger, N. (2020). The unequal toll of COVID-19 mortality by age in the United States: Quantifying racial/ethnic disparities. *HCPDS Working Paper*, *19*(3). Retrieved from https://cdn1.sph.harvard.edu/wp-content/uploads/sites/1266/2020/06/20_Bassett-Chen-Krieger_COVID-19_plus_age_working-paper_0612_Vol-19_No-3_with-cover-1.pdf

Bregman, H. R., Malik, N. M., Page, M. J. L., Makynen, E., & Lindahl, K. M. (2013). Identity profiles in lesbian, gay, and bisexual youth: The role of family influences. *Journal of Youth and Adolescence*, *42*(3), 417–430. doi:10.1007/s10964-012-9798-z

Centers for Disease Control and Prevention. (2020, May 13). *Coronavirus disease 2019 (COVID-19) – Symptoms*. Centers for Disease Control and Prevention. Retrieved from https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html

Czeisler, M. É., Lane, R. I., Petrosky, E., Wiley, J. F., Christensen, A., Njai, R., … Rajaratnam, S. M. W. (2020). Mental health, substance use, and suicidal ideation during the COVID-19 pandemic—United

States, June 24–30,2020. *MMWR. Morbidity and Mortality Weekly Report*, *69*(32), 1049–1057. doi:10.15585/mmwr.mm6932a1

Dowshen, N., & Ford, C. A. (2019). Urgent need for research to achieve health equity for sexual and gender minority youth. *Pediatrics*, *144*(3), Article e20192133. doi:10.1542/peds.2019-2133

Fredriksen-Goldsen, K. I., Kim, H.-J., Shui, C., & Bryan, A. E. B. (2017). Chronic health conditions and key health indicators among lesbian, gay, and bisexual older US adults, 2013-2014. *American Journal of Public Health*, *107*(8), 1332–1338. doi:10.2105/AJPH.2017.303922

Grossman, A. H., D'Augelli, A. R., & Hershberger, S. L. (2000). Social support networks of lesbian, gay, and bisexual adults 60 years of age and older. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *55*(3), P171–P179. doi:10.1093/geronb/55.3.P171

Harasemiw, O., Newall, N., Shooshtari, S., Mackenzie, C., & Menec, V. (2018). From social integration to social isolation: The relationship between social network types and perceived availability of social support in a national sample of older Canadians. *Research on Aging*, *40*(8), 715–739. doi:10.1177/0164027517734587

Hatzenbuehler, M. L. (2009). How does sexual minority stigma "get under the skin"? A psychological mediation framework. *Psychological Bulletin*, *135*(5), 707–730. doi:10.1037/a0016441

Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: A meta-analytic review. *Perspectives on Psychological Science*, *10*(2), 227–237. doi:10.1177/1745691614568352

Johns, M. M., Lowry, R., Andrzejewski, J., Barrios, L. C., Demissie, Z., McManus, T., & Underwood, J. M. (2019). Transgender identity and experiences of violence victimization, substance use, suicide risk, and sexual risk behaviors among high school students—19 states and large urban school districts, 2017. *MMWR. Morbidity and Mortality Weekly Report*, *68*(3), 67–71. doi:10.15585/mmwr.mm6803a3

Kaniuka, A., Pugh, K. C., Jordan, M., Brooks, B., Dodd, J., Mann, A. K., … Hirsch, J. K. (2019). Stigma and suicide risk among the LGBTQ population: Are anxiety and depression to blame and can connectedness to the LGBTQ community help? *Journal of Gay & Lesbian Mental Health*, *23*(2), 205–220. doi:10.1080/19359705.2018.1560385

Kaufman, T. M. L., Baams, L., & Dubas, J. S. (2017). Microaggressions and depressive symptoms in sexual minority youth: The roles of rumination and social support. *Psychology of Sexual Orientation and Gender Diversity*, *4*(2), 184–192. doi:10.1037/sgd0000219

Kraft, J. M., Beeker, C., Stokes, J. P., & Peterson, J. L. (2000). Finding the "community" in community-level HIV/AIDS interventions: Formative research with young African American men who have sex with men. *Health Education & Behavior*, *27*(4), 430–441. doi:10.1177/109019810002700406

Kroenke, K., Strine, T. W., Spitzer, R. L., Williams, J. B. W., Berry, J. T., & Mokdad, A. H. (2009). The PHQ-8 as a measure of current depression in the general population. *Journal of Affective Disorders*, *114*(1–3), 163–173. doi:10.1016/j.jad.2008.06.026

Lick, D. J., Durso, L. E., & Johnson, K. L. (2013). Minority stress and physical health among sexual minorities. *Perspectives on Psychological Science*, *8*(5), 521–548. doi:10.1177/1745691613497965

Mereish, E. H., O'Cleirigh, C., & Bradford, J. B. (2014). Interrelationships between LGBT-based victimization, suicide, and substance use problems in a diverse sample of sexual and gender minorities. *Psychology, Health & Medicine*, *19*(1), 1–13. doi:10.1080/13548506.2013.780129

Meyer, I. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*, *129*(5), 647–697. doi:10.1037/0033-2909.129.5.674

Meyer, I. H., & Frost, D. M. (2012). Minority stress and the health of sexual minorities. In C. J. Patterson & A. R. D'Augelli (Eds.), *Handbook of psychology and sexual orientation* (pp. 252–266). New York, NY: Oxford University Press. doi:10.1093/acprof:oso/9780199765218.003.0018

Neville, S., & Henrickson, M. (2009). The constitution of 'lavender families': A LGB perspective. *Journal of Clinical Nursing*, *18*(6), 849–856. doi:10.1111/j.1365-2702.2008.02457.x

O'Laughlin, K. D., Martin, M. J., & Ferrer, E. (2018). Cross-sectional analysis of longitudinal mediation processes. *Multivariate Behavioral Research*, *53*(3), 375–402. doi:10.1080/00273171.2018.1454822

Operario, D., Gamarel, K. E., Grin, B. M., Lee, J. H., Kahler, C. W., Marshall, B. D. L., … Zaller, N. D. (2015). Sexual minority health disparities in adult men and women in the United States: National health and nutrition examination survey, 2001-2010. *American Journal of Public Health*, *105*(10), e27–34. doi:10.2105/AJPH.2015.302762

Phillips, G., Felt, D., Ruprecht, M. M., Wang, X., Xu, J., Pérez-Bill, E., … Beach, L. B. (2020). Addressing the disproportionate impacts of the COVID-19 pandemic on sexual and gender minority populations in the United States: Actions toward equity. *LGBT Health*, *7*(6), 279–282. doi:10.1089/lgbt.2020.0187

Platt, L. F., Wolf, J. K., & Scheitle, C. P. (2018). Patterns of mental health care utilization among sexual orientation minority groups. *Journal of Homosexuality*, *65*(2), 135–153. doi:10.1080/00918369.2017.1311552

Sarno, E. L., Newcomb, M. E., & Mustanski, B. (2020). Rumination longitudinally mediates the association of minority stress and depression in sexual and gender minority individuals. *Journal of Abnormal Psychology*, *129*(4), 355–363. doi:10.1037/abn0000508

Satici, B., Saricali, M., Satici, S. A., & Griffiths, M. D. (2020). Intolerance of uncertainty and mental wellbeing: Serial mediation by rumination and fear of COVID-19. *International Journal of Mental Health and Addiction*. doi:10.1007/s11469-020-00305-0

Sherbourne, C. D., & Stewart, A. L. (1991). The MOS social support survey. *Social Science & Medicine*, *32*(6), 705–714. doi:10.1016/0277-9536(91)90150-B

Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, *166*(10), 1092–1097. doi:10.1001/archinte.166.10.1092

Su, D., Irwin, J. A., Fisher, C., Ramos, A., Kelley, M., Mendoza, D. A. R., & Coleman, J. D. (2016). Mental health disparities within the lgbt population: A comparison between transgender and nontransgender individuals. *Transgender Health*, *1*(1), 12–20. doi:10.1089/trgh.2015.0001

Testa, C. C., Krieger, N., Chen, J. T., & Hanage, W. P. (2020). Visualizing the lagged connection between COVID-19 cases and deaths in the United States: An animation using per capita state-level data (January 22, 2020 – July 8, 2020). *HCPDS Working Paper*, *19*(4). Retrieved from https://cdn1.sph.harvard.edu/wp-content/uploads/sites/1266/2020/07/HCPDS-WP_19_4_testa-et-al_Visualizing-Lagged-Connection-Between-COVID-19-Cases-and-Deaths-in-US_final_07_10_with-cover.pdf

Testa, R. J., Habarth, J., Peta, J., Balsam, K., & Bockting, W. (2015). Development of the gender minority stress and resilience measure. *Psychology of Sexual Orientation and Gender Diversity*, *2*(1), 65–77. doi:10.1037/sgd0000081

Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research*, *27*(3), 247–259. doi:10.1023/A:1023910315561

United States Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. (2020). *Early release of selected mental health estimates based on data from the January–June 2019 national health interview survey*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. Hyattsville, MD: National Center for Health Statistics.

United States Department of Health and Human Services, Centers for Disease Control and Prevention, National Health Interview Survey. (2018). *Sexual orientation and health among*

U.S. adults: National health interview survey, 2018. Hyattsville, MD: National Center for Health Statistics.

US Department of Homeland Security, Cybersecurity & Infrastructure Security Agency. (2020, March 19). *Identifying critical infrastructure during COVID-19*. Retrieved from https://www.cisa.gov/identifying-critical-infrastructure-during-covid–19

Zarwell, M., Ransome, Y., Barak, N., Gruber, D., & Robinson, W. T. (2019). PrEP indicators, social capital and social group memberships among gay, bisexual and other men who have sex with men. *Culture, Health & Sexuality*, *21*(12), 1349–1366. doi:10.1080/13691058.2018.1563912

Zarwell, M. C., & Robinson, W. T. (2018). The influence of constructed family membership on HIV risk behaviors among gay, bisexual, and other men who have sex with men in New Orleans. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, *95*(2), 179–187. doi:10.1007/s11524-017-0203-9