Impact of COVID-19 Restrictions on Mental Health and Physical Activity Among LGBQAP and Heterosexual Adults

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Structured Abstract

Introduction: We compared the impact of the COVID-19 lockdown on mental health (MH) and physical activity (PA) between US adults who identify as lesbian, gay men, bisexual, queer, asexual, and pansexual (LGBQAP) and heterosexual US adults.

Method: Participants completed online questionnaires to assess PA and MH.

Results: No difference in MH was identified between LGBQAP and heterosexual participants prior to lockdown, however LGBQAP participants reported significantly worse mental health during lockdown. No group differences were found in PA, but all participants exhibited a decline in PA during lockdown.

Conclusion: This study highlights the differential impact of social restrictions on marginalized populations.

Keywords: coronavirus, LGBTQ+ communities, pandemic, wellbeing
Impact of COVID-19 Restrictions on Mental Health and Physical Activity Among LGBQAP and Heterosexual Adults

On March 11, 2020, the World Health Organization declared that the spread of coronavirus disease 2019 (COVID-19) had been classified as a global pandemic (World Health Organization, 2020a). In the United States, like elsewhere in the world, a variety of constraints were put in place to limit the spread of the disease, including shelter-in-place orders, quarantine and social distancing mandates, and the closure of non-essential businesses. Such mitigation efforts have no modern-day precedent and the impact on health and wellbeing is yet to be fully understood, although it is likely that there will be significant public health implications as a result of such measures (Faulkner et al., 2020). These include reduced opportunities for physical activity (PA) as well as threats to mental health and psychosocial wellbeing (World Health Organization, 2020b).

The COVID-19 pandemic has had a deleterious effect on mental health at a global level, as evidenced through marked increases in stress, anxiety, and depression (Salari et al., 2020). Likely contributing factors to the decrement in mental health include social isolation, concerns about personal or familial health, financial worries, and interruptions to travel and education (Faulkner et al., 2020). In the United States, 13.6% of adults surveyed in April 2020 reported symptoms of serious psychological distress, compared to 3.9% in April 2018 (McGinty et al., 2020). Research on past epidemics and natural disasters suggests that social inequities are exacerbated during times of crisis (Gauthier et al., 2020). It is becoming increasingly clear that marginalized or socially disadvantaged subgroups of the population have been disproportionately affected by the pandemic (Shadmi et al., 2020). Those belonging to such groups may be more susceptible than others to the attendant psychosocial consequences (Pfefferbaum & North, 2020).
Marginalized communities have been identified as “those excluded from mainstream social, economic, educational, and/or cultural life” (Sevelius et al., 2020, p. 2009), including, but not limited to groups that are excluded on the basis of race, gender identity, sexual orientation, age, physical ability, language, and/or immigration status (Sevelius et al., 2020). One such subgroup includes individuals who identify as lesbian, gay, bisexual, transgender, queer, and other diverse sexual orientations and gender identities (LGBTQ+), who, despite well-documented vulnerability to a number of social, health, and psychological risks, have received minimal attention during the COVID-19 pandemic (Salerno et al., 2020).

Mental and physical health disparities have been documented between LGBTQ+ persons and their heterosexual, cisgender counterparts (Gorczynki & Fasoli, 2020). Researchers have reported increased prevalence of chronic diseases, substance abuse, anxiety, depression, and suicide (Gorczynski & Fasoli, 2020). These disparities are likely a result of exposure to prejudice and discrimination in the social environment, referred to as minority stress (Meyer, 2003), and thus related to social inequalities, such as poorer access to healthcare and higher rates of poverty, that disproportionately affect LGBTQ+ persons compared to heterosexual and cisgender peers and may be intensified by the global pandemic (Salerno et al., 2020). For example, as a higher percentage of LGBTQ+ individuals work in service industry jobs (40% compared to 20% of heterosexuals), thus likely being at a higher risk of unemployment, loss of healthcare, and facing greater financial distress as a result of lockdown (Salerno et al., 2020). As the pandemic continues to impact societies the world over, it is important to find ways to improve or maintain psychological health (Holmes et al., 2020), particularly among groups that are marginalized.

PA has been shown to protect both physical and mental health (Rebar et al., 2015) and shows inverse associations with anxiety and depressive symptoms (McDowell et al., 2019;
Schuch et al., 2018). Therefore, engaging in PA might help people in coping with COVID-19-related stress and mitigate its detrimental effects on mental health and wellbeing. In addition, PA is strongly associated with a reduced risk for severe COVID-19 outcomes, including hospitalization, intensive care unit admission, and death, even after controlling for other risk factors (Sallis et al., 2021). However, the restrictions and social distancing measures adopted in response to the COVID-19 pandemic left limited opportunities for planned PA, as most sports facilities, gyms, and public swimming pools were closed. Likewise, opportunities for unplanned PA diminished with the closure of parks and playgrounds and greater reliance on virtual communication for activities such as work, education, and shopping.

Tison et al. (2020) examined the effect of COVID-19-related lockdown on daily step counts using de-identified data collected via a smartphone app. Across 455,404 app users from 187 countries, there was a 27.3% decrease in mean daily step counts after 30 days of confinement when compared to prepandemic data. Likewise, an analysis of Fitbit’s user data indicated a 5–20% reduction in total steps worldwide during the early stages of the pandemic (Fitbit Inc., 2020). A number of other studies – primarily those collecting self-report data – have indicated significant decreases in moderate-to-vigorous PA (Dunton et al., 2020), walking time (Cheval et al., 2020; Dunton et al., 2020), and resistance-based exercise (Faulkner et al., 2020).

Despite overwhelming evidence of reductions in PA during the COVID-19 pandemic, it is important to note that some groups have been able to sustain, or even increase, PA behavior (Brand et al., 2020; Nienhuis & Lesser, 2020). Notably, it appears that individuals who have been more physically active during COVID-19 restrictions have better overall mental health (Jacob et al., 2020). For example, those who report a negative change (i.e., decrease) in PA and exercise habits from prior to during COVID-19, also report poorer mental health (Faulkner et al.,
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2020), increased loneliness and stress (Meyer et al., 2020), lower social, emotional and psychological wellbeing, and higher generalized anxiety (Nienhuis & Lesser, 2020). Although the evidence is limited by (necessarily) cross-sectional approaches to data collection, it indicates that the known association between PA and superior mental health status (McDowell et al., 2019; Schuch et al., 2018) can be sustained during times of stress or crisis (Cheval et al., 2020).

Generally, LGBTQ+ communities have been understudied in the realm of PA (Gorczynski & Brittain, 2016), yet warrant special attention given the health disparities that affect its members. Evidence from the few studies relating to PA has been equivocal. For example, compared to heterosexual youth, LGB youth exhibit lower participation rates in terms of 60 min of moderate-to-vigorous PA each week (lesbian/gay = 19%; bisexual = 17% heterosexual = 25%; Mereish & Poteat, 2015). This discrepancy has been attributed to microaggressions, discrimination, and harassment experienced in sport and PA during formative years (Herrick & Duncan, 2018). Furthermore, Herrick et al. (2021) found that proximal minority stressors were negatively associated with the satisfaction of psychological needs in PA settings among LGBTQ+ adults. The lack of satisfaction, in turn, undermined the motivation to engage in PA.

In contrast, other researchers have indicated that PA participation among adult lesbians, gay men, and bisexual men and women is similar or greater than individuals who identify as heterosexual (Boehmer et al., 2012; VanKim et al., 2017). More specifically, VanKim et al. (2017) reported that lesbian and bisexual women reported higher MET-hours/week in aerobic activity compared to heterosexual women. Bisexual women, as well as gay and bisexual men, report higher levels of muscle strengthening activity when compared to their heterosexual counterparts (Boehmer et al., 2012).
LGBTQ+ adults often seek safe and inclusive environments to engage in sport and PA such as queer-friendly gyms (Herrick & Duncan, 2018), competitive sports teams (Willis, 2015), or recreational leagues and club teams (Calwood & Smith, 2019). Lockdown restrictions and social distancing measures due to COVID-19 likely impact the way in which LGBTQ+ adults engage in PA. The combined impact of social restrictions and limited access to LGBTQ+ inclusive spaces for leisure, PA, and sport may, therefore, have a disproportionately negative impact on LGBTQ+ individuals.

**Purpose and Hypotheses**

It is evident that COVID-19 has disproportionately impacted marginalized communities in the United States and across the world. Nonetheless, little is known about the ramifications for LGBTQ+ communities, bearing in mind that this subgroup of the population is already subject to higher levels of disparity in mental and physical health. Accordingly, we investigated the impact of the United States COVID-19 lockdown on mental health and PA among individuals who identify as lesbian, bisexual, gay, queer, and other diverse sexual orientations compared to heterosexual identifying participants. We tested two hypotheses: $H_1$ Participants representing a diverse array of sexual orientations would report a larger decline in mental health from prior-to-lockdown to during lockdown when compared to heterosexual participants; $H_2$ Participants representing a diverse array of sexual orientations would report a larger decrease in planned and unplanned PA from prior-to-lockdown to during lockdown when compared to heterosexual participants.

**Method**

Some of the data from the present study are drawn from a larger study examining PA, sedentary behavior, and mental health across four Western nations (Author citation, in press).
We assessed mental health and PA during the United States’ initial COVID-19 lockdown. Participants were also asked to answer questions about their mental health and PA prior to lockdown by use of a retrospective frame.

**Participants**

Overall, 585 individuals residing in the United States participated in this study, including 452 (77%) women, 130 (22%) men, two (< 1%) individuals who identified as “other” and one (< 1%) person who “preferred not to say”. Participants were all at least 18 years old and their age range was 18–92 years ($M = 37.6, SD = 15.8$). Most participants identified their sexual orientation as heterosexual ($n = 533, 91\%$). Individuals also identified as lesbian ($n = 19, 3\%$), bisexual ($n = 21, 4\%$), gay man ($n = 4, 1\%$), queer ($n = 2, < 1\%$), asexual ($n = 3, < 1\%$), or pansexual ($n = 3, 1\%$). For the purposes of the current study, individuals who identified as lesbian, bisexual, gay man, queer, asexual, or pansexual were collapsed into a single category ($n = 52, 9\%$). We labeled the category LGBQAP to recognize all sexual orientations indicated by participants. Initial comparisons were made between LGBQAP and heterosexual participants on key anthropometric indices. No significant mean differences were found in age, height, weight, and BMI. Additional descriptive data pertaining to the sample can be found in Table 1.

**Instrumentation**

**Planned and Unplanned Physical Activity**

The Brunel Lifestyle Physical Activity Questionnaire (BLPAQ; Karageorghis et al., 2005) was used to assess participants’ planned and unplanned PA prior to and during the COVID-19 lockdown. Planned PA was defined as, “…any activity that is scheduled into your daily routine, which may enhance your health, fitness or wellbeing.” Examples included brisk walking, jogging, cycling, and gardening. Unplanned PA was defined as any other form of PA
mentally demanding has your job or day-to-day activities been during the social distancing period?” Participants were asked to respond to the nine items in this scale (six for planned PA and three for unplanned PA) using a 5-point, continuous-closed numerical scale (e.g., 1 = Not at all, 5 = Highly). Reliability and validity of the BLPAQ scores have been demonstrated in previous studies (Vencato et al., 2017a; Vencato et al., 2017b). In the present sample, internal consistency estimates for planned PA were .91 (prior to lockdown) and .93 during lockdown. Alpha estimates were lower for the 3-item unplanned PA scale (prior to lockdown = .55, during lockdown = .65). Cronbach’s alpha is often smaller among scales with fewer items (Loewenthal & Lewis, 2020). The retrospective nature of measures for behaviors prior to lockdown may also have served to reduce internal consistency.

**Mental Health**

The General Health Questionnaire-12 (GHQ-12; Goldberg & Williams, 1988) was used to assess participants’ mental health prior to and during the COVID-19 lockdown. This 12-item scale includes items such as, “Have you recently been able to enjoy your normal day-to-day activities?” to which participants respond using a 4-point scale (e.g., 0 = More so than usual to 3 = Much less than usual). Adequate reliability and validity evidence has been reported in previous studies (see Hardy et al., 1999). In the present sample, the internal consistency estimate was .86 for the retrospective, prior to lockdown, administration, and .91 during lockdown.

**Procedures**

Procedures for the protection of human research participants were reviewed and accepted by an institutional ethics review board. Data were collected via Qualtrics (Provo, UT) at one time point using a self-report, survey-based approach. Individuals were invited to take part in the
study and provided with direct access to the online survey via recruitment posts on social media (e.g., Facebook, Instagram, and Twitter) and direct email communication. Collection occurred in the early phases of the COVID-19 pandemic in the United States (April 24–May 18, 2020). The timing of the collection captured the initial, and possibly most dramatic, change to people’s daily routines related to various pandemic restrictions. Participants provided informed consent and the survey took ~20 min to complete.

**Statistical Analysis**

The Statistical Package for the Social Sciences (SPSS) v26.0 (Armonk, NY) was used to conduct the analyses described herein. Prior to the analyses, data were screened for missing data, outliers, normality within each cell of the analysis, and other assumptions that underlie analysis of variance (ANOVA). Descriptive statistics were conducted to evaluate the demographic variables, COVID-19 status, and PA both prior to and during COVID-19 lockdown. A 2 (Time) × 2 (Sexual Orientation) mixed-model (within–between) ANOVA was conducted to examine mental health, and a 2 (Time) × 2 (Sexual Orientation) mixed-model (within–between) MANOVA was conducted to examine planned and unplanned PA. Simple effects tests and Bonferroni-adjusted post hoc comparisons were used as appropriate. Additionally, Pearson product-moment correlations were computed to examine the relationship between mental health and PA for both LGBQAP and heterosexual participants. Alpha was set at .05 for all analyses, unless otherwise specified.

**Results**

The survey was opened 1,858 times and 1,153 participants met the initial criteria of residing in the United States, being ≥18 years old and able to complete the survey in English. Participants who did not complete the survey in its entirety were removed prior to the analyses,
resulting in 595 usable survey responses. Ten participants were removed because they did not identify their sexual orientation. Consequently, 585 surveys were deemed suitable for analysis. Data were inspected for univariate outliers exhibiting z-scores > ±3.29. Outlying scores were reduced to the highest or lowest value not considered an outlier (Tabachnick & Fidell, 2019). The normality of dependent variables was then assessed and all were negatively skewed (planned PA at both time periods) or positively skewed (unplanned PA and mental health at both time periods; all ps < .001). Given the relative robustness of (M)ANOVA in the case of skewed distributions (Tabachnick & Fidell, 2019), data transformations were not applied.

To address our first hypothesis, we compared the impact of lockdown on the mental health of LGBQAP vs. heterosexual participants. A 2 (Time) × 2 (Sexual Orientation) ANOVA revealed a significant two-way interaction, $F(1, 583) = 6.19, p = .013, \eta^2_p = .01$. A simple effects test was conducted to analyze the interaction. No significant mean difference was found between LGBQAP ($M = 11.7, SD = 4.9$) and heterosexual participants’ ($M = 11.1, SD = 4.2$) retrospective responses to the GHQ-12, $t(583) = -0.97, p = .331, d = .14, 95\%$CI: $-1.8$–$0.6$. However, during lockdown, LGBQAP participants ($M = 19.6, SD = 6.9$) reported significantly higher GHQ-12 scores, indicating poorer mental health when compared to heterossexuals ($M = 16.4, SD = 7.2$), $t(583) = -3.06, p = .002, d = .45, 95\%$CI: $-5.2$–$-1.1$.

Thereafter, we considered the impact of the COVID-19 lockdown restrictions on PA. Prior to lockdown, participants estimated that they completed 33.7% ($SD = 30.8$) of their exercise at home, 31.1% ($SD = 31.8$) at a gym or health club, and 35.2% ($SD = 26.8$) outdoors. During lockdown, home based ($M = 56.8\%, SD = 31.7$), and outdoor exercise ($M = 42.0\%, SD = 31.4$) significantly increased, $t(584) = -17.03, p < .001, d = 0.70, 95\%$CI: $-25.8$–$-20.4$ and $t(584)$
We computed a mixed-model MANOVA to determine whether PA frequency (planned and unplanned) differed between LGBQAP and heterosexual participants. No Time × Sexual Orientation interaction emerged, Wilks’s Λ = 1.00, F(2, 582) = 1.55, p = .212, ηp² = .00. Additionally, no significant mean differences were found in PA between LGBQAP and heterosexual participants, Wilks’s Λ = 1.00, F(2, 582) = 0.24, p = .79, ηp² = .00. Nonetheless, a significant main effect of time emerged, Wilks’s Λ = .92, F(2, 582) = 25.50, p < .001, ηp² = .08.

Participants reported higher planned PA prior to lockdown (M = 3.8, SD = 1.0) compared to during (M = 3.5, SD = 1.1), F(1, 583) = 17.13, p < .001, d = 0.28, 95%CI: 0.16–0.46. Similarly, unplanned PA was significantly higher prior to lockdown (M = 2.4, SD = 0.7) compared to during (M = 2.1, SD = 0.8), F(1, 583) = 46.91, p < .001, d = 0.38, 95%CI: .28–.50.

We ran correlation analyses between mental health and PA in both groups of participants, both prior to and during lockdown. For LGBQAP individuals prior to lockdown, no significant linear relationship was found between mental health and planned PA (r = .00, p = .984), but a marginally significant negative relationship was found between mental health and unplanned PA (r = -.28, p = .046). As unplanned PA increased, GHQ-12 scores decreased (i.e., mental health was improved). This pattern of relationships remained consistent during lockdown (r = -.13, p = .377 and r = -.36, p = .008, respectively). For heterosexual participants prior to lockdown, a weak but significant relationship was found between mental health and planned PA (r = -.14, p = .002), but there was no significant relationship with unplanned PA (r = -.08, p = .070). During lockdown, mental health exhibited a significant negative correlation with both planned (r = -.22, p < .001) and unplanned PA (r = -.22, p < .001) in heterosexual participants.
Discussion

The sudden onset of the COVID-19 pandemic and the restrictions set in place to combat the virus have disrupted daily activities, leading to changes in mental and physical wellbeing. While the global pandemic has disaffected all segments of society, marginalized groups have experienced a substantially greater burden. The purpose of the present study was to examine the impact of the COVID-19 lockdown on mental health and PA among individuals who identify as lesbian, bisexual, gay, queer, and other diverse sexual orientations compared to those who identify as heterosexual.

To address our first hypothesis \((H_1)\), we found that while all participants reported a decrease in mental health during lockdown, this drop was significantly larger for LGBQAP participants. This finding is consistent with how other marginalized groups have been afflicted by the COVID-19 pandemic. For example, researchers have reported mental health disparities as a consequence of race and ethnicity (McKnight et al., 2021) as well as gender (Gausman & Langer, 2020). Thus far, sexual orientation has been largely ignored. The present findings begin to fill a gap in the literature that will serve as a bridge toward appropriate mental health support for LGBQAP persons (Gorcyznisk & Fasoli, 2020). As PA has a potentially protective effect in regard to decrements in mental health, we explored how both groups engaged in PA prior to and during lockdown, as well the relationships between mental health and PA.

Prior to the COVID-19 lockdown, participants in the current study reported a fair level of PA. More specifically, the BLPAQ scores illustrate that, relative to the normative values for planned and unplanned PA reported by Karageorghis et al. (2005), both groups of present participants exceeded these pre-lockdown. Moreover, PA levels on the whole were indicative of a frequency, duration, and intensity of weekly activity that is a small degree below what is
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recommended by the ACSM (2018). The during lockdown scores show a decrement in PA that is of an equal measure in the planned and unplanned dimensions. The drop shifts the weekly frequency, duration, and intensity of activity to a moderate degree below ACMS recommendations.

The levels of PA engagement between LGBQAP and heterosexual participants were similar, consistent with previous research that has demonstrated similar PA participation rates between LGB and heterosexual individuals (Boehmer et al., 2012; VanKim et al., 2017). We observed a small but significant decrease in both planned and unplanned PA across the study sample during the initial COVID-19 lockdown, which is consistent with other researchers (e.g., Cheval et al., 2020; Dunton et al., 2020; Tison et al., 2020) who reported decreases in PA as a result of lockdown restrictions, but did not distinguish between planned and unplanned PA. The magnitude of the drop in planned and unplanned PA was broadly analogous to that reported in other Western nations over the same time period (e.g., France; Guérin et al., 2021). No differences in PA habits, planned or unplanned, were observed between LGBQAP and heterosexual individuals during lockdown. This finding is contrary to our expectation that COVID-19 restrictions would have a more negative impact on LGBQAP participants ($H_2$). It also contrasts with initial findings pertaining to other marginalized groups; for example, racial differences have been reported during but not prior to lockdown for exercise frequency (Bann et al., 2020). We did find that PA positively contributed to mental health in both groups. During lockdown, both planned and unplanned PA were weakly, but significantly, associated with mental health in heterosexual respondents. For LGBQAP participants, a moderate association was found between mental health and the frequency of unplanned PA.
While only minimal differences were found in frequency of PA, participant responses reflected a notable shift in where PA took place. Certainly, access to gyms and other organized PA venues was limited or entirely unavailable given the imposition of social distancing and quarantine restrictions. Accordingly, it is unsurprising that the percentage of time spent exercising in a gym or health club exhibited a dramatic decline (from 31.1% to 1.3%). This was offset somewhat by an increase in time spent exercising at home and in outdoor spaces during lockdown. This change in exercise environment would have forced many individuals into modifying current exercise habits and/or adopting new PA behaviors. Albeit these changes did not result in a difference in PA between groups based on sexual orientation, it is possible that the changes in the social facets of PA affected these groups differentially. For example, given that individuals who identify as LGBQAP would already have been more likely to avoid traditional gym settings (Herrick & Duncan, 2018), unplanned PA could be more conducive to LGBQAP participation, thus resulting in a stronger link with mental health than planned PA.

Social restrictions imposed in March 2020 across the United States to “flatten the curve” such as social distancing, self-isolation, and quarantine had the likely consequence of detaching many LGBQAP individuals from their PA and social networks. While Herrick and Duncan (2018) noted that sport and PA are generally in the heterosexual domain, increased opportunities to participate in queer-inclusive spaces exist that encourage PA participation in LGBTQ+ communities. Inclusive spaces for sport and PA offer a sense of community and belonging (Calwood & Smith, 2019), promote collective self-efficacy, and foster a sense of self-empowerment (Krane et al., 2005). Inclusive competitive recreational teams (e.g., gay male soccer team; Willis, 2015) or leagues also provide a safe space for individuals to participate in sport and socialize with other LGBTQ+ individuals or allies. During lockdown, as most gyms
closed and athletic teams were unable to compete, individuals shifted their PA primarily to the home and outdoors, likely reducing more social forms of PA.

In addition to PA restrictions, individuals were no longer able to access some LGBTQ+-inclusive spaces like gay bars or teen and community centers that can foster social bonds (Anderson & Knee, 2020). Similarly, COVID-19 restrictions limited access to large community events like Pride Parades, commonly held in the month of June (Haynes, 2020). Many LGBTQ+ adolescents may have been forced to spend more time in home environments where they are not accepted or supported, or where they may have not disclosed their sexual orientation or gender identity (Salerno et al., 2020). Older members of LGBTQ+ communities are twice as likely to live alone when compared with their heterosexual counterparts, and 3–4 times less likely to have children, making them more vulnerable to social isolation and its potentially deleterious consequences (Yang et al., 2018). In the current study, a greater percentage of LGBQAP participants identified as single (63.5% compared to 46.2% of heterosexual participants) and fewer indicated that had children living at home with them (12% compared to 30% of heterosexual participants). Thus, it is not surprising that the imposed restrictions had a marked effect on the mental health of LGBQAP participants.

Implications of the Present Findings

Lessons learned from the present study can be applied to benefit LGBTQ+ communities for future disturbances to social norms of this nature. Health, wellness, and sport professionals who work with LGBQAP clients/patients/athletes should take note of the differential impact on mental health and adjust their level of support as necessary during such times of social isolation. Additional digital check-ins or increased scheduling of virtual or socially-distanced gatherings may be warranted to maintain a sense of social connectedness (e.g., Perone et al., 2020).
Practitioners might also discuss how maintaining PA habits at home or outdoors can support mental health. Individuals and companies that provide digital exercise instruction might consider engaging the LGBQAP population, offering inclusive programming that is directly targeted at them. Finally, exercise/sport professionals should be prepared to refer any individual who is experiencing mental health challenges to an appropriate health professional.

Suggestions for Future Research

Future researchers might address the long-term effects of lockdown on LGBTQ+ communities. Negative impacts on mental health have likely continued past the end of the first lockdown (approximately May 25 2020, varying by state), as many states continue to encourage or mandate social-distancing measures that inhibit social gatherings, until COVID-19 vaccines are widely administered. Surveillance and interventions aimed at maintaining and improving mental health are particularly important in this subgroup of the population. Researchers should also continue to examine LGBQAP persons’ access to mental healthcare against a backdrop of a highly increased need among the general population.

Limitations of the Present Study

We acknowledge that some aspects of the research design limit generalizability of our findings. Retrospective assessment of mental health and PA in relation to the pre-lockdown period could have introduced recall errors and biases, potentially represented by greater variability in those assessments. Caution should be exercised when considering the retrospective analysis. In addition, the disproportionate sample sizes of heterosexual and LGBQAP adults may have influenced the analysis and outcomes of this study. For example, while the LGBQAP participant representation in this study is similar to national estimates and reflects other work examining PA in this population (e.g., Boehmer et al., 2012; VanKim et al., 2012), we were
unable to control for other factors associated with PA participation, such as gender and education level, due to the uneven subsamples within the overall sample. We acknowledge that the relationship between mental health and PA is highly complex and nuanced, but offer the present findings as a point of origin in furthering understanding of the impact of the COVID-19 pandemic.

In order to allow for comparisons, we condensed individuals who identify as LGBQAP into a single group. In doing so, we risk homogenizing a complex community. Further, our data do not represent transgender adults or other diverse gender identities. As transgender individuals tend to report lower levels of PA (Jones et al., 2017) and disproportionality greater negative mental health outcomes (James et al., 2016), it is critical that gender identity also be considered when considering the impact of lockdown on mental and physical health in marginalized groups. Moreover, as Herrick and Duncan (2018) noted, intersectionality should be accounted for when considering PA participation among the LGBTQ+ population. Our sample was primarily white and of a middle-class background. The experiences of LGBTQ+ individuals who also identify as Black, Indigenous, and people of color (BIPOC) are therefore underrepresented. We recognize that the study findings and associated limitations are specific to the COVID-19 context. However, the limitations acknowledged should be addressed in future mental and physical wellbeing research involving marginalized groups as they appear to be a recurring issue within the extant literature (Gorcyznski & Brittain, 2016).

Conclusions

The present findings add to a rapidly growing literature that serves to increase understanding of the wide-ranging psychological and physical impact of COVID-19. While the drastic social restrictions of COVID-19 touched all parts of society, the isolating impact of such
measures will vary for different groups within society. Our findings indicate that the COVID-19 lockdown had a more negative impact on LGBQAP individuals. This is particularly concerning given that such individuals are already more likely to struggle with mental health concerns and have poorer access to healthcare.
References


theory perspective. *Annals of Behavioral Medicine*. Advance online publication.

https://doi.org/10.1093/abm/kaab052.


https://doi.org/10.1016/j.mhpa.2020.100345


Table 1

Sample Demographic and Anthropometric Data

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