Sexual and Gender Minorities Facing the Coronavirus Pandemic: A Systematic Review of the Distinctive Psychosocial and Health- related Impact

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Abstract

Sexual and gender minorities (SGM) constitute vulnerable groups in many countries. Thus, they might be affected to a different extent than heterosexual and cisgender individuals by the Coronavirus pandemic. This systematic review aimed to summarize the state of international research on the mental and physical health-related as well as socioeconomic effects of the Coronavirus pandemic on SGM individuals. Following the PRISMA protocol, we identified 35 publications, including different article formats. We considered minority stress theory and intersectionality in synthesizing the reviewed literature. Our key finding implicates that both minority- and pandemic-specific adversities increase the vulnerabilities of SGM individuals. Minority-specific stressors include discrimination experiences, poorer mental and physical health, and fewer socioeconomic resources. Pandemic-specific challenges such as the deferral and delay of medication or school closing expose certain SGM subgroups (transgender individuals, young SGM) to particularly high risk. Moreover, the reviewed evidence suggests distinctive interactive effects of minority-specific stressors with pandemic-specific challenges (e.g., being forced to stay close to rejecting others during lockdown periods). A significant share of the included literature was US-based, while research from other countries remained scarce. The specific mechanisms still deserve to be better understood to protect SGM in future crises, especially during pandemics.

Keywords: Sexual Minorities, Gender Minorities, Pandemic, Minority Stress, Intersectionality, LGBTQ

Since the beginning of the Coronavirus pandemic in December 2019, people worldwide have faced unprecedented challenges, and they were coerced to adapt their ways of living. For sexual and gender minorities (SGM), the pandemic could implicate extraordinary challenges that might add to the disparities they face in their everyday lives (Egede & Walker, 2020; Gibb et al., 2020; Kantamneni, 2020; Turner-Musa et al., 2020). In this review, we refer to diverse populations that contrast cisgender and heterosexual populations with the term sexual and gender minorities. They include individuals who identify as lesbian, gay, bisexual, transsexual, or queer and feel affiliated (LGBTQ). Other related groups addressed in previous research are men who have sex with men (MSM), transgender and/or nonbinary individuals (TGNB), and sexual minority women (i.e., lesbian, bisexual, queer women, SMW).

Pre-Pandemic Disparities between SGM and Non-SGM populations

Before the pandemic, studies pointed to multidimensional disparities of SGM when compared to cisgender and heterosexual groups. Studies showed elevated risks and prevalence rates for anxiety, depression, self-harm, and suicidal ideation (Borgogna et al., 2019; Plöderl & Tremblay, 2015; Russell & Fish, 2016). The severity of these mental health-related disparities was greater among particular SGM subgroups, for example, transgender males (Price-Feeney et al., 2020). Regarding age, younger individuals from SGM were more likely to be exposed to sexual, psychological, and physical abuse than cisgender youth (Baams et al., 2018; Friedman et al., 2011). Feelings of uncertainty, unpredictability, and loneliness connected to the pandemic potentially compromise the mental health of many individuals, especially those with pre-existing mental health issues (Torales et al., 2020). Several studies highlighted an increased risk and prevalence rates of SGM for a series of physical and chronic conditions of illness, including asthma, diabetes, heart diseases, cardiovascular disease, or cancer (Dispenza et al., 2017). Before the pandemic, they also showed higher rates of substance abuse, sexually transmitted infections, self-harm, and suicide (Medina-Martinez et al., 2021). Cancer, heart diseases, diabetes, and HIV are risk factors for a severe Coronavirus infection (Maragakis, 2021). However, many SGM individuals reported

discriminating and rejecting experiences in healthcare settings, including barriers to accessing healthcare services.

Furthermore, SGM have a higher risk of unfavorable socioeconomic living circumstances. A survey-based report of the Movement Advancement Project (2020) found that SGM households (broadly compared to non-SGM households) are more likely to experience financial problems, job losses or wage reduction, and poorer internet access. According to the Williams Institute (2019) pre-pandemic data, 22% of LGBTQ adults in the US live in poverty, compared to 16% of cisgender and heterosexual adults. Some subgroups of SGM were found at an even higher risk of socioeconomic living difficulties. Among those were transgender individuals and transgender people of color. In addition, individuals in precarious economic situations were more at risk during economic downturns, such as the pandemic-related recession following national lockdowns and closings of workplaces (Nicola et al., 2020). Due to their socioeconomic and health-related vulnerabilities, research needs to evaluate whether SGM populations are disproportionately affected by the Coronavirus pandemic.

SGM and Crises

Other crises have already demonstrated that minoritized communities are especially vulnerable to crisis-related adversities. For example, the environmental effects of the climate crisis have compromised access to food, water, shelter, and culture. Minority populations with socioeconomic disadvantages are especially vulnerable because they are more likely to lack material and financial resources to compensate for these detrimental effects (Levy & Patz, 2015). More specifically, the HIV/AIDS epidemic has exposed SGM to increased health risk and stigmatization experiences for SGM populations (Bowleg, 2020; Kline, 2020). However, SGM often lack resources for physical and psychological resistance (Dispenza et al., 2017; Plöderl & Tremblay, 2020) that may be important to cope with such experiences.

On March 11, 2020, the World Health Organization (WHO) declared the outbreak of the novel severe acute respiratory syndrome coronavirus (SARS-Cov-2) (Cucinotta & Vanelli, 2020). The pandemic was first reported in China in December 2019 and has since spread to all continents (Lai et al., 2020). The pandemic might affect SGM through different pathways as effects may be

conveyed directly (immediately linked to Coronavirus physical health threats) and indirectly (consequences of pandemic-related restrictions for SGM). Pre-existing disparities regarding psychological, health-related, and socioeconomic resources might exacerbate the challenges of the Coronavirus pandemic. By experiencing social restrictions and physical distancing measures, for example, SGM could be limited in their access to safe spaces and other community-related support, which constitute SGM coping factors (Wilson & Cariola, 2020). Adopting a theoretical perspective could scaffold our understanding of the potentially disproportional and adverse effects of the pandemic on SGM populations.

Theoretical Frameworks

Minority stress theory (Meyer, 2003) could offer such a framework. Minority stress describes distress that individuals experience due to their belonging to stigmatized social categories. SGM-specific minority stress may range from gender-based or sexuality-based victimization, rejection, or discrimination to internalized trans-, bi-, or homophobia. These experiences were found to link to adverse mental and physical health outcomes in SGM individuals (Medina-Martinez et al., 2021). Among SGM, minority stressors might therefore provide a distinctive foundation for having lower resources to respond to crises.

When exploring the impact of the Coronavirus pandemic, the intersection of different experiences by individuals with multiply minoritized identities (Crenshaw, 1989) should be acknowledged. While some SGM groups are generally at risk of being minoritized, those SGM individuals with intersecting minority identities could experience the highest levels of minority stress. Specifically, SGM individuals are not only facing discrimination due to their gender and sexuality but also discrimination due to social class or race. The unique experiences of multiply minoritized groups comprise mental, physical health-related, and economic difficulties, including greater perceptions of job insecurity or more significant financial barriers to health care (Lavaysse et al., 2018; Lett et al., 2020). Considering that SGM groups were occasionally blamed for the Coronavirus outbreak (Greenhalgh, 2020), the Coronavirus pandemic could potentially reinforce intersectional discrimination and stigmatization experiences for SGM individuals. Preliminary evidence indeed suggests that infection with the virus can be associated with shame and

stigmatization (Perry, 2021). Which roles the specific vulnerability resulting from minority stress and intersecting identities play for the mental health, physical health, and socioeconomic living circumstances of SGM populations during the Coronavirus pandemic is yet unclear.

This systematic review aims to contribute to our understanding of the impact of the Coronavirus pandemic on SGM populations worldwide. Theories on minority stress and intersectionality suggest that SGM populations could especially suffer from the impact of the Coronavirus pandemic. Based on the current literature, we evaluated the study question of whether SGM experience a deterioration of their living quality and living conditions. We specifically evaluated the psychosocial, physical health-related, and economic effects of the Coronavirus pandemic and compared these to heterosexual and cisgender individuals. We discuss our findings from minority stress perspectives.

Methods

Search Strategy

The overall search strategy aimed to identify literature on the psychosocial impact of the Coronavirus pandemic on SGM populations. We, therefore, followed a step-wise and comprehensive approach following the PRISMA scheme. Initially, we conducted an exploratory-unsystematic search with two goals. First, we identified keywords for our main search. Second, we identified relevant research articles that were subsequently used to validate our main search and to pre-structure our review content-wise. Based on the main search, and following evidence from the pre-pandemic literature, we decided to distinguish between three guiding categories of the pandemic-related effects in our systematic review: (1) mental health (MH), (2) physical health (PH), and (3) socioeconomic circumstances (SEC).

Subsequently, we conducted the main literature search in several digital meta-databases that potentially hosted the relevant studies to this review. These include EBSCO Information Services (e.g., PsycARTICLES, PsycINFO), PubMed (e.g., MEDLINE, Ovid), and Scopus. For the main literature search, we used variations of the pre-defined set of English keywords linked by Boolean operators (see Supplemental Table A). The keywords had to be mentioned in the title of the publication, ensuring the focus was on SGM in connection with the Coronavirus pandemic. The

search string was developed and piloted in EBSCO and adapted to the other databases' requirements. However, this search strategy did not yield all the relevant research articles we previously identified in the exploratory-unsystematic search. Thus, we applied two additional search strategies. We additionally conducted a manual backward citation search for potentially relevant studies in the reference lists of the articles identified through the search strings (yielding $n=5$ further publications). With a more explorative search strategy, we aimed to especially identify grey literature and that literature published in the German language ($n=12$). We initially planned to set an additional focus on the situation of SGM in Germany but did not find enough relevant literature during the search process. We conducted the main literature search between the 20th of February and the 1st of March 2021. We included scientific publications other than original articles (i.e., commentaries, reports, letters to the editor, or editorials) if these reported empirical evidence. We did this to summarize the state of empirical literature as comprehensively as possible.

Eligibility and Study Inclusion Criteria

For inclusion in this review, publications had to meet four criteria. First, the publication date of the studies had to be between January 2020 and March 2021, as the worldwide Coronavirus outbreak started in December 2019. The clear focus of the literature had to be on the impact of the pandemic on youth and adult SGM populations. Finally, the literature we included had to consist of a sample size of at least ten subjects. Studies reporting results from less than ten subjects were excluded, as we intended not to review evidence from individual narratives and single case reports. All publications were evaluated in a three-stage selection process according to the criteria mentioned above. In the first stage, solely the title of the publication was analyzed; during the second stage, abstracts of the publications were screened for eligibility criteria. The publications that passed the first two stages were then fully screened. In cases where the relevance and fit of a publication were unclear, the text was kept for the next screening stage. Overall, 44 records were identified through the database search. The manual literature search resulted in 17 additional records following the initial database search. After duplicate removal, 15 records were excluded, resulting in 46 publications that preliminarily met the inclusion requirements. We give a detailed overview of our search stages in the PRISMA Flow Diagram (see Supplemental Figure 1).

Data Management and Extraction

We used Citavi 6 (Swiss Academic Software, Schweiz) for the management of references as well as the identification of duplicates. We document the detailed results of the different screening stages and the information on the reasons for exclusion in Supplemental Table B. Some publications, for example, had collected a substantial part of their data prior to the pandemic, had adjusted their study goals during data collections due to the onset of the Coronavirus pandemic, or had set their focus on posing methodological recommendations. Data from the included publications was extracted using an evidence matrix depicted in Supplemental Table C. That matrix shows the author and year of publication, the characteristics and size of the sample (in this case specifying which subgroups of sexual and gender minorities were addressed), the place of the publication, the study or text type, and the essential findings or aspects of the publications. Additionally, the literature was assigned to our three guiding categories: MH, PH, and SEC. One publication could be assigned to more than one category. When information on one of the mentioned criteria was missing, the cell was filled out with "*n.a.*" (not applicable).

The total number of 33 texts addressed MH, 20 PH, and 17 SEC of SGM populations. Sample sizes of the included quantitative studies ranged from 10 to 10,079 participants. In most cases, publications addressed more than one subpopulation of SGM, including lesbian, gay, bisexual, transgender, queer, questioning, intersexual, or asexual respondents. Other terminologies used for these subpopulations in the considered studies were gender-expansive, nonbinary, same-gender-loving, gender non-binary, genderqueer, or gender nonconforming. Four studies included heterosexual individuals as a reference group. Three publications studied transgender individuals exclusively. Regarding the country of publication, the United States stood out with 19 publications addressing SGM populations and the Coronavirus pandemic. The other texts and studies were from the United Kingdom (n=2), China (n=2), Australia, Brazil, India, and Italy (each n=1). The remaining studies collected data from multiple countries, including Germany, Turkey, Russia, Mexico, Malaysia, and Sweden (among others). Nearly half of the publications consisted of online survey studies (n=19), whereas four reported qualitative data based on interviews. The other 16

publications did not follow a conventional research article format, including commentaries (n=2), guest editorials (n=2), research reports (n=2), policy briefs (n=2), letters to the editor (n=2), a blog post and a research brief.

Results

Mental Health

A synthesis of the international literature supported that the Coronavirus pandemic has exacerbated the psychosocial difficulties and heightened distress that SGM populations experience in their everyday lives. Such distress manifested in symptoms of anxiety and depression, suicidal ideation, and feelings of rejection and harassment. While this seemed to hold for younger and older SGM individuals, there were likely socially-transmitted effects with yet different mechanisms during the pandemic. Moreover, findings on suicidal thoughts were concerning, as more than one-third of transgender individuals have expressed suicidal thoughts during the pandemic (Koehler et al., 2020).

Young, Adult, and Aging SGM Individuals

Regarding SGM youth, many individuals were forced to return home to possibly rejective environments, which may promote anxiety and result in abusive and traumatic experiences, consequently increasing the risk for depression, anxiety, and suicide (Green et al., 2020; Whittington et al., 2020). Overall, more than 60% of SGM students in the US reported mental distress, including anxiety and depression (Gonzales et al., 2020). In another US-based sample of SGM students, 65% of respondents reached clinically relevant thresholds for moderate or severe psychological distress (Salerno, Pease, et al., 2020). Similar results were reported in chatrooms of US SGM adolescents, as they were likely to exchange experiences of stress, frustration, anxiety, depression, and mental health problems, partly pandemic-related (Fish et al., 2020).

Adult SGM individuals seemed equally affected by the Coronavirus pandemic (Drabble & Eliason, 2021; Kidd et al., 2021; Salerno, Devadas, et al., 2020). Studies comparing the mental health of adult SGM individuals and non-SGM individuals showed significantly higher burdens regarding anxiety, depression, psychological distress, and PTSD among SGM populations (Moore et al., 2021; Peterson et al., 2020; Potter et al., 2020). In an international sample of MSM

individuals, 31% of respondents reported moderate to severe psychological distress (Santos et al., 2020). Anxiety and depression scores showed significant increases among US SGM individuals compared to pre-pandemic scores (Flentje et al., 2020; Moore et al., 2021). A global online survey among TGNB supports findings regarding anxiety and depression levels, as about half of the sample was screened positive for both disorders (Jarrett et al., 2020). Similar patterns were found for Chinese transgender individuals, especially those who had problems accessing hormones and were worried about the delay of gender-affirming surgery due to the Coronavirus pandemic (Wang et al., 2020). Another challenge was the high rates of suicidality, especially among transgender youth and adults in general and particularly during the Coronavirus pandemic. A global survey showed that 35.1% had suicidal thoughts since the beginning of the Coronavirus pandemic, and 3.2% of the sample had attempted suicide since then (Koehler et al., 2020). Researchers in Hong Kong showed that stressors related to identifying as a member of SGM communities significantly explained the variance of anxiety and depressive symptoms above pandemic-related stressors (Suen et al., 2020). In an online questionnaire with US-based SGM adults, Scroggs et al. (2020) examined the difference in alcohol use and experiences of hope, pride, SGM group identification, and overall minority stress. Comparing the data collected before and after the lockdown showed a significant decrease in all measures. Interestingly, study findings yielded lower experiences of minority stress in the post-lockdown group. A cross-national comparative study (2021) found that respondents from Brazil and Chile reported more negative psychosocial effects of the pandemic than respondents from European countries. Interestingly, being from Europe was overall more predictive of adverse mental health outcomes than being from South America (Gato et al., 2021).

Studies focusing on the foundations of distress among aging SGM individuals highlighted some additional pandemic-related challenges. Significant shares of aging SGM respondents from the US and UK reported living alone, feeling isolated, and having no one to call in case of an emergency (Cahill, 2020; Jen et al., 2020; LGBT Foundation, 2020). These findings suggest that the intersection of age with other personal characteristics (e.g., gender identity, sexual orientation) had increased older SGM individuals' risk of experiencing minority stress during the pandemic (Jen et al., 2020). The notion is further supported by a qualitative study from India based on interviews

with transgender individuals 60 years and older (Banerjee & Rao, 2021). Participants reported marginalization and stigmatization due to their age and gender in health care settings and public life. They also mentioned the loss of social support in the form of rituals and celebrations that were coping factors prior to the pandemic.

Discrimination Experiences

Increasing experiences of discrimination seemed to link to heightened mental distress experienced by SGM during the Coronavirus pandemic. Kneale and Bécares (2020) found that the odds for high depression levels were three times higher in a British sample of SGM individuals with experiences of homophobic/ transphobic discrimination than those without such experiences. Specifically, one in five respondents of that sample reported experiences of discrimination during the pandemic. An Italian study showed that the Coronavirus pandemic might exacerbate discrimination against social minorities, including sexual and gender minorities (Mattei et al., 2020). Data from the British LGBT Foundation helpline corroborated this hypothesis. They reported high increases in calls regarding biphobia (450%), transphobia (100%), and homophobia (52%) compared to pre-pandemic levels (LGBT Foundation, 2020).

Isolation and Social Support

The increasing levels of isolation resulting from the outbreak of the Coronavirus pandemic seemed to present an extraordinary burden for people belonging to SGM communities. As described earlier, SGM youth had to return home and isolate together with their families. For some youth, staying with close relatives implied living in environments that reject their sexual orientation and gender identification (Gato et al., 2021; Grant et al., 2021). Research generally shows that only one-third of US-based SGM adolescents experience parental acceptance, while another third has not yet come out, and the last third undergoes parental rejection (Green et al., 2020). During the pandemic, adolescents with unsupportive parents reported psychological distress more often than those with supportive parents (Gonzales et al., 2020). Furthermore, around 30% of student respondents from the US mentioned that members of their families talked negatively about SGM individuals more frequently, 40% reported feeling isolated from others, and 26% reported lacking

social or emotional support (Salerno, Pease, et al., 2020). Moreover, the fact that some individuals of the SGM community come together as rainbow families represented another challenge: They were more often not recognized as actual relatives and thus fell under restrictive social distancing policies, i.e., contact restrictions (Striegan, 2020).

Many studies could show that being connected to the SGM community face-to-face helps SGM individuals to shield themselves from the harmful impact of stigmatization, depression, and suicidality (Drabble & Eliason, 2021; Grant et al., 2021; Green et al., 2020; Salerno, Devadas, et al., 2020). Kidd and colleagues (2021) supported these findings in a US sample of TGNB respondents. Authors found increased psychological distress among respondents linked to reductions in SGM community support. Holloway and colleagues (2021) also supported these findings in a study comparing gay, bisexual, and other men who have sex with men who have isolated themselves strictly versus those who did not. Those individuals who strictly isolated themselves reported higher levels of anxiety, loneliness, and sexual dissatisfaction. However, data on compliance rates with self-isolation behavior in SGM communities was overall not precise. In a diverse sample of the US population, SGM respondents overall reported to more strongly adhere to the social distancing guidelines than non-SGM US respondents (Baumel et al., 2021). However, these results were not replicated in another US-based sample (Moore et al., 2021). When both groups were asked whether they avoided groups of ten people or more, no significant differences were found. Finally, one study considered SGM refugees a uniquely vulnerable subpopulation during the pandemic (Striegan, 2020). Many SGM refugees were isolated in refugee accommodations together with unaccepting others. There, they are even more likely to experience discrimination because of their origin and residency status in combination with their sexual orientation.

Physical Health

A synthesis of the literature suggested that SGM individuals were at an increased risk for numerous physical health conditions of illness during the Coronavirus pandemic. These conditions include respiratory issues, cardiovascular diseases, and endocrine disorders. Transgender

individuals specifically experienced pandemic-related restrictions in medication and surgeries that overall extended their distress related to their gender-related physical appearance. The mental burden is reflected in changes and worries regarding substance consumption. Consequently, these circumstances disproportionately increase the physical health-related vulnerability of SGM individuals, also in case of an infection with the Coronavirus.

Health Insurance and Risks

Some studies discussed disparities when accessing medical services for SGM populations as especially relevant during the Coronavirus pandemic, a global health crisis (Koehler et al., 2020; Whittington et al., 2020). Undersupply in medical care and discriminatory experiences in healthcare settings are especially relevant in the US, where access to health care services is linked to individuals' financial capacities. Many SGM individuals in the US cannot afford sufficient health insurance and therefore lack access to medical treatment, even in emergency cases, due to their more often precarious economic situations (Whittington et al., 2020). At the onset of the Coronavirus pandemic, 17% of all US SGM individuals were not health insured, compared to 12% of US non-SGM counterparts. Among US LGBTQ adults, Afro-American and Latinx LGBTQ adults had the lowest health insurance rates, with 23% of LGBTQ adults of color and 22% of transgender adults having none (Krause, 2021; Whittington et al., 2020).

Additionally, SGM individuals face discrimination in health care settings regularly (Banerjee & Rao, 2021; LGBT Foundation, 2020). These results are critical considering that many SGM are at an increased risk for various diseases, including chronic conditions, respiratory diseases, and overweight (Cahill, 2020; Potter et al., 2020; Whittington et al., 2020). Findings from a global study underline the severity of this issue, as over half (52.6%) of the respondents reported at least one acute or chronic condition (Koehler et al., 2020). Again, SGM individuals of color are particularly vulnerable to medical conditions and risks (Jen et al., 2020).

Delay and Deferral of Gender-Affirming Care

Another specific problem reported was the pandemic-related delay and deferral of gender-affirming care like medication, psychological support, or surgeries. The postponement through months of the pandemic could put transgender individuals at risk for several physical health conditions and complications (van der Miesen et al., 2020). In particular, long-term inadequate gender-affirming hormone administration increases the risk of osteoporosis or cardiovascular diseases. Jarrett and colleagues (2020) conducted a global online survey showing that 55% of the transgender and non-binary respondents reported reduced access to gender-affirming care. Another global survey revealed that among those who had already undergone transition-related treatment, 49.3% reported restrictions in access to transgender health care services during the pandemic (Koehler et al., 2020). In-depth analyses showed that participants assigned male at birth and individuals with a lower income were at a higher risk of experiencing restrictions to adequate services. Thus, access to adequate gender-affirming care could have been even more difficult for those individuals with less financial resources (Koehler et al., 2020; van der Miesen et al., 2020). Kidd and colleagues (2021) examined the lack of health-related care. They found that one-third of the sample of US SGM respondents reported an interruption or delay in gender-affirming care, including 11% of respondents who reported cancellations or postponements of gender-affirming surgery. In a sample of US-based SGM college students, Gonzales and colleagues (2020) found that students who were unable to receive mental health care were more likely to report mental distress. While gender-affirming surgeries have overall shown improvements in patients' mental health (Wang et al., 2020), the discontinuation of these surgeries and services could negatively influence SGM individuals' short- and long-term health during the Coronavirus pandemic. The same applies to interruptions in HIV prevention, as 23% of respondents living with HIV reported that they lost access to their health care providers during the pandemic (Santos et al., 2020).

Substance Consumption

Compared to their non-SGM peers, SGM adolescents are twice as likely to have tried psychoactive drugs (Cahill, 2020; Konnoth, 2020). Adding to that, many SGM individuals smoke

(Whittington et al., 2020), vape (Cahill, 2020), and drink alcohol (Salerno, Pease, et al., 2020) more frequently than their heterosexual counterparts, putting them at significant risk for a more severe Coronavirus infection course. During months of the pandemic, findings from Brazil and the US showed an even increased alcohol, tobacco, and marijuana consumption among SGM individuals (Bochicchio et al., 2021; Torres et al., 2020). However, some respondents also reported their consumption decreased as face-to-face social events no longer happened. Peterson and colleagues (2020) did not find any effect on gender or sexual identity and alcohol consumption (in the last month, during the pandemic) in a US-based sample. According to research by the LGBT Foundation (LGBT Foundation, 2020), about 18% of SGM individuals were worried about increased substance use or relapse.

Socioeconomic Circumstances

The synthesis of studies revealed that the Coronavirus pandemic exerted heightened economic pressure on many SGM populations. Experiences of job losses, salary reductions, homelessness and occupational discrimination had become more likely during months of the pandemic, especially for SGM populations due to their overall socioeconomic disadvantages.

SGM individuals make up a significant share of "essential" workers who appeared to suffer most from pandemic-related shutdowns. Whittington and colleagues (2020) estimated that more than 5 million people in the US-based SGM community work in jobs impacted by the Coronavirus pandemic, e.g., restaurants and food services, hospitals, entertainment services, or schools. These industries make up 40% of SGM individuals' jobs compared to 22% of non-SGM individuals. Interestingly, Moore and colleagues (2021) came to different estimates yet similar conclusions. In their study, the share of US non-SGM populations working in essential industries was estimated to be slightly higher (54%) than among SGM (50%). However, Moore and colleagues found that SGM respondents in the US overall reported job loss and financial difficulties significantly more often than US non-SGM respondents. Other US-based studies also found that homelessness, poverty, job loss, and occupational discrimination more often affected SGM individuals during the pandemic (Green et al., 2020; Konnoth, 2020). In an online survey (2020), 43% of US SGM

individuals reported losing their job, and 26% had a job offer canceled. In another qualitative study, 50% of the Latinx sexual minority men and Latinx transgender women reported a job loss (MacCarthy et al., 2020). Consequently, 36.5% stated food insecurity, and 55.8% could not pay important bills (MacCarthy et al., 2020). About 44% of gay, lesbian and bisexual respondents of an online survey conducted in China indicated that their economic situation had been affected to a moderate or even to a large extent by the Coronavirus pandemic (Suen et al., 2020). In a Brazilian sample of MSM and TGNB, 45.2% experienced a job loss or salary reduction due to the pandemic (Torres et al., 2020).

Such economic pressure seems to link to mental health problems, for example sleeping problems, anxiety, and depression (MacCarthy et al., 2020; Millar et al., 2020; Santos et al., 2020). Additionally, 11% to 28% of US-based SGM individuals reported discrimination like termination or rejection of jobs and promotions due to their sexual identity and orientation (Whittington et al., 2020). The number of transgender individuals affected was even higher, as 27% reported occupational discrimination in that study.

Discussion

The objective of this review was to summarize the mental and physical health-related as well as socioeconomic impact of the Coronavirus pandemic on SGM populations worldwide. We built our review on studies timely before the Coronavirus pandemic (Bowleg, 2020; Kline, 2020; Levy & Patz, 2015), suggesting more detrimental effects of crises and pandemics on SGM populations. We moreover considered MST and intersectionality in our study approach. Consistent with our expectations, evidence from 35 studies overall suggested that the Coronavirus pandemic likely affected SGM populations in several regards more strongly when compared to cisgender and heterosexual populations through multiple, also intersecting, pathways.

The examined studies suggest that the psychological consequences primarily manifest in symptoms of anxiety, depression, and (increased) suicidality among SGM adolescents, adults, and aging individuals. Age-specific stressors seem to additionally determine the extent to which pandemic-related stress harms SGM individuals. That applies, for example, to students who have to

return to families that may not accept gender identity or sexual orientation and to aging SGM individuals, who are particularly vulnerable to isolation, loneliness, and disease (Cahill, 2020; Gato et al., 2021; Grant et al., 2021). However, to which extent SGM individuals adhere to self-isolation and social distancing behaviors and whether there are differences between non-SGM persons remains unclear (Baumel et al., 2021; Moore et al., 2021). The finding that SGM populations likely adhere to safety measures more strictly might be due to increased anxiety or the prevention of discrimination. Some studies indicate that discrimination had exacerbated throughout the pandemic, which in turn could have also posed a risk to the mental health condition of SGM individuals (Kneale & Bécares, 2020; LGBT Foundation, 2020; Mattei et al., 2020). Another notable finding comes from a cross-national study on SGM populations' psychosocial and mental health outcomes in different countries (Gato et al., 2021). Although respondents from Brazil and Chile reported more negative psychosocial effects of the pandemic, being from Europe was overall more predictive of adverse mental health outcomes. The results could be explained by the complex, dynamic nature of the pandemic. Asynchronously spread worldwide, the pandemic yields different living circumstances at the timepoints of data collection among the studies included (early 2020-spring 2021). When the first wave of Coronavirus infections subsided in Europe, for example, case numbers were still increasing in South America. The time-varying impact possibly explains why more psychosocial effects were reported in Brazil and Chile. However, the psychosocial situation and support for SGM individuals in South American countries are less comprehensive than in many European countries.

Looking at the health condition and the health care of SGM individuals across different countries, it becomes clear that the pandemic has led to significant cutbacks and downturns. The delay and deferral of gender-affirming care or transition-related treatments imply psychological strain and can put some SGM individuals at physical risk (van der Miesen et al., 2020).

Considering that SGM a) are less likely to be health insured, b) are more likely to face discrimination and stigmatization in health care, c) are at higher risk for various health conditions (respiratory diseases, overweight, chronic conditions), and d) might show several risk behaviors

more often – it becomes clear that SGM individuals are highly vulnerable regarding their physical constitution and particularly likely to face further health-related consequences due to the pandemic (Koehler et al., 2020; Potter et al., 2020; Whittington et al., 2020). At the same time, they might be less likely to seek treatment, testing, and vaccination, thereby increasing the risk of infection with the Coronavirus. Clarifying data is lacking on SGM's substance consumption, representing another potential risk. While some studies reported increased consumption during the pandemic, others reported less substance consumption (Bohicchio et al., 2021; Peterson et al., 2020; Torres et al., 2020). While an increase in consumption might be a coping mechanism for mental distress, consumption reduction might result from fewer social activities or tightened financial resources during the pandemic.

The pandemic affected the economic and financial situation of SGM individuals. Especially US-based SGM individuals appear to be disproportionately affected by job loss and financial dearth (Green et al., 2020; Konnoth, 2020; Moore et al., 2021; Whittington et al., 2020). Numbers on the percentage of SGM individuals working in essential industries varied in the US (Moore et al., 2021; Whittington et al., 2020) and were not available for other countries. However, it would be essential to know whether SGM populations are overall more likely to serve as essential workers, as this data would yield an important estimate of the economic consequences of the pandemic on SGM populations. Moreover, the prevention of descent into homelessness and poverty may depend on support systems and help of family or friends, which may be less accessible to SGM individuals than to other populations (Kidd et al., 2021). In addition, financial and economic strains exacerbate psychological distress and could have increased the overall mental burdens caused by the pandemic (Millar et al., 2020; Santos et al., 2020).

The results predominantly indicate that the Coronavirus pandemic has deteriorated the living conditions of SGM individuals around the world. Pandemic-related stressors, resulting in disruptions and constraints, may be more challenging to overcome for SGM populations. Although our findings were sectioned in content, they are embedded in the interplay of psychological, health-related, and economic factors. Experiences of minority stress might contribute to an increased

vulnerability and poorer capacity to compensate for negative experiences, emotions, or shifts in living circumstances. Study evidence moreover indicates that some SGM-specific stressors due to the pandemic emerged. These stressors partially build on minority stress interrelating with psychosocial changes due to the Coronavirus pandemic. Those are, for example, discrimination in health care settings and the delay or deferral of gender-affirming care. At the same time, several results indicate that intersectionality must be considered when examining the impact of the pandemic on the lives of SGM populations. For example, SGM individuals of color are likely to be most affected - by medical conditions, the lack of health insurance, or occupational discrimination (Jen et al., 2020; Whittington et al., 2020).

Surprisingly, one finding regarding minority stress suggests that the Coronavirus pandemic could have had selected positive implications for the lives of SGM individuals. In a US-based sample of emerging adults, SGM respondents' scores for minority stress decreased significantly compared to pre-pandemic social distancing scores (Scroggs et al., 2020). There are several possible explanations for this finding. Firstly, minority stress was measured using a single item only ("Most of the bad things in my life happen because of homophobia and/or transphobia") (Scroggs et al., 2020). It is plausible that in times of the pandemic, "bad things in life" are attributed to the multiple impacts of the Coronavirus rather than sexual orientation or gender identification. The alternative attribution would not necessarily mean that minority stress decreased. Still, it could have been overshadowed by the pandemic. Another explanation for lower minority stress during the pandemic could refer to less frequent discriminatory or other adverse encounters due to stay-at-home orders – at least for some groups of SGM. The reasons for this finding are not yet entirely understood. Thus, future research should examine how a pandemic or other crises shape experiences of minority stress.

Limitations and Future Directions

Some study limitations could have influenced the literature review and our conclusions from the reviewed studies. Most studies are cross-sectional, with only a few studies including comparison groups. Specifically, only four studies included in this review gathered comparison

data on cisgender or heterosexual control groups. As a result, not all findings can be interpreted comparatively, and causal inferences of study findings are more limited overall. Another limitation is the lack of pre-post designs. Due to the sudden rise of the pandemic, pre-pandemic measurements are often not available, and the significance of some results is difficult to assess. Moreover, to date, we still do not know when we can consider data post-pandemic.

In addition, the wide range of sample sizes ($n= 10$ to $n= 10,079$) of the included studies influences the comparability and generalizability of the results. Consequently, methodology, study populations, and the respective study focus varied. We did not apply a systematic weighing based on study quality due to an overall limited number of eligible studies for our review.

Moreover, our review highlights a lack of SGM research from countries other than the US. More than half of the included publications originate from the US, while each other country contributed only one or two studies each. Most of these countries were industrialized countries. While there was very little research from developing countries, the pandemic presumably has affected such countries even more strongly. The lack of international research could result in biased perspectives.

In the development and selection of search criteria, we balanced two aims. We intended to include evidence on SGM populations worldwide in the review while also acknowledging their large diversity. However, there could be significant differences in the individual experiences of the pandemic across SGM subgroups and countries. In the future, systematic reviews on specific SGM subgroups should be conducted based on the concurrently emerging literature.

As of to date, our review highlights the structural shortage of subgroup-specific studies on SGM individuals. Merging diverse SGM subpopulations or viewing them as a uniform group does ignore subgroup differences and individual experiences. For example, sexual orientation, gender expression, and gender identity are sometimes confused (Eliason, 2014). Preliminary evidence suggests that especially the experiences of binary and non-binary individuals could vary during the pandemic. More attention must be paid to individual intersectional experiences, as they are elusive

and demand differentiating research. However, the complexity of individuals' intersectionality also challenges investigations, especially when aiming to understand the influence of certain events on SGM individuals, such as the Coronavirus pandemic. For example, future research should address intersecting stigmatization (sexism, racism, and ageism) more distinctively and the resulting experiences for SGM individuals.

The Coronavirus pandemic has been a complex and multidimensional stressor affecting people's lives worldwide for several years. Thus, further work should adopt developmental perspectives, e.g., how the mental health of LGBTQ individuals will progress or the long-term consequences of the delay and deferral of gender-affirming care. Therefore, longitudinal studies are urgently needed to examine how a global pandemic affects the life trajectories of SGM. Additionally, it is crucial to keep in mind that pandemics will likely emerge more often in the future (Intergovernmental Science-Policy Platform On Biodiversity And Ecosystem Services, 2020). For psychological research, this means that prevention work is essential and, therefore, there is a need for knowledge on the mechanisms of the detrimental effects and preventive actions.

Conclusion

The available evidence yields a disproportionately adverse impact of stressors linked to the Coronavirus pandemic on the lives of SGM individuals, primarily due to pre-existing vulnerabilities. Mental distress, physical health needs, and scarce economic resources likely put SGM populations at a heightened risk for downward dynamics throughout the pandemic. The severity and key determinants of such pandemic-elicited dynamics are on both individual and context levels. Considering that pandemics will likely emerge more often in the future, further international research, including non-Western countries, is needed to understand better the pandemic's multidimensional effects on SGM populations in different contexts.

List of abbreviations

AIDS = Acquired Immune Deficiency Syndrome

LGBTQ* = individuals who identify as lesbian, gay, bisexual, transsexual, or queer and feel affiliated

MH = mental health

MSM = men who have sex with men

PH = physical health

HIV = Human Immunodeficiency Virus

SEC = socio-economic circumstances

SGM = sexual and gender minorities

SMW = sexual minority women (lesbian, bisexual, queer women)

TGNB = transgender and/or nonbinary

US = United States

Declarations

Acknowledgments

Papers initially included as preprints and published during revision were updated in our references.

Declarations of Interest

Authors have no competing interests to declare.

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Supplemental Material

Supplemental Table A

Search String

<i>Keywords</i>	<i>Field</i>	<i>Boolean Operator</i>
Lgbtq OR lgbtqia OR lesbian OR gay OR homosexual OR bisexual OR transgender OR queer OR sexual minority OR gender minority	Title	And
Coronavirus OR covid-19 OR 2019-ncov OR covid19 OR corona virus OR sars-cov-2 OR pandemic	Title	And
Mental health OR depression OR anxiety OR stress OR emotional health OR consequences	Title	

Supplemental Table B*Excluded studies*

<i>Literature excluded after abstract screening</i>			
<i>Authors</i>	<i>Publication Year</i>	<i>Type</i>	<i>Reason for Exclusion</i>
Botta et al.	2021	Narrative	Sample size ($n= 3$)
Cerezo et al.	2021	Online study	Study goal adjusted
Gilbert et al.	2020	Commentary	Irrelevant to the subject
Gorczynski & Fasoli	2020	Article	Focus on methodology
Poteat et al.	2020	Online study	Main data collection before 2020
Thankachan et al.	2020	Case report	Sample size ($n= 1$)
<i>Literature excluded after full-text screening</i>			
<i>Authors</i>	<i>Publication Year</i>	<i>Type</i>	<i>Reason for Exclusion</i>
Hafi & Uvais	2020	Letter to the editor	Irrelevant to the subject
Nelson et al.	2020	Online study	Study goal adjusted
O'Neill	2020	Report	Main data collection before 2020
Phillips et al.	2020	Article	Irrelevant to the subject
Stephenson et al.	2020	Online study	Irrelevant to the subject

Supplemental Table C

Study Evidence Matrix

<i>Author and Year of Publication</i>	<i>Sample Characteristics and Size</i>	<i>Location</i>	<i>Type</i>	<i>Central findings</i>	<i>Category</i>
Banerjee & Rao (2021)	Older transgender adults ($n=10$)	India	Qualitative study	Participants mostly suffered from distress due to marginalization, burdens linked to both “age” and “gender,” and physical, emotional, or financial threats during the pandemic. Social rituals, spirituality, and hope supported their coping.	(1) MH (2) PH (3) SEC
Baumel et al. (2021)	Sexual minority (lesbian, gay, bisexual, queer; LGBTQ) and heterosexual individuals ($n=1007$)	US	Online survey study	Sexual minorities reported lower functioning, heightened psychological distress and pandemic-related worries, more compliance with social distancing policies, and more digital communication use than heterosexual participants. Heightened pandemic-related worries and social distancing mediated poorer psychological well-being.	(1) MH
Bohicchio et al. (2021)	Sexual minority women (lesbian, bisexual, queer; SMW) ($n=16$)	US	Qualitative study	Respondents reported increasing drug consumption (alcohol and marijuana), which was linked to a loss of routines, seeking recreation and relief, as well as problems with monitoring limits of responsible alcohol and marijuana use.	(1) MH (2) PH
Cahill (2020)	Lesbian, gay, bisexual, transgender, queer, intersexual, asexual, or gender-expansive (LGBTQIA+) individuals	US	Policy Brief	LGBTQIA+ communities face unique challenges arising from the Coronavirus pandemic. Risk factors and vulnerabilities are outlined to highlight the specific needs of these communities.	(1) MH (2) PH (3) SEC
Drabble & Eliason (2021)	Lesbian, gay, bisexual, transgender, queer, or gender-expansive (LGBTQ+) individuals	International	Guest Editorial	Structural mental health disparities predispose LGBTQ+ individuals to poorer physical and mental health outcomes. Sexual minority women used drugs more frequently to cope with pandemic-related stressors. Community support seemed essential for LGBTQ+ individuals, especially among those living with unsupportive others.	(1) MH (2) PH (3) SEC
Fish et al. (2020)	Lesbian, gay, bisexual, transgender, and queer (LGBTQ) individuals	US	Qualitative study	LGBTQ individuals faced unique intrapersonal, interpersonal, and structural challenges during the Coronavirus pandemic, including sexuality and gender-related rumination.	(1) MH (2) PH
Flentje et al. (2020)	Non-heterosexual individuals and transgender or gender-expansive individuals (LGBTQIA+) ($n=2288$)	US	Online survey study	Depression and anxiety symptoms increased throughout the pandemic. Interestingly, among individuals who showed symptoms of depression at T1, symptom levels had decreased at T2. However, individuals who did not report symptoms of generalized anxiety disorder at T1 showed some symptoms at	(1) MH

				T2. At the same time, those individuals who reported symptoms of generalized anxiety disorder at T1 had no symptom change at T2.	
Gato et al. (2021)	LGBTQ+ young adults ($n=1934$)	International	Online survey study	Depression and anxiety scores were higher among those who were younger, unemployed, living in Europe, who felt more emotionally affected by the pandemic, uncomfortable at home, and/or isolated from the community.	(1) MH
Gonzales et al. (2020)	Lesbian, gay, bisexual, and transgender (LGBT) individuals ($n=477$)	US	Online survey study	Nearly half of the sample (45.7%) reported unsupportive parents. About 60% experienced psychological distress, anxiety, and depression during the pandemic.	(1) MH
Grant et al. (2021)	Lesbian, gay, bisexual, transgender, intersexual, and queer (LGBTIQ) individuals ($n=231$)	Australia	Online survey study	The loss of LGBTIQ public spaces reduced feelings of visibility and connectedness. Respondents reported being afraid of visiting public places, prejudices, discrimination, and invisibility. Individuals living with accepting others had different worries than individuals living with others rejecting their gender orientation.	(1) MH
Green et al. (2020)	Lesbian, gay, bisexual, transgender, and queer (LGBTQ) individuals	US	Research Report	The Coronavirus pandemic may impact LGBTQ youth in many ways (decreasing positive social interactions, unemployment concerns, housing instability, or struggles about the future).	(1) MH (2) PH (3) SEC
Holloway et al. (2021)	Gay, bisexual and other men who have sex with men (GBMSM) ($n=10079$)	International	Online survey study	Around two-thirds of the sample adhered to the physical-distancing policies. However, they reported feelings of loneliness and anxiety, and downturns regarding sex lives. They increased social media use to stay in touch with others.	(1) MH
Jarrett et al. (2020)	Transgender and nonbinary adults ($n=964$)	International	Online survey study	More than half of the participants reported reduced access to gender-affirming resources, and 38% reported reduced time living according to their gender. Also, 50.4% were screened positive for depressive episodes and 45.8% for anxiety disorder.	(1) MH (2) PH (3) SEC
Jen et al. (2020)	Lesbian, gay, bisexual, transgender, queer, and same-gender-loving (LGBTQ+/SGL) older individuals	US	Letter to the editor	Older LGBTQ+ and SGL adults were at an increased risk of suffering from the Coronavirus pandemic. Many of them experienced illness, discrimination, and restricted access to both Coronavirus treatments and gender-affirming care.	(1) MH (2) PH
Kidd et al. (2021)	Transgender and nonbinary (TGNB) individuals ($n=208$)	US	Online survey study	The Coronavirus pandemic increased mental health problems among TGNB. The loss of support led to increased psychological distress. However, interruptions and/or delays in gender-affirming care were not associated with increased psychological distress.	(1) MH

Kneale & Bécares (2020)	Lesbian, gay, bisexual, transgender, queer (LGBTQ+) individuals ($n= 310$)	UK (84% of the sample)	Online survey study	High levels of distress and depressive symptoms, particularly among younger and transgender or gender-diverse respondents, were found. This association was partially explained by experiences of discrimination, which had a significant and consistent impact on stress experiences and mental health.	(1) MH
Koehler et al. (2020)	Transgender individuals ($n= 5267$)	International	Online survey study	More than half of the sample had risk factors for a severe course of a COVID-19 infection and were at high risk of avoiding testing or treatment of an infection. Access to transgender health care services was restricted due to the pandemic for 50% of the respondents.	(2) PH
Konnoth (2020)	Lesbian, gay, bisexual, and transgender (LGBT) individuals	US	Policy Brief	The disproportionate impact of the pandemic on LGBT individuals had far-reaching and specific consequences for those populations. Thus, policymakers must raise awareness of the situation and implement policies that consider the needs of LGBT individuals.	(1) MH (2) PH (3) SEC
LGBT Foundation (2020)	Lesbian, gay, bisexual, and transgender (LGBT) individuals ($n= 555$)	UK	Research Report	The Coronavirus pandemic greatly impacted LGBT individuals in many ways (isolation, health care, substance abuse). The pandemic multiplied the need for support among these communities.	(1) MH (2) PH (3) SEC
MacCarthy et al. (2020)	Latinx sexual minority men (LSMM) and transgender women (LTGW)	US	Qualitative study	Participants reported increased physical conflicts and relationship problems (13.5%) or other adults (19.2%). They also reported concerning alcohol consumption (23.1%), sleeping (67.3%), and mental health problems (78.4%).	(1) MH (2) PH
Mattei et al. (2020)	Lesbian, gay, bisexual, and transgender (LGBT) individuals	Italy	Letter to the editor	Increased unemployment was associated with increased discrimination against homosexual and transgender individuals. Thus, the economic problems arising from the Coronavirus pandemic may contribute to increasing discrimination against LGBT individuals.	(1) MH (3) SEC
Millar et al. (2020)	Sexual minority men (gay, bisexual, transgender) ($n= 477$)	US	Online survey study	About 75% of the respondents reported restless sleep in the last week. Over 40% reported worsening sleep since the beginning of the Coronavirus pandemic. Most of the respondents reporting worse sleep had pandemic-related worries. Economic and financial issues aggravated sleeping problems additionally.	(1) MH (2) PH

Moore et al. (2021)	Lesbian, gay, bisexual, asexual, queer, transgender, gender non-binary, questioning, genderqueer, gender non-conforming or intersex (SGM) individuals and cisgender heterosexual individuals (<i>n</i> = 1380)	US	Online survey study	SGM respondents reported pandemic-related physical symptoms and depression and anxiety symptoms more frequently. The SGM population also reported higher pandemic-related job loss and financial difficulty.	(1) MH (3) SEC
Peterson et al. (2020)	Lesbian, gay, bisexual, and queer/questioning (LGBQ) individuals and heterosexual individuals (<i>n</i> = 170)	US	Online survey study	Sexual minorities and women reported more general psychological and peritraumatic distress than sexual majorities and men due to the pandemic. Alcohol consumption did not show any differences.	(1) MH
Potter et al. (2020)	Sexual minority (lesbian and bisexual) women and heterosexual women (<i>n</i> = 493)	US	Online survey study	Results showed perceptions of the Coronavirus threat were greater among sexual minority women than heterosexual women. Sexual minority women showed more proximal and distal vulnerabilities related to the Coronavirus that partially explained group differences.	(1) MH
Salerno & Devadas (2020)	Lesbian, gay, bisexual, transgender, and queer or questioning (LGBTQ) individuals	US	Comment	Public health stakeholders were less attentive to the mental health problems faced by young LGBTQ persons during the Coronavirus pandemic. However, young LGBTQ persons required facilitated access to LGBTQ-affirming resources such as health care or social support systems during the pandemic.	(1) MH (2) PH (3) SEC
Salerno & Pease (2020)	Lesbian, gay, bisexual, transgender, queer, or nonbinary (LGBTQ) individuals (<i>n</i> = 565)	US	Online survey study	US-based LGBTQ+ students faced Coronavirus-related challenges due to their gender or sexual orientation. Measures of psychological distress among LGBTQ+ students increased from 26% before to 43% during the pandemic.	(1) MH (2) PH (3) SEC
Santos et al. (2020)	Gay men and other men who have sex with men (MSM) (<i>n</i> = 2732)	International	Online survey study	The sample reported not only economic and mental health difficulties but also interruptions to HIV prevention and testing, as well as HIV care and treatment services. These issues were more significant among people living with HIV, racial/ethnic minorities, immigrants, sex workers, and socio-economically vulnerable groups.	(1) MH (2) PH (3) SEC
Scroggs et al. (2020)	Lesbian, gay, bisexual, transgender, and queer (LGBTQ) emerging adults (<i>n</i> = 1895)	US	Online survey study	A repeated measurement survey showed decreasing levels of hope for the future, higher levels of alcohol consumption, and a lower sense of connection to and pride regarding the LGBTQ community. But interestingly, they also reported a lower sense of minority stress.	(1) MH

Striegan (2020)	Queer individuals	Germany	Blog post	Fears of many queer individuals concern travel and contact restrictions, which often exclude rainbow families. Thus, many queer individuals are forced to live with others who do not know about their sexual identity and act abusive or rejective.	(1) MH (2) PH (3) SEC
Suen et al. (2020)	Lesbian, gay, and bisexual individuals (LGB) (n=857)	China	Online survey study	Nearly one-third of the participants met the clinical criteria for depression (31.5%) and generalized anxiety disorder (27.9%). The numbers had increased in comparison to previously collected data. LGB individuals who were younger and had a lower socioeconomic status reported more daily hassles and financial difficulties during the Coronavirus pandemic.	(1) MH (3) SEC
Torres et al. (2020)	Men who have sex with men (MSM) and transgender/non-binary individuals (n=3486)	Brazil	Online survey study	Maintaining social distancing seemed more challenging for MSM and TGNB individuals. Socioeconomic and racial disparities were associated with lower compliance with social distancing among these groups. TGNB populations reported more mental health problems and challenges in accessing health care than cisgender MSM.	(1) MH (3) SEC
van der Miesen et al. (2020)	Transgender and gender non-conforming (TGNC) individuals	n.a.	Guest Editorial	The deferral of gender-affirming care depicted a risk for the mental health of TGNC individuals, as pre-pandemic studies showed that such treatments improve the physical and mental health of TGNC adults and youth. Together with the socioeconomic difficulties and the lack of attention on TGNC rights, the Coronavirus pandemic threatened TGNC communities to a larger extent.	(1) MH (2) PH (3) SEC
Wang et al. (2020)	Transgender individuals	China	Comment	Transgender individuals faced novel challenges through the Coronavirus pandemic, especially regarding health care and psychological well-being. Therefore, there was a need to consider this group specifically (esp., hormone interventions, and gender-affirming surgeries).	(1) MH (2) PH
Whittington et al. (2020)	Lesbian, gay, bisexual, transgender, and queer (LGBTQ) individuals	US	Research Brief	LGBTQ individuals are at a heightened risk of experiencing economic and health difficulties than non-LGBTQ individuals. Both youth and adults of LGBTQ communities face unique challenges.	(2) PH (3) SEC

Notes. Mental health (MH), physical health (PH), and socioeconomic circumstances (SEC).

Supplemental Figure 1*PRISMA Flow Chart*