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Title: COVID-19 related mental health difficulties among marginalized populations: a literature review

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Abstract

Background: The COVID-19 pandemic has had negative consequences on the mental health of the population, which has been documented. Marginalized groups, that are at risk of poor mental health overall, have been particularly impacted.

Objective: The purpose of this review is to describe the mental health impact of the COVID-19 pandemic on marginalized group (that is persons who are socio-economically disadvantaged, migrants and members of ethno-racial minorities, experience homelessness) and identified interventions which could be well-suited to prevent and address mental health difficulties.

Methods: We conducted a scoping review of systematic reviews on mental health difficulties since the beginning of the COVID-19 epidemic and appropriate interventions among marginalized groups published from January 1st 2020 up to May 2, 2022, using Google Scholar and PubMed (MEDLINE).

Results: Among 792 studies on mental health difficulties among members of marginalized groups identified by keywords, 17 studies met our eligibility criteria. 12 systematic reviews examining mental health difficulties in one or several marginalized groups during the COVID-19 pandemic and 5 systematic reviews on interventions that can mitigate the mental health impact of the COVID-19 pandemic were retained in our scoping review.

Conclusion: The mental health of marginalized groups was severely affected during the COVID-19 pandemic. Most frequently reported mental health difficulties included symptoms of anxiety and depression. Additionally, there are interventions that appear effective and well-suited for marginalized populations, which should be disseminated on a large scale to mitigate the psychiatric burden in these groups and at the population level.

Impact statement

Marginalized populations – including persons who are socio-economically disadvantaged, migrants and members of ethno-racial minorities, experience homelessness have taken an important public health toll because of the COVID-19 epidemic. In particular, they seem to have especially high levels of symptoms of anxiety and depression, which deserve special attention from health professionals and public health decision makers. There are potentially effective interventions that can help target marginalized groups, and should be made widely available to limit the mental health burden in this group.

1. Background

Since the end of 2019, the COVID-19 pandemic has had detrimental consequences worldwide in terms of morbidity and mortality, has weakened healthcare systems, and has led to the implementation of preventive measures which were disruptive in terms of social and economic life including lockdowns, workplace and school closing as well as other restrictions in daily activities (WHO, 2020; OECD, 2021). These aspects of the COVID-19 pandemic have resulted in a significant deterioration of population mental health (Santomauro & al, 2020; Fiorillo & al, 2020).

This situation was not entirely unexpected. Previous epidemics such as H1N1, MERS, Sars-Cov-1 and Ebola had highlighted the risk of an increase in levels of anxiety, depression, and post-traumatic stress disorder (Zürcher & al, 2022; Park & al, 2020), particularly among frontline health care workers (Chigwedere & al, 2021; Yuan & al, 2021; Magnavita & al, 2021). Yet, the COVID-19 pandemic had a much broader scope, and in addition to healthcare workers, women, young people as well as persons experiencing chronic mental and physical disorders have also found to be at increased risk of psychological distress, as well as of symptoms of anxiety and depression (Chigwedere & al, 2021; Salari & al 2021; Panchal & al, 2021). Several authors have suggested that the COVID-19 pandemic should be considered as a new source of mental health trauma (Adhanom Ghebreyesus, 2020; Bridgland et al., 2021). Moreover, different marginalized groups experienced particularly high increases in rates of psychiatric disorders, including persons who experience socioeconomic disadvantage, the homeless, migrants and members of ethno-racial minority groups. These groups have disproportionately suffered from the direct and indirect impacts of the COVID-19 pandemic, in terms of health as well as economic and social impact (Green & al, 2021; Wachtler & al, 2020). Moreover, inequalities in mental health exacerbated by the COVID-19 pandemic could cause further socioeconomic disadvantage in the foreseeable future. Additionally, marginalized groups tend to experience difficulties in accessing standard healthcare (Wachtler & al, 2020), which calls for innovative interventions. Prior systematic reviews and meta-analyses of the mental health impact of COVID-19 have extensively summarized findings on levels of psychological distress in the general

population and among health care workers (Chigwedere & al, 2021; Yuan & al, 2021; Magnavita & al; Yuan & al, 2021; Zücher & al, 2020), however to date there was no overview of the situation among marginalized groups. There is also evidence that in-person as well as online psychosocial interventions can be effective in reducing levels of stress, anxiety, depression and insomnia exacerbated by the COVID-19 pandemic (Ye, Li, et Zhu 2022; Lekagul et al. 2022). The aim of this scoping review is to describe current evidence regarding the levels of psychological distress and psychiatric disorders among persons belonging to marginalized groups in the context of the COVID-19 pandemic, as well as promising interventions well-suited for these populations. Given the large number of studies recently published in this area and in order to analyse the most rigorous evidence, we focused our review on systematic reviews and meta-analyses.

2. Methods

Marginalized groups considered in this review are: persons who experience socioeconomic disadvantage (i.e. low income, low educational level, a low-grade occupation, or unemployment), migrants and persons belonging to an ethno-racial minority group, and persons who experience homelessness. Regarding interventions, we included all studies describing programs which could mitigate the mental health impact of the COVID-19 pandemic among marginalized groups. We defined mental health outcomes as participants' overall mental health, as well as symptoms of anxiety, depression, stress, and psychological distress, which are the most frequent psychological difficulties in the general population. Additionally, we considered all interventions aiming to help persons cope with psychological distress during the COVID-19 pandemic.

To identify articles examining rates of psychological distress as well as psychiatric disorders among marginalized groups in the context of the COVID-19 pandemic, we proceeded as follows. An electronic search was subsequently conducted in Google scholar and PubMed between April 8, 2022 and May 2, 2022 to identify systematic reviews and/or meta-analyses published after march 2020. Using Boolean combinations (AND, OR, NOT), the following research terms were used: "COVID-19";

“SARS-CoV-2”; “coronavirus”; “vulnerable group”; “vulnerability”; “group at high-risk”; “marginalized”; “inequality”; “income loss”; “low-income”; “household income”; “socioeconomic disadvantaged”; “unemployment”; “homeless”; “people experiencing homelessness”; “migrant”; “born abroad”; “ethnic minority”; “minority”; “ethnic group”; “ethno-racial minority”; “mental health”; “mental health disorder”; “depression”; “anxiety”; “psychological distress”; “suicide”.

Due to the dearth of current reviews on mental health interventions specifically designed for/targeted at marginalized groups, we decided to broaden the scope of the search to all intervention studies aiming to reduce mental health difficulties during the COVID-19 pandemic. Specifically the terms searched for in Google scholar and PubMed were: “digital intervention” ; “intervention” ; “prevention” ; “COVID-19” ; “SARS-CoV-2”; “coronavirus”; “mental health” ; “mental disorder”; “depression”; “anxiety” ; “psychological distress”; “suicide” ; “decrease”; “reduction”.

Studies included in our review had to fulfil the following criteria: 1) systematic review and/or meta-analysis; 2) focus on mental health outcomes or a mental health intervention; 3) inclusion of at least one of the targeted marginalized groups; 4) implementation during the period of the COVID-19 pandemic; 5) English language. The time range for publication of the selected papers was January 1st 2020 to May 2nd 2022.

Data collection

Data extraction was performed in Excel. The data extraction form relative to systematic analyses on mental health risk of marginalized groups included the following information: 1) authors; 2) journal; 3) date of publication; 4) title; 5) period covered; 6) number of articles included in the review; 7) countries; 8) study design); 9) populations studied; 10) mental health outcomes; 11) main results. Whenever possible, we also extracted p-values.

The data extraction form relative to systematic reviews of interventions aiming to reduce the impact of the COVID-19 pandemic on mental health included the following information: 1) authors,

2) journal, 3) setting, 4) characteristics of the studied population, 5) type of intervention, and 6) mental health outcomes.

3. Results

Our search retrieved 792 studies through searching the identified databases. After removing duplicates, we screened the titles and abstracts of the remaining studies. After reading the full text of the remaining studies, 17 studies that met our eligibility criteria.

3.1 Characteristics of studies describing mental health risks among marginalized populations

Overall, we identified 12 systematic reviews examining mental health difficulties in one or several marginalized groups during the COVID-19 pandemic and 5 systematic reviews on interventions that can mitigate the mental health impact of the COVID-19 pandemic. Four systematic reviews also included a meta-analysis. The number of included studies per article ranged from 15 to 294.

The systematic reviews we identified mainly included cross-sectional studies and were mostly based in China or Western industrialized countries (US, UK, France, Italy and Spain). The majority of systematic reviews presented data on the targeted marginalized groups as a subgroup of the population studied, except Corey & al, 2022, Jesline & al, 2021 and Hintermeier & al, 2021 who specifically focused on persons experiencing homelessness, migrants and displaced populations.

A majority of systematic reviews explored a diversity of mental health outcomes including depression (Xiong & al, 2021 ; Gibson & al, 2021 ; Wang & al, 2020 ; Rodríguez-Fernández & al, 2021 ; Filindassi & al, 2022 ; Leung & al, 2022 ; Corey & al ; Hintermeier & al, 2021), anxiety (Xiong & al, 2021 ; Gibson & al, 2021; Wang & al, 2020 ; Rodríguez-Fernández & al, 2021 ; Filindassi & al, 2022 ; Leung & al, 2022 ; Corey & al, 2022 ; Hintermeier & al, 2021 ; Jesline & al, 2021) , post-traumatic stress disorder (PTSD) (Xiong & al, 2020 ; Wang & al, 2020 ; Gibson & al, 2021 ; Rodríguez-Fernández & al, 2021 ; Leung & al, 2022), stress (Xiong & al, 2021 ; Gibson & al, 2021 ; Wang & al, 2020 ; Rodríguez-Fernández & al, 2021 ; Filindassi & al, 2022 ; Leung & al, 2022), suicidal thoughts (Corey &

al, 2022), self-harm, nervousness (Corey & al, 2022 ; Gibson & al, 2021), and well-being (Filindassi & al, 2022 ; Hintermeier & al, 2021). All included systematic reviews presented at least two different mental health outcomes.

Most included studies relied upon participants' self-reports of psychological distress or psychological difficulties, assessed using a variety of scales (for instance the General Anxiety Disorder scale – GAD-7, Beck Anxiety inventory - BAI, Patient Health Questionnaire- PHQ-9, Depression, Anxiety and Stress Scale- DASS, General Health Questionary - GHQ, Hospital Anxiety and Depression Scale - HADS, Perceived Stress Scale - PSS, Self-rating Depression Scale - SDS, and Self-rating Anxiety Scale- SAS).

3.2 Persons experiencing socio-economic disadvantage

Regarding rates of mental health difficulties and psychiatric disorders among persons experiencing socioeconomic disadvantage, we observed the following. Wang & al (2020) reported an elevated prevalence of anxiety (1.21 [1.05–1.40; $I^2 = 86.1\%$]), depression (1.15 [1.03–1.29; $I^2 = 82.0\%$]) and stress (1.15 [1.03–1.29]; $I^2 = 9.0\%$) among persons with a low educational level, compared to those with an intermediate or high educational level across thirty studies. Rodríguez-Fernández & al (2021) also found an increased prevalence of symptoms of anxiety (8.3% to 45.1% in five studies), depression (14.6% to 46.42% in seven studies), stress-related symptoms and PTSD (8.1% to 49.66% in four studies) among persons with a low level of education. Xiong & al (2020) found that persons with a low level of education were more likely to suffer from anxiety (ranging from 6.33% to 50.9% in 11 studies) and depression (ranging from 14.6% to 48.3% in 12 studies), compared to persons with a high level of education. However, in this systematic review, a low level of education was not associated with symptoms of PTSD. Finally, Gibson & al (2021), analysing twenty-eight studies, found that a low level of education was associated with a deteriorated mental health. Conversely, the same systematic review also reported that in five studies a high level of education was associated with worse mental health outcomes and in four studies the level of education was not associated with participants' mental health. Likewise, Finlindassi & al (2021), found a high rate of anxiety among highly-educated groups in two studies. Nevertheless, stress and depression were significantly more

frequent among persons with a low level of education in most studies included in this systematic review (Gibson & al, 2021; Finlindassi & al, 2021; Rodríguez-Fernández & al, 2021 ; Wang & al, 2020 ; Xiong & al, 2020).

Similarly, six studies reported that individuals with a low income were also at increased risk of psychological distress during the COVID-19 pandemic. Wang & al (2020), suggested that members of low-income groups were more likely to suffer from anxiety (1.45 [1.24–1.69; $I^2 = 82.3\%$]), depression (1.56 [1.26–1.92; $I^2 = 85.4\%$]) and stress (1.27 [1.20–1.34]; $I^2 = 0\%$) in comparison with members of higher-income groups. Gibson & al (2021) and Rodríguez-Fernández & al (2021) observed similar findings. Specifically, Rodríguez-Fernández & al (2021), reported elevated levels of symptoms of anxiety (in eight studies), depression (in ten studies) and PTSD (in six studies) among persons with low income. Additionally, Filindassi & al (2022) found higher levels of symptoms of mental distress such as anxiety (in four studies), depression and stress (in three studies) among persons with low income. Xiong & al (2020) showed a positive association between a low-income and the risk of depression in two studies. Leung & al (2022) found a pooled prevalence of 13.0% of psychological distress in the general population, with persons experiencing low income being at high risk. Persons belonging to a low-income group were also at increased risk of experiencing an acute stress disorder.

Across the systematic reviews analysed, there is consensus regarding the association between unemployment and mental health problems the context of the COVID-19 epidemic. Xiong & al (2020) reported that persons who were unemployed were at increased risk of developing depression (prevalence rates across twelve studies ranging from 14.6% to 48.3%) and stress symptoms (prevalence rates across four studies ranging from 8.1% to 81.9%). Leung & al (2022), reported prevalence rates of anxiety ranging from 14% to 32.8% (in six studies) and of depression ranging from 9.5% to 27.8% (in twelve studies) with persons who were unemployed disproportionately affected by these symptoms. Filindassi & al (2022) and Rodríguez-Fernández & al

(2021) also reported elevated levels of symptoms of anxiety, stress and psychological distress among persons who were unemployed. These results corroborate those of the meta-analysis performed by Wong & al (2020): in this analysis persons who were employed had a pooled OR of psychological distress of 0.89 [0.78–1.02; $I^2 = 26.6\%$] in relation to those who were unemployed, highlighting a protective effect of employment. Gibson & al (2021) confirmed this finding. Noticeably, two studies reported by Gibson & al (2021) found that being on temporary leave because of the COVID-19 pandemic was more strongly associated with poor mental health than unemployment. The conclusion of Gibson & al (2021) contrasts with findings of others studies and indicates heterogeneity in the risk of psychological distress according to employment status.

3.3 Migrants and members of ethno-racial minority groups

Four systematic reviews examined levels of psychological distress among persons who are migrant or belong to an ethno-racial minority group, mostly suggesting an elevated risk of mental health difficulties. Gibson & al (2021) reported worse mental health among migrants and members of the Black, Asian and Minority Ethnic (BAME) group in ten studies. Hintermeier & al (2021) examined five studies and reported that 73.5% of migrant workers felt anxiety, depression or perceived stress due to the COVID-19 pandemic, persons originating from South-East Asia being especially impacted. 63.3% of migrant workers reported an increase in negative thoughts, tension, frustration, irritability and fear of death. Two studies reported significantly elevated levels of distress among migrants (Hintermeier & al, 2021). Tsamakidis & al (2021) suggested that deterioration in mental health among migrants arises from disadvantaged living conditions, which also contribute to an increased risk of COVID-19 infection. Similarly, Jesline & al (2021) also suggested that precarious living conditions in migrant populations contribute to high levels of psychological difficulties experienced in this group. This marginalized population, experiencing multiple forms of social vulnerability, has elevated odds of experiencing various negative outcomes: suicidal tendencies, self-harm, loneliness, anxiety, and psychological distress.

However, two studies analysed by Gibson & al (2021) did not report elevated rates of mental health difficulties among members of ethno-racial minority groups. Furthermore, at least one study conducted in the U.S. found that persons who identified as White Caucasian had higher levels of psychological disorders during the COVID-19 pandemic than those who identified as Asian or Hispanic. Although members of migrant and ethno-racial minority groups were overall at significantly higher risk of experiencing mental disorders, it is important to note that the extent to which this risk is elevated varies across different groups and settings.

3.4 People experiencing homelessness

Corey & al (2022) conducted an exhaustive scoping review regarding issues affecting persons experiencing homelessness in the context of the COVID-19 pandemic. Five original studies revealed poor mental health in this group, with a 32% and 49% prevalence of symptoms of anxiety and of feelings of loneliness, respectively. Women experiencing homelessness and unstable housing appear particularly likely to have high levels of anxiety (42%) and depression (55%) according to nine studies. Moreover, Corey & al (2022) demonstrated that the COVID-19 pandemic induced a deterioration in the mental health of persons experiencing homelessness. Additionally, two of the included studies indicated a deterioration of mental health (39% of persons) throughout the COVID-19 pandemic and a rise in thoughts of self-harm and suicide (up to 21%). To the contrary, three studies summarized in the review conducted by Corey & al (2022), suggested improvements in mental health and well-being among persons experiencing homelessness during the COVID-19 pandemic. These studies conducted in Italy and Ireland were performed in night shelters that provided services 24-hours a day, seven days a week, which could have mitigated the impact of the COVID-19 pandemic. Another study, analyzed by Corey & al (2022) and conducted among persons experiencing homelessness in France, indicated that 24% had unmet mental health needs. Several barriers to care were pointed out: barriers in access as well as insufficient efficacy of telephone and online services.

Three additional reviews indicated high levels of psychological distress among persons experiencing homelessness (Rajkumar, 2020; Tsamakis & al, 2020; Uphoff & al, 2021).

3.5 Interventions aiming to reduce the risk of mental health difficulties in marginalized groups

Different types of tools appear to be effective in addressing individuals' psychological needs and may be well-suited for marginalized populations in pandemic time.

Bonardi & al (2022) performed a review of 9 randomised controlled trials. Three were designed during the COVID-19 pandemic and included a racially and ethnically diverse sample. One trial tested the effects of a 4-week lay person-delivered intervention consisting of telephone calls to a group of homebound older adults in the United States receiving home meal services through the Meals on Wheels program. The investigators trained university students in empathetic conversational skills (e.g., prioritizing listening, eliciting conversation on topics of interest to participants) and each caller supported 6 to 9 participants. Calls were performed on 5 days during the first week and 2 to 5 days in the following three weeks and lasted less than 10 minutes. The study observed effects on participants' symptoms of anxiety, depression, overall mental health, and loneliness. A second trial tested the efficacy of multifaceted videoconference-based 4-week group intervention tested in 12 countries and aiming to reduce levels of anxiety, depression, fear and loneliness among persons with rare autoimmune diseases, systemic sclerosis, or scleroderma. The third study showed the effect of a self-guided online cognitive behavioural intervention tested in the general population of Sweden. Regarding these three interventions, COVID-19-specific anxiety and general anxiety symptoms were reduced by an SMD (Standardized Mean Difference) of 0.31 (95% CI, 0.03 to 0.58) to 0.74 (95% CI, 0.58 to 0.90) compared to no intervention or a waitlist. Depressive symptoms were also reduced [SMDs between 0.31 (95% CI, 0.05 and 0.56 (95% CI, 0.22 to 0.55)].

Damiano & al (2021) gathered 125 qualitative studies addressing preventive or interventional strategies to improve mental health and three RCTs adapted to the context of the COVID-19 pandemic. Most involved psychological/psychiatric interventions (12.8%), technological/ media interventions (7.2%) (e-health or digital or telephone-based interventions), psychological/psychiatric interventions associated with technology/media and education (5.6%), self-care (exercise, eating

habits, leisure time, sleep hygiene) and governmental programs (5.6%). Using data from three RCTs with a total of 128 participants, the meta-analysis highlighted improvements in symptoms of anxiety, depression, sleep quality, hostility, and somatization; (SMD = 0.87 [95%CI 0.33-1.41], $p < 0.001$, $I^2 = 69.2\%$). The first trial was a 1-day group debriefing technique based on based on Asian philosophies and traditional Chinese medicine applied to persons who experience a chronic disease. The two other trials involved Internet-based interventions focusing on muscle and breathing relaxation for COVID-19 patients (30 min daily for 5 days; 2-week trial of daily 50-minute practices of breath relaxation techniques).

Rauschenberg & al (2021) and Strudwick & al (2021) found some evidence of effectiveness of digital general public interventions, which could be used in the context of the COVID-19 pandemic. According to these authors, e-health (electronic health) and m-health (mobile health) interventions decreased levels of symptoms of common mental disorders such as anxiety and depression during the COVID-19 pandemic. Additionally, these analyses appear to be cost-effective, although the number of studies is limited. Strudwick & al also showed evidence that digital interventions are scalable and well-suited to the COVID-19 pandemic. These interventions had a positive impact on the risk of anxiety, depression and PTSD. Notably, the authors included interventions directly designed for members of ethno-racial minority groups (3 articles) or groups experiencing socioeconomic disadvantage (11 articles). The number of interventions tested in these marginalized groups is low but this review showed the possibility of successful targeting. The key barriers to the implementation of such interventions is the difficulty to use technology, mistrust of technology, or difficulty establishing a therapeutic alliance with health care providers due to technology-related challenges.

[4. Discussion](#)

This scoping review summarizes data on the impact of the COVID-19 pandemic on the mental health of persons belonging to marginalized groups. Indeed, socioeconomic disadvantage, as measured by a low educational level, low income or unemployment is linked with the occurrence of mental health

disorders such as anxiety, depression and acute stress. Similarly, migrants and persons belonging to ethno-racial minorities or experiencing homelessness are also at increased risk of psychological distress. Regarding actions that mitigate psychological distress, we found no reviews regarding specific interventions aiming to improve mental health during COVID-19 pandemic in marginalized groups. Yet, we found evidence of interventions that can be relevant for persons who are often excluded from standard health care. The systematic reviews we examined point to improvements in the prevention and care of mental health difficulties among members of marginalized groups which should be the focus of future research testing innovative community-based designs.

4.1 Limitations

Our review has several limitations. First, we searched for relevant articles in Pubmed and Google Scholar, and may have bypassed some relevant publications. Nevertheless, Google Scholar covers multiple disciplines and fields, and it is unlikely that we missed important publications in the field. Second, the number of systematic reviews focused on the mental health of members of marginalized groups is limited, unlike health care workers, children, women, older people and people with pre-existing mental health disorders who have been widely studied (Vizheh & al, 2020; Jones & al, 2021; Thibaut & Van Wijngaarden-Cremers, 2021; Sepúlveda-Loyola & al, 2020; Hards & al, 2021). Third, there is a lack of variety among studies presented in the systematic reviews we examined. Most studies were cross-sectional, conducted online and come from industrialized countries such as China, U.S or European countries. Therefore, there is need to additional high quality studies in the future. A notable systematic review performed by Jesline & al (2021) focused on India and involved migrants, giving some information about the situation in a middle-income country. Fourth, marginalized groups were not equally represented in the scientific literature: we found few reviews dedicated to persons experiencing homelessness. Future research should take care to involve designs which make it possible to study marginalized groups which are often excluded from standard designs.

4.2 Interpretation of study findings

Our findings imply a degree of universality in the relationship between membership in a marginalized group and mental health difficulties in the context of the COVID-19 pandemic in Western countries. A relevant element, which was not discussed in the systematic reviews we analysed, is that marginalized groups may have experienced high levels of mental health difficulties prior to COVID-19 (Silva & al (2016); Businelle & al (2014)). The COVID-19 outbreak may have exacerbated these pre-existing difficulties and highlighted the mental health needs in these high-risk groups. It is also relevant to point out that marginalized group may cumulate different forms of disadvantage (Wright & al, 2021). For example, a study conducted by Scarlett & al. (2021) shows that among persons experiencing homelessness, being unemployed was associated with the likelihood of depression alongside migrant status.

Interestingly, The Covid-19 pandemic led to unprecedented levels of resources for research on mental health. For example, the European *Preparedness of health systems to reduce mental health and psychosocial concerns resulting from the COVID-19 pandemic* (the RESPOND project) aims to identify vulnerable groups at highest risk of mental health problems and test an innovative stepped care intervention programme (Self-Help Plus and Problem-Management Plus developed by the World Health Organisation). The RESPOND project also examines the cost-effectiveness of this programme to identify effective strategies to improve health system preparedness in the event of a future pandemic (RESPOND project, 2022). The RESPOND project aims to answer to several issues raised in this review: the need for screening tools which make it possible to identify groups at risk of suffering of psychological issues and the ways of addressing them, as indicated by Mendes-Santos & al (2020); the necessity to test the use of digital and in-person psychosocial support interventions, as pointed out by Rauschenberg & al (2021). The intervention being tested in the context of the RESPOND trial may be well-suited for populations who are marginalized and have difficulty accessing mental healthcare, and this aspect will be specifically examined. Finally, our scoping review reveals the lack of data on marginalized populations in low- and middle-income countries, and the need for additional research in these settings.

Nevertheless, despite existing gaps in knowledge, several recommendations can be made to health care professionals, on the basis on our findings as well as existing literature. First, given the increase in mental health problems and special vulnerability identified among persons who experience socioeconomic disadvantage, homelessness, or who are migrant, screening for symptoms of anxiety and depression in these groups should be disseminated as much as possible. Second, given difficulties in access to mental health care among members of socioeconomically marginalized groups, there is need to develop innovative interventions to prevent but also address symptoms of anxiety and depression, are cost-effective and can be widely disseminated(Stewart et Appelbaum, 2020). In the aftermath of the COVID-19 pandemic, when the economic consequences start being evaluated, mental health professionals also need to be present on the public scene and in face of decision makers to indicate that even if the number of COVID-19 infections and death have decreased, the psychiatric consequences are far from over, particularly among marginalized groups, and will require budgetary and personnel commitments to be addressed(McDaid, 2021).

5. Conclusion

The mental health of marginalized groups was severely affected during the COVID-19 pandemic. Symptoms of mental health disorders reported and studied predominantly included anxiety, depression and stress. Public authorities should be aware of the role of socioeconomic disadvantage, being a migrant, being a minority and/or being homeless with regard to poor mental health, especially during a pandemic such as COVID-19. This should alert healthcare providers and policy makers as to the need regarding specific support required by these groups. Mental health interventions should also better target these marginalized groups in order to mitigate psychological distress. Indeed, interventions mitigating mental health distress in times of crisis exist and should be developed and rendered appropriate to marginalized populations. Although marginalized groups were disproportionally impacted, few studies and interventions specifically target this group. More targeted studies and interventions are needed to reduce social inequalities with regard to mental

health difficulties in the aftermath of the COVID-19 pandemic and to prepare possible future outbreaks.

Table 1. Systematic reviews examining the mental health of marginalized groups in the context of the COVID-19 pandemic: 2020-2022.

Author, (year)	Journal	Year of publication	Title	Period covered	Number of studies included	Countries studied	Design	Study design included	Marginalized groups studied	Outcomes studied	Main results
Socio-economically disadvantaged groups											
Xiong & al (2021)	Journal of Affective Disorders	2021	Impact of COVID-19 pandemic on mental health in the general population: A systematic review		19	Different countries (China=10; USA/Western Europe=6; others=2)	Systematic review		Employment status	Depression (DBI II, SDS, CES-D), Anxiety (BAI, GAD-7, SAS) . DASS-21, HADS, PTSD,	In general, mental health has deteriorated during the COVID 19 pandemic. The unemployed have elevated levels of depression and anxiety
Gibson & al (2021)	Canadian Psychology	2021	The impact of inequality on mental health outcomes during the COVID-19 pandemic: a systematic review		117	Different countries - (China=47; USA=14)	Systematic review	Cross sectional studies (n=112) cohort studies (n=4) case control studies (n=1)	Income; Employment and occupation status; Migrant status and ethnicity	Worry / nervousness / Anxiety - Depression - Stress / PTSS / PTSD	Participants with low income, unemployed, low occupational grade, migrant or belonging to ethnic minority groups at high risk of worry/anxiety/depression.
Wang & al (2020)	Plos One	2020	Factors associated with psychological distress during the coronavirus disease 2019 (COVID19) pandemic on the predominantly general population: Asystematic review and metaanalysis	12/2019–15/07/2020	68	Western Pacific Region (n=41; China= 39; Japan=1; Vietnam=1) ; European region (n=16 ; Italy=6; UK,Spain, Turkey=2; Slovenia, Albania, France, Ireland=1) Region of Americas (n=4; UU=3 Colombia =1) Eastern Mediteranean region (n=4; Iran, Israel, Saudi Arabia=1) ; South-East Asia Region (n=2; India) ; Africa (n=1, Tunisia)	Systematic review and a meta-analysis	Cross sectional studies	SES	Anxiety, depression, distress, stress, post-traumatic stress, and insomnia	Participants with low SES have higher levels of mental health disorders.
Rodríguez-Fernández & al (2021)	International Journal of Environmental Research and Public Health	2021	Psychological effects of home confinement and social distancing	12/2019 onward	26	China (n=6); Spain (n=3); Germany (n=2); UK (n=2); Saudi Arabia (n=1);	Systematic review	Cross-sectional (n=24) and longitudinal studies (n=2)	Education, socioeconomic disadvantage	Anxiety, depression, stress, PTSD	Participants with low education or who experience socioeconomic disadvantage have high levels of anxiety,

			derived from COVID-19 in the general population—a systematic review			Brazil (n=1); India (n=1); South Korea (n=1); Pakistan (n=1); Jordan (n=1); Italy (n=1); Vietnam (n=1); Turkey (n=1); Bangladesh (n = 1); US (n = 1); multiple countries (n=2)					depression and stress.
Finlindassi & al (2022)	COVID	2022	Impact of the COVID-19 first wave on psychological and psychosocial dimensions: a systematic review	12/2019-6/2020	294	30 different countries	Systematic review	Not reported	Employment status, Income, Education, SES	Anxiety, depression, stress, other mental health outcomes, social support, coping	Participants with low income and low levels of education found to have highest levels of anxiety and depression.
Leung & al (2022)	Transnational Psychiatry	2022	Mental disorders following COVID-19 and other epidemics: a systematic review and meta-analysis	Until 9/12/2020	255 (15 in the meta-analysis)	50 different countries (China n=64)	Systematic review and a meta analysis	Not reported	Employment status, Income, Education	Anxiety, depression, Post-traumatic stress disorder, Psychological distress, acute stress, suicidality	Low-income groups, persons with low education severely impacted in terms of mental health by the sanitary crisis.

Author, (year)	Journal	Year of publication	Title	Period covered	Number of studies included	Countries studied	Design	Study design included	Marginalized groups studied	Outcomes studied	Main results
People Experiencing Homelessness											
Corey & al (2022)	International Journal of Environmental Research and Public Health	2022	A scoping review of the health impact of the COVID-19 pandemic on persons experiencing homelessness in North America and Europe		96	US (n=51); UK (n=9); France (n=9); Canada (n=6); Spain (n=5), Italy (n=4); Germany (n=4); Denmark (n=2); Belgium (n=2); Multiple (n=2); Slovakia (n=1); Ireland (n=1)	Scoping review	Cross-sectional (n=30); unspecified (n=7); longitudinal (n=4); mixed-methods (n=4); pilot (n=4); case study (n=4); qualitative (n=3); report (n=3); case report (n=2); case series (n=2); retrospective (n=2)	Persons experiencing homelessness	Mental health (anxiety, depression, loneliness, nervousness, suicidal thoughts, psychological distress)	Persons experiencing homelessness are at high risk of mental health difficulties: high rates of anxiety, depression, loneliness.
Rajkumar (2020)	Asian Journal of Psychiatry	2020	COVID-19 and mental health: A review of the existing literature	Unreported	28	China (n=18); Iran (n=2); Canada (n=2); Brazil (n=1); Singapore (n=1); India (n=1); Japan (n=1); no specified (n=2)	Literature review	Cross-sectional studies (n=4); letters/commentaries (n=24)	Persons experiencing homelessness, migrant workers	Anxiety, depression, sleep disorders	The COVID-19 pandemic had significant a impact on mental health of persons who are homeless.
Tsamakis & al (2021)	Experimental and Therapeutic Medicine	2021	COVID-19 and its consequences on mental health	Unreported	Unreported	Unreported	Review	-	Persons experiencing homelessness, refugees	Mental health disorders (Anxiety, depression, stress, PTSD)	Impact of the COVID-19 pandemic on mental health of persons who are homeless, but the evidence is limited.
Uphoff & al	PLOS ONE	2021	Mental health among healthcare workers and other vulnerable groups during the COVID-19 pandemic and other coronavirus outbreaks: A rapid systematic review	7/2020 – 8/2020	25	Different countries	Rapid systematic review	Empirical studies (n=10); cross sectional studies (n=4); Experimental or observational studies with a control group (n=1) ; Qualitative studies (n=1)	Persons experiencing homelessness (n=1)	Any mental health condition, quality of life, suicide or attempted suicide	Lack of evidence regarding the mental health of persons who are homeless.

Author, (year)	Journal	Year of publication	Title	Period covered	Number of studies included	Countries studied	Design	Study design included	Marginalized groups studied	Outcomes studied	Main results
Migrants, Ethno-racial minorities											
Gibson & al (2021)	Canadian Psychology	2021	The impact of inequality on mental health outcomes during the COVID-19 pandemic: A systematic review		117	Different countries (n=28)/ China=47 ; USA=14	Systematic review	Cross sectional studies (n=112); cohort studies (n=4); case control studies (n=1)	Education; income; employment and occupation status; migrant status and ethnicity	Worry / nervousness / anxiety - Depression - Stress / PTSS / PTSD	Migrant participants at risk of mental health difficulties. One study found no association; another study found worse mental health among persons who self-identified as White.
Hintermeier & al (2021)	Journal of Migration and health	2021	SARS-CoV-2 among migrants and forcibly displaced populations: a rapid systematic review	Since 12/2019	15	High income countries (n=7); upper or low middle-income countries (n=5); low-income countries (n=3)	Rapid systematic review		Refugees, asylum seekers (n=5); migrant workers (n=4); international students (n=2); migrants with no further specification (n=2)	Anxiety, depression (PHQ2; GAD2, PSS-4); social well-being, loneliness	Among migrants and displaced persons, negative impacts of the COBID-19 crisis.
Jesline & al (2021)	Humanities and Social Sciences Communications	2021	The plight of migrants during COVID-19 and the impact of circular migration in India: a systematic review		15	India	Systematic review		Migrant workers	Loneliness; anxiety; irritability;depression	One study reported a high prevalence of loneliness and depression among migrants.
Tsamakis & al (2021)	Experimental and Therapeutic Medicine	2021	COVID-19 and its consequences on mental health	Unreported	Unreported	Unreported	Review	-	Persons experiencing homelessness; refugees	Mental health disorders (Anxiety, depression, stress, PTSD)	Limited information on migrants.

Table 2. Interventions aiming to address mental health needs in the context of COVID-19 suitable for marginalized groups.

Authors, (year)	Journal	Settings/purpose of the review	Characteristics of the study/ study population	Type of intervention	Outcomes/Recommendations/ Conclusions
Interventions and recommendations					
Strudwick & al(2021)	Journal of Medical Internet Research	Digital interventions that could be used to support the mental health.	Description of different digital interventions suitable in the context of the COVID-19 pandemic.	Mobile app (31) and Internet-based resources (114)	A variety of digital interventions were identified. The authors suggested the need to develop targeted intervention and evaluate their cost-effectiveness. The authors also point out that few apps addressed equity-related considerations.
Bonardi & al (2021)	The Canadian Journal of Psychiatry	Randomized Controlled Trial of an Internet base program	9 eligible trials: 3 interventions designed specifically in the context of mental health challenges during the COVID-19 pandemic, 6 trials of standard interventions (e.g., individual or group therapy, expressive writing, mindfulness recordings) minimally adapted for COVID-19	Internet-based mental health programs for the general population and lay- or peer-delivered interventions for marginalized groups may be effective and scalable in the context of COVID-19.	A self-guided Internet intervention reduced both anxiety and depression symptoms, consistent with a growing body of evidence that Internet-based psychological interventions may be effective as first-line strategies for many people scalable in the context of the Covid-19 crisis.
Rauschenberg & al (2021)	Journal of Medical Internet Research	Gathering of a theoretical and empirical base, user perspective, safety, effectiveness, and cost-effectiveness of digital interventions related to public mental health provisions (i.e. mental health promotion, prevention, and treatment of mental disorders) that may help to reduce the consequences of the COVID-19 pandemic.	Analysis of systematic reviews and meta-analyses that investigated digital tools for mental health promotion, prevention, and treatment of mental health conditions and determinants likely affected by the COVID-19 pandemic.	Telemedicine, e-health , m-health	The scientific literature shows that digital interventions can be effective in the context of the COVID-19 pandemic to reduce symptoms of depression and anxiety. However, there is a lack of cost effectiveness studies.
Damiano & al (2021)	Brazilian Journal Psychiatry	Review of the most common mental health strategies aimed at alleviating and/or preventing mental health problems in the context of the COVID-19 pandemic.	Preventive or interventional strategies for mental health symptoms in individuals during coronavirus pandemics.	One-day group debriefing technique, Strength-Focused and Meaning Oriented Approach for Resilience and Transformation (SMART), based on Asian philosophies and traditional Chinese medicine applied for people with chronic diseases one month after the SARS pandemic (1RCT); progressive muscle relaxations (2 RCT)	The present review found few clinical trials assessing the effectiveness of interventions to improve the mental health of individuals during the COVID-19 pandemics. Qualitative articles identified highlight the potential effectiveness of digital interventions.
Mendes-santos & al (2020)	Frontiers	This review presents an overview of initiatives developed to address the challenges faced by the mental healthcare system, and discusses how the timely implementation of a comprehensive digital mental health strategy, coupling research, education, implementation, and quality assessment initiatives, might buffer the impact of the COVID-19 pandemic.	Description of innovative psychosocial intervention strategies in Portugal.	Recommendations in these domains: Internet research, screening and tracking tools, tele-counselling and psychotherapy, Internet interventions, comprehensive e-Learning and e-supervision Initiatives.	The authors described an initiative in Portugal and recommended ways to improve the mental health care of Portuguese people during the COVID-19 pandemic.

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[Author contribution statement](#)

MM had the original idea for the study and discussed it at length with all authors. CC conducted the literature review, synthesized the studies found and drafted an initial version of the manuscript. MM finalized the manuscript, which was read, revised and approved by all authors.

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[Conflict of interest statement](#)

The authors report no conflict of interest.

[Data availability statement](#)

All data used in this publication are available upon request.