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Insights from the EQUALS4COVID19 study on migrant mental health in Portugal: a cross-sectional mixed-methods approach

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Abstract

Background The COVID-19 pandemic and related disruptive consequences in the economic, health, and educational sectors have impacted people's lives, contributing to a context of increased economic and social vulnerability. The pandemic has revealed and accentuated social inequalities and discrimination based on racial or ethnic origin. This study aimed to contribute to the promotion of the mental health and well-being of migrant populations living in Portugal via the definition of an analytical framework and recommendations emerging from the EQUALS4COVID19 project.

Methods To gather information on the impact of the COVID-19 pandemic and resilience determinants among immigrants, a mixed-methods approach was implemented in 2022, combining a cross-sectional survey targeting immigrant adults in Portugal, focus groups with immigrants, focus groups with healthcare professionals, and in-depth individual interviews with stakeholders involved in the implementation of measures related to mental health and well-being during the pandemic. The analysis followed an integrated framework; quantitative data informed the script of qualitative data collection methods, and qualitative analysis informed the reinterpretation of quantitative data.

Results The survey with 604 Brazilian and Cape Verdean immigrants revealed that gender (being a woman) was associated with both psychological distress and depression-related symptomatology and that the perception of discrimination was a major risk factor for psychological suffering, while perceived social support and individuals' resilience characteristics were protective factors. Qualitative data provided deeper insights into these findings, revealing the ways mental health is affected by social structures, such as gender and ethnic hierarchies. Migrants tend to work in precarious jobs requiring physical presence, which, together with dense housing conditions, puts them at higher risk of infection. The deterioration of the economic conditions of the general population has also increased the perception of ethnic-racial discrimination, which was found to be related to the increase in insecurity and anxiety-related symptomatology among the migrant population. Newly arrived migrants, with reduced support networks,

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experienced a greater sense of insecurity as well as concern and anguish regarding relatives who live far away, in their home country. Migrant women reported greater family-related distress, including work-life balance problems.

Conclusions Proposals to address mental health inequalities should be considered in the context of the necessary global changes both at the societal level and in the delivery of mental health services. Additionally, they should be considered with the active involvement of migrants, families, and communities in the design and delivery of mental health promotion and care processes.

Keywords COVID-19 pandemic, Mental health, Social determinants of health, Resilience, Social support, Discrimination

Background

The World Health Organization (WHO) declared coronavirus disease 2019 (COVID-19) a Public Health Emergency of International Concern (PHEIC) on 30 January 2020. Since then, the pandemic has reached the level of a humanitarian crisis, with more than seven hundred million confirmed cases of SARS-CoV-2 infection and approximately seven million deaths attributed to COVID-19 reported globally to date [1]. The impact of COVID-19 has reached far beyond the medical and research community. Its socioeconomic, educational, and global consequences contributed to a framework of increased economic and social vulnerability. Estimated to be a main determinant of the worst economic crunch since the Great Depression of 1930, the COVID-19 pandemic was likely to cause much greater hardships than any other health problem phenomena, accentuating the social exclusion of the most vulnerable groups, health inequalities, and increasing mental problems [2–9].

Alongside the decrease in socioeconomic resources and mounting public health issues, societies worldwide have experienced dramatic growth in mental health and well-being concerns. The COVID-19 pandemic has unveiled the paramount impact of social determinants on health outcomes, including mental health. According to the WHO, during the first year of the COVID-19 pandemic, the global prevalence of anxiety and depression symptoms increased by a massive 25% [10]. Similarly, another study found that adults in the early months of the pandemic were more than three times as likely to screen positive for depression or anxiety symptomatology, compared to 2019 [11].

These factors led to positioning the pandemic as a social disease that requires integrated health, economic, and social responses [12]. To this day, the pandemic impact on social and economic structures continues to exacerbate mental health symptoms across vulnerable groups, including the migrant population. Although previous studies have alerted that high prevalence of depression and anxiety existed well before the pandemic across different migrant populations, this health-related crisis aggravated this issue and intertwined with factors such as stress, job insecurity, chaotic environment, ethnic-racial discrimination, and socioeconomic inequities [12–14]. A study conducted by Gama et al. (2022) found that migrants in Portugal (especially older, female, less educated and with lower-income migrants) reported worsened health and financial condition as a result of the pandemic [15].

Furthermore, a report on mental health from the Centers for Disease Control and Prevention, covering the period pre- and post-COVID-19, from June 2019 to June 2020, found a significant increase in mental disorders, with 40% of adults experiencing symptoms of anxiety and/or depression-related disorders [16]. Furthermore, these mental disorders are disproportionately pronounced in marginalized communities, with existing and enduring inequities causing stress on socioeconomic minorities [17]. A clarifying example is the study by Ettman et al., who examined the prevalence of symptoms of depression before and during the pandemic and their important mental health implications [18]. The authors found higher prevalence rates of depression-related symptoms across all severity levels during the COVID-19 pandemic compared with rates of depression before the pandemic in the US. A recent study synthesized evidence on the effect of the pandemic on mental health and mental health care in high-income European countries, showing that the prevalence of some mental health problems increased during the pandemic [19]. Other studies found that for certain population groups, such as lower-income workers, underserved communities, or people with higher stress levels associated with the pandemic, symptoms of depression were even more pronounced. Other studies also found that vulnerable groups, including ethnic minorities, are more likely to experience suboptimal patient outcomes and mental health harms associated with the COVID-19 pandemic [20]. Conversely, the use of mental health services declined at the onset of the pandemic, and despite the increase in the offer of mental health care services later in the pandemic, utilization rates did not return to pre-pandemic levels.

While mental health became a major concern during the COVID-19 outbreak, the impact on migrants' mental health has still been relatively neglected [21]. During the COVID-19 pandemic, immigrant communities

experienced worsening socioeconomic conditions and employment losses, which placed these groups at highly increased risk of psychiatric disorders [22–24]. Low-skilled labour migrants, which constitute most of the migrant population in the EU and USA, were disproportionately affected by the pandemic due to their unfavourable living and working conditions (such as living in overcrowded dormitories). Examples from Saudi Arabia and Singapore show that 75% and over 95%, respectively, of all confirmed SARS-CoV-2 infection cases were among migrants. In Singapore, over 93% of the total cases were related to migrants' dormitories [25]. In line with this, COVID-19 outbreaks have been documented in crowded refugee camps in Greece, among asylum seekers and refugees in reception centres in Germany, in US detention centres, and among asylum seekers in a hostel in Portugal [26, 27]. Additionally, although data on unemployment rates disaggregated by migratory status are not available at a nationally representative level, analysis of data collected by IOM's Displacement Tracking Matrix highlights that the unemployment rates of migrants were higher than the unemployment rates of the populations of the destination countries [24, 28]. Hence, the combination of these factors uniquely affects the mental health and well-being status of the migrant population. Regardless of the COVID-19 pandemic, immigrants and refugees are less likely to look for or be referred to mental health services than the general population. It is hypothesized that the underutilization of mental health services by migrants since the beginning of the pandemic can be attributed to the wide range of barriers they perceive or encounter when accessing mental health services, such as communication difficulties due to cultural or linguistic barriers, confidentiality and trust concerns, and amplified stigma towards migrant populations [29–31].

Furthermore, much of the information materials on COVID-19 released during the initial period of the pandemic lacked linguistic and cultural adaptation to the migrant population [32]. More specifically, despite best efforts to provide easier-to-read and translated materials, communication from public health agencies, government, health and healthcare providers, and academia, was often not understood by members of the migrant community [33]. This is surprising, given the size of this group worldwide: approximately 184 million people, representing 2.3% of the world's population, live outside of their country of nationality [34, 35]. Additionally, a recent scoping review has suggested that virtual access to mental health services for the migrant population may not be achieved because of insufficient consideration of barriers for those already facing the greatest challenges in accessing care (e.g., those with limited linguistic fluency, digital literacy, or access to electronic devices) [36, 37]. Moreover, this lack of tailored approach on the mental health impact of epidemics and pandemics on this population group is also surprising, considering that these populations already suffer from an increased psychological vulnerability [38, 39], exacerbated by the psychosocial risks presented by the pandemic [40].

While there is no clear literature on how to support mental health of immigrants and refugees during the pandemic, the emergence of COVID-19 has brought renewed attention to the disparities and inequities in the mental health and well-being outcomes for migrant populations in Portuguese society. The EQUALS4COVID19 project aimed to fill this gap in the study of the impact on the mental health and well-being of immigrant populations related to the COVID-19 pandemic in Portugal, incorporating a holistic, intersectional, and multilevel approach. Overall, this study aimed to contribute to applied research and to the definition of mental health promotion programs for the population in general and immigrant populations in particular, contributing to health equity (i.e., ensuring that everyone has a fair and just opportunity to attain their highest level of health, regardless of their background, economic status, or social conditions). The project also aimed to produce practical, social, cultural, religious, and linguistically appropriate and pragmatic recommendations to promote equity in the mental health and well-being of populations, promote health literacy, and reduce social and health inequalities.

The central hypothesis of this research was that the pandemic would profoundly aggravate health inequity among immigrants. At the same time, it would reveal social determinants of inequities, revealing migration as a specific determinant mediating the interaction of social, economic, cultural, institutional, and structural factors with health indicators, affecting different spheres of life. Thus, it was considered important to identify the multiple interconnected factors influencing mental health and well-being, to better understand the interdependencies between mental health and global challenges, in the current post-pandemic context, and their individual and societal impacts.

Methods and sample sizes

This study followed a mixed-methods approach, consisting of a cross-sectional survey disseminated among two of the largest immigrant populations in Portugal, from Brazil and Cape Verdean (both countries that gained independence from Portugal, in 1822 and 1975 respectively), four focus groups (FG) with immigrants from the same countries, three FG with healthcare professionals, and ten individual in-depth interviews with relevant stakeholders working with migrant populations and involved in the implementation of measures related to mental health and well-being during the pandemic (Fig. 1).

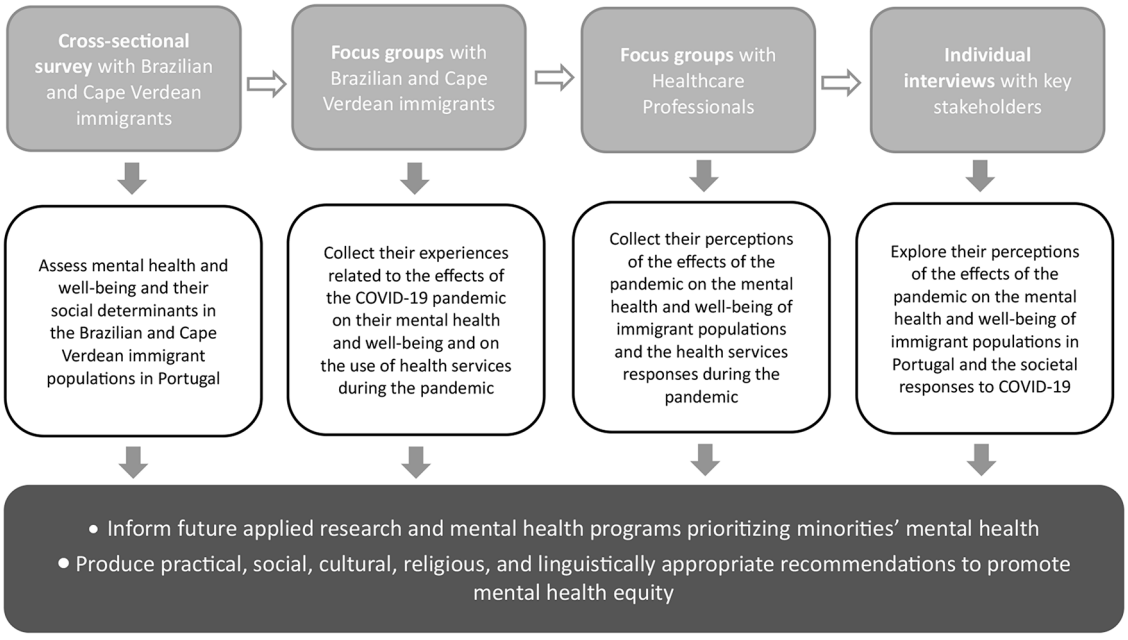

Fig. 1 EQUALS4COVID19 (Equity in health in times of the COVID-19 pandemic) study design

Cross-sectional survey

The main goal of the cross-sectional survey was to characterize mental health and well-being among Brazilian and Cape Verdean immigrant populations, and to identify risk and protective factors and their association with psychological symptoms. The survey, with data collection through self-completed online questionnaire or face-to-face structured questionnaires, was conducted between February and November 2022 with a sample of immigrant adults having Brazilian or Cape Verdean nationality (18 years of age or older and living in Portugal). A minimum of 267 questionnaires per immigrant country was determined to allow to estimate proportions with a 90% confidence level and a 5% margin of error. To enable the generation of a large and diverse though non-probabilistic sample, the online questionnaire was disseminated using different channels (digital social networks, social media, community institutions, etc.). Considering that a non-representative sample runs the risk of over-inquiring some specific profiles and leaving others more difficult to access, the sample profile was monitored throughout the fieldwork and an attempt was made to reinforce the sample with profiles that were less represented. Face-to-face questionnaires served to reach individuals with lower digital literacy, lower educational qualifications, and older groups, mitigating sample bias by ensuring the inclusion of a wide range of perspectives. The survey focused on dimensions of mental health considered potentially relevant to the pandemic context: psychological distress (Portuguese version of the five-item Mental Health Inventory with the cut-off of 52 points for psychological distress [41]. Cronbach's alpha was 0.864 for the total sample, 0.893 for the sample of Brazilian immigrants, and 0.807 for the sample of Cape Verdean immigrants); anxiety-related symptoms (Portuguese version of the Generalized Anxiety Disorder 7-item questionnaire with the cut-off points 5, 10, and 15 to classify the anxiety as none/normal (0–4), mild (5–9), moderate (10–14), and severe (15–21) [42]. The Cronbach's alpha was 0.860 for the total sample, 0.855 for the sample of Brazilian immigrants, and 0.852 for the sample of Cape Verdean immigrants.); and depression-related symptoms (Portuguese version of the 9-item Patient Health Questionnaire with cut-off points as follows: 0–4 as minimal, 5–9 as mild, 10–14 as moderate, 15–19 as moderately severe, and 20–27 as severe [43]. The Cronbach's alpha was 0.887 for the total sample, 0.911 for the sample of Brazilian immigrants, and 0.836 for the sample of Cape Verdean immigrants). Based on an equity-focused literature review on the mental health of migrant populations during the COVID-19 pandemic [44], the following predictor variables were included in the regression models: age, gender, nationality, number of years living in the host country (Portugal), employment status, educational level, perceived financial situation, resilience, perceived social support, and perceived discrimination. Resilience was measured by the Portuguese version of the 10-item Connor-Davidson Resilience Scale (CD-RISC-10) [45]. Perceived social support was measured using a Portuguese translation of the Brief Form of the Perceived Social Support Questionnaire (F-SozU K-6) [46]. Discrimination was measured through the question "*At some point, during this pandemic, did you feel*

discriminated against, or did you feel that you received unfair treatment, for being Cape Verdean/Brazilian?", with the following answer possibilities: "*Yes*", "*No*", "*I don't know*", and "*I prefer not to answer*". The detailed methods of this survey were previously described [47].

For the purpose of identifying factors associated with symptoms of psychological distress, moderate to severe anxiety, and moderate to severe depression according to sociodemographic characteristics (e.g., nationality and gender) and psychological factors (e.g., resilience and perceived social support), simple and multiple logistic regression models were used, with the results being represented as odds ratios (OR) with 95% confidence intervals. The data were analyzed using IBM SPSS Statistics version 28 and statistical significance was considered when $p < .05$.

Focus groups

Second, to provide rich qualitative data on sensitive and complex topics like mental health, mini-FG were conducted with Brazilian and Cape Verdean immigrants to collect experiences related to the effects of the COVID-19 pandemic on their mental health and well-being and the use of health services. Mini-FG with healthcare professionals were also performed to determine their perceptions about the effects of the pandemic on the mental health and well-being of immigrant populations in Portugal and to characterize their views about the response of health services during the pandemic. With both groups, sessions also aimed to identify recommendations to promote equity in addressing the mental health and well-being of migrant populations. Focus groups enabled to identify commonalities in the experiences, which was crucial for understanding the collective impact of the pandemic. The interaction between participants stimulated in-depth discussions and insights, leading to a richer understanding of shared experiences and to a comprehensive interpretation of the data collected through the cross-sectional survey.

The sessions were conducted by videoconference (Zoom® platform) and had an average duration of 1 h. They occurred between June and July 2022 with healthcare professionals and in October 2022 with immigrant individuals. A psychologist and a sociologist with expertise in FG moderated and co-moderated, respectively, all the sessions. A third researcher registered field notes regarding nonverbal communication and group dynamics.

For the FG with immigrant adults of Brazilian or Cape Verdean nationality, a set of heterogeneity criteria were considered, ensuring the inclusion of people of different genders, ages, educational background, and lengths of stay in Portugal. Participants from the survey who agreed to be contacted again and provided a valid email address or phone number were invited to participate also in the FG; also, an invitation was disseminated through social networks and newsletters of various associations of immigrants in Portugal. For the FG with healthcare professionals, a wide dissemination was made through several primary health care centres (all over the country).

In-depth interviews

Finally, diverse key stakeholders were interviewed to explore their perceptions regarding the effects of the pandemic on the mental health and well-being of immigrant populations in Portugal and the societal responses to COVID-19. Ten interviews were conducted, seven of which were conducted by videoconference (Zoom® platform), between January and June 2022. Stakeholders' selection was based on their knowledge and performance in the areas of mental health, social determinants of health, and measures to support immigrant populations in Portugal. The interviews were carried out by one researcher with a background in psychology in one-on-one appointments.

The interview scripts for the FG and interviews were structured in three sections (in addition to the presentation of the study and the interviewees): (i) perception of the effect of the COVID-19 pandemic on the health and well-being of populations (e.g.: *What were the main difficulties that the pandemic has brought?*); (ii) perception of the effect of the COVID-19 pandemic on the use/organization of social and health support services (e.g.: *What are the main factors that hinder the contact with the health services (or immigrants' assistance capacity, for healthcare providers)?*); and (iii) measures to promote equity in the mental health and well-being of populations (e.g.: *What measures do you think could contribute to the mental health and well-being of immigrant populations?*).

All FG and interviews were audio-recorded, fully transcribed, and anonymized. The qualitative analysis was performed with the software MAXQDA, version 12. The content analysis followed a thematic analysis approach.

Data triangulation

Through a mixed methodological approach and with different actors, this study served to present a comprehensive picture of the individual, social, cultural, institutional, and structural interconnected factors that influence the mental health and well-being of immigrant populations in the context of a global public health crisis, such as happened with the COVID19 pandemic. The quantitative data provided the scope of the mental health issues among the immigrant populations, while the qualitative data offered depth and context, allowing for delineating effective recommendations to promote equity in the mental health and well-being of populations. Data triangulation enabled the development of a comprehensive

understanding of the phenomenon, mitigating biases that could be associated with relying solely on one type of data, promoting external validity of the research findings.

Ethical considerations

The protocol was submitted to and approved by the Ethics Committee of the Centro Académico de Medicina de Lisboa (287/21 approved on 20 December 2021) before participants' enrolment and data collection. This study followed the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments [48]. For the cross-sectional survey, the focus groups, and the in-depth individual interviews, participants received detailed information about the goals, procedures, and average time of participation before enrolment. Participants were also informed that they could interrupt their participation at any moment and that their anonymity and, therefore, data confidentiality were assured. All participants provided written informed consent.

Findings

This paper describes and discusses the main findings of the EQUALS4COVID19 study. A set of recommendations based on the collected evidence is also shared.

The COVID-19 pandemic had an enormous impact on public health around the globe in terms of both physical and mental health, and the mental health implications of the pandemic may continue long after the physical health consequences have resolved [49]. While the pandemic brought a variety of challenges for all, including social, emotional, financial, and work-life balance, migrants experienced additional sources of mental health stressors compared to the host population. Stigma, discrimination, cultural mistrust, and feelings of isolation are among the factors that have been identified as negatively impacting the mental health and well-being of migrants.

A general summary of the results from the survey is presented in Table 1. The survey sample was composed of 604 participants (322 Brazilian and 282 Cape Verdean), with 58.5% of those being women. Brazilian immigrant men were younger group and had higher employment rates. Compared with Cape Verdean immigrants, Brazilians had a higher educational level (for both genders) and had been residing in Portugal for fewer years. In terms of subjective financial well-being, there were more Cape Verdean (29.9%) than Brazilian (19.0%) individuals indicating that the financial situation of their household was "Difficult or Very difficult".

The overall main results of the qualitative part of the study, the FG with immigrants, the FG with healthcare professionals, and the interviews with key stakeholders are presented in Table 1. Four mini-FG were conducted with a total of 12 immigrants (seven Brazilian women, two Brazilian men, two Cape Verdean women, and one Cape Verdean man). Despite several attempts to contact questionnaire survey participants and new recruitment avenues, participation in FG was rather asymmetrical in terms of nationality and gender with most Brazilian women. Participants from various municipalities across the country, spanning from the north to the south, took part in the study; all had legal residence in Portugal. In the composition of the FG with healthcare professionals, there was also a bias in participation in terms of gender: In the three mini-FG conducted, with a total of 13 healthcare professionals, all participants were women, of which seven were nurses, three general and family physicians, three public health physicians, and one environmental health technician.

Ten in-depth individual interviews were conducted with stakeholders involved in the decision-making and implementation of COVID-19 measures related to mental health and well-being of immigrant populations, from leaders of various immigrant associations to representatives of governmental-specific health services having intervention with immigrant populations.

The integrated main findings from the mixed-methods research on the potential impacts of the pandemic on the mental health and well-being of migrant populations are divided into three main themes: (1) COVID-19 pandemic-related stressors, (2) social determinants of mental health, and (3) socio-psychological protective factors.

COVID-19 pandemic-related stressors

In addition to the direct effects of COVID-19, the pandemic has created an environment that, despite being designed to effectively prevent as many severe forms of the disease as possible, largely impacted the mental health and well-being of whole societies and generated multiple stressors. Social restrictions, lockdowns, school and business closures, loss of livelihood, decreases in economic activity, and shifting priorities of governments in their attempt to control COVID-19 outbreaks, all affected the mental health of the population. The Global Burden of Disease 2020 study estimated 76.2 million additional cases of anxiety disorders and 53.2 million cases of major depression disorder attributed to the COVID-19 pandemic, representing a 25.6% and a 27.6% increase in anxiety and major depression prevalence, respectively, compared to pre-pandemic prevalence [50].

Stress from the potential health impacts of being infected with SARS-CoV-2

In the early months of the pandemic, many people experienced fear of infection or fear of death due to the many unknown aspects of the virus and the disease it causes [51, 52]. Participants in the FG discussions with Brazilian and Cape Verdean immigrants reported that their mental health was negatively affected by the social isolation

Table 1 Main findings on the potential impacts of the pandemic on the mental health and well-being of migrant populations

Data Collection Method	Main Findings
Survey ($n=604$)	• More than one-third of the participants indicated that their financial situation worsened with the pandemic (39.5%). • Work, family and personal life conciliation differed by gender, while both men and women consider that they managed to reconcile work with domestic tasks during the pandemic (men 59.6%; women 52.4%); a high percentage of women considered that work has interfered with family and personal life with the pandemic (31.3%) while men disagreed (38.7%) ($p=.05$). • The effect of the pandemic on income differed by gender: 43.4% of women reported that their income decreased with the pandemic, vs. 33.6% among men ($p=.03$). • Adequate levels of resilience were found for 57.2% of the total sample, more frequent among Brazilian women (68.9%) and Cape Verdean women (59.3%), compared to Brazilian men (54.5%) and Cape Verdean men (39.4%) ($p<.001$). • High levels of optimism were found in the total sample (mean 68.43 in a scale of 0 "not at all optimistic" to 100 "very optimistic"), with no between-gender or between-nationality differences. • Brazilian immigrants revealed higher levels of psychological distress (28.6% vs. 11.7%; $p<.001$) and reported more symptoms of anxiety (10.4% vs. 5.4%; $p=.002$), and more symptoms of depression (29.6% vs. 20.7%; $p<.001$), then the Cape Verdean immigrants. • Being a woman was associated with both psychological distress (aOR: 1.9; CI: 1.1–3.3) and symptoms of depression (aOR: 3.2; CI: 1.8–5.5). • Higher education was associated with symptoms of anxiety (aOR: 4.1; CI: 1.5–11.3). • The worsening of financial situation was associated with psychological distress (aOR: 2.1; CI: 1.3–3.6). • Perceived discrimination was associated with psychological distress (aOR: 2.5; CI: 1.5–4.4) and symptoms of depression (aOR: 1.9; CI: 1.1–3.2). • Low levels of resilience were associated with psychological distress (aOR: 2.0; CI: 1.1–3.7), symptoms of anxiety (aOR: 5.8; CI: 1.6–20.8), and symptoms of depression (aOR: 3.1; CI: 1.7–5.7). • Low perceived social support was associated with psychological distress (aOR: 4.2; CI: 2.3–7.6) and symptoms of depression (aOR: 3.1; CI: 1.7–5.7).
Focus Groups with immigrants ($n=12$)	• Most immigrants lost income early in the pandemic – this is related to the fact that many lost their jobs or had reduced working hours; some were self-employed and were not entitled to any kind of state support. • Work-family balance difficulties were associated to temporary school lockdowns and the generalized move to online school teaching. • Social isolation has been reported as a difficult experience during COVID-19 lockdowns in terms of emotions and feelings of loneliness, especially for immigrants who had arrived recently. • The pandemic exacerbated preexisting barriers to access to social and health services, namely due to changes in services availability. • Perceived discrimination, already expected according to some FG participants, is related with high levels of stress and anxiety, and creates barriers in the use of services. • Immigrants not registered in the National Health Service (NHS) reported facing delays in accessing vaccination and felt increased difficulties in accessing COVID-19 tests and isolation declarations. • Social Security, Finance, and Portuguese Immigration and Border Service were also reported as services directly affected by the pandemic. Due to delays in appointments, the scheduling system created barriers for newcomers who needed the taxpayer identification number and social security identification number to be able to work (many immigrants do not have these documents). • The request for support such as the unemployment fund or sick leave were also referred to as urgent actions that had no response, due to the change in the functioning of the services. • Various strategies were employed to address the effects of the COVID-19 pandemic. Among these, the establishment of mutual interpersonal (informal) aid networks played a significant role. These networks provided support to individuals in isolation and offered assistance in areas such as finance, food, and psychological well-being. • The increase in alcohol consumption was also mentioned to deal with anxiety.

Table 1 (continued)

Data Collection Method	Main Findings
Focus Groups with healthcare professionals (*n* = 13)	• A common perception was the feeling of anxiety from the users of primary healthcare units at the beginning of the pandemic, alongside with more cases of depression, mainly related to social isolation. • Healthcare workers have also been affected by the pandemic, whether in their personal lives or due to the sudden change in their working patterns. Many professionals were reassigned to the COVID-19 pandemic response and protocols changed very quickly, making the first phase of the pandemic a particularly "turbulent" and distressing time for healthcare workers as well. • The perception of risk was a topic discussed throughout the FG, with the perception that, in many cases, Brazilian and Cape Verdean migrants showed resistance to assume they were infected (asymptomatic conditions). • Public health doctors reported difficulties in controlling the outbreaks of COVID-19 in migrants' communities, due to the living conditions and lifestyle (in numerous communities and groups with a lot of proximity), but also due to an apparent low perception of risk (among immigrants), particularly in the case of Brazil – due to the way the Brazilian government, the media and the healthcare professionals have dealt with the pandemic. • Economic factors, in association with job insecurity and precariousness, were among the factors with the greatest effect on the mental health and well-being of the migrant population. Healthcare professionals, especially those who worked directly in the epidemiological surveys, reported that many infected people could not even comply with the isolation due to economic insufficiency (had to go to work, even if infected). • Discrimination was recognized as a major barrier in access to health services by the migrant population in Portugal, and more specifically during the period of the pandemic. • Other barriers to healthcare access among immigrants were: the irregular situation of some migrant patients during the pandemic, which may have result in them avoiding seeking care for fear of being denounced to the immigration authorities; and the language barrier, especially for users from countries where the Portuguese is not spoken, but also for Cape Verdean people who do not speak fluently Portuguese and had difficulties in understanding what is communicated by the healthcare professionals and health authorities. • Mental health literacy was another factor pointed out as a possible barrier to the search for health services. For example, Cape Verdean population often considers mental health a taboo; this is linked with difficulties to recognize signs and symptoms, and consequently to not seeking professional help. • The barriers become even greater with illiteracy, which hinders access to information and use of mobile phones (text messages and teleconsultations, for example). Public health communication strategies created during the pandemic were not, according to several healthcare professionals who participated in the FG, effective in informing migrant populations.
In-depth Individual Interviews with stakeholders (*n* = 10)	• The pandemic has had a very negative effect on immigrant populations, in the economic sphere, health, and social relations. • A relevant part of the immigrant populations in Portugal started the pandemic already from a position of triple disadvantage: (1) low levels of education and literacy, (2) low socioeconomic status, and (3) the status of foreigner. With the pandemic, these conditions did not improve and acted as vectors for increased inequity in (and unequal effectiveness of) prevention actions of SARS-CoV-2 transmission and access to treatment or follow-up of severe cases of COVID-19. • Low levels of formal education and literacy, especially digital and health literacy, made it more difficult to access and use reliable information. • Low socioeconomic status made migrants more vulnerable to unemployment, evictions, and low social support. • The foreigner status limited access to several of the changes that were implemented in public institutions, since these changes were not designed for foreigners, especially those not registered in the NHS. • Most of the interventions implemented by immigrant associations and nongovernmental associations (NGO) were at the level of covering primary needs; few measures were directed to mental health needs.

period during COVID-19 lockdowns, with feelings of loneliness among immigrants who had arrived recently:

> *I was depressed, I needed support, and I thought I would not be able to get out of this wave of negativity that we were going through with the pandemic, bringing only things like that; every day we got more scared, we still did not know very well, at the beginning, what was going to happen. In addition, this uncertainty left, at least for me... (I was unemployed) it left people in total insecurity, not being able to return to Brazil.Brazilian immigrant man.*

Looking back on previous epidemics and pandemics, such as SARS, Ebola, Zika and HIV, several studies reported a range of negative mental health outcomes linked to concern about the virus and/or corresponding diseases [39, 53, 54]. More specifically, some studies documented that the harmful mental health effects were not directly related to the objective risk of being infected (such as the proximity to the infectious outbreak); indeed, it was found that it was the fear of contagion that was related to increased odds of suffering from symptoms of posttraumatic stress disorder, depression and/or anxiety, even one year after the outbreaks [39, 55].

Furthermore, the findings of this study indicated that this fear of infection was extended to the fear of vaccination. As noted in the FG with the healthcare professionals, these fears were intensified due to the existing literacy barriers that became even greater with the lockdowns and social isolation [56]. This fear hindered access to trustworthy information and to the use of mobile phones

(for tele-consultation). Public health communication strategies implemented during the pandemic have failed for migrant populations. The lack of sources of reliable and understandable information led to increased levels of fear about SARS-CoV-2 infection, which extended to a lack of trust in the vaccination itself, resulting in significant mental health strains among the immigrant population. One of the participants in the FG discussions with immigrants stated:

> *Fear, psychological fear of catching the coronavirus. I did not catch it, here at home no one did, it must be luck. Fear also because of the vaccines, because it was something new and it was created just like that, suddenly... and I was like, hey, is it going to be viable, is it going to be, in practical terms, healthy? Will not it hurt my health more than help prevent the virus? That is, I had many questions in my head, and all that together caused me immense anxiety. In addition, with all this anxiety, I used to sleep a lot, now I can only sleep 4 to 5 hours a night.Cape Verdean immigrant woman.*

Results from other studies seem no different [57]. A study conducted among undergraduate students found that concern about being infected with the virus explains 52% of anxiety symptoms and 50% of depression symptoms. These symptoms can be explained by the beliefs and concerns about the negative consequences that getting COVID-19 would have on one's health, their family's health, educational progress, and professional future, as well as the risk of being stigmatized by their social circle [58]. A recent meta-analysis conducted among the general population, including college and university students, from 18 different countries reported that fear of COVID-19, among other mental health issues, was related to anxiety, traumatic stress, stress, and depression [59]. Another study from China found that individuals between 18 and 30 years of age or above 60 years of age had the highest COVID-19 Peritraumatic Distress Index (CPDI) scores, with the level of distress being higher among migrant workers [60]. Similarly, a study on the immigrant Latino community in the USA found that although few participants were infected with the COVID-19 virus, the pandemic had significant impacts on their mental health and ability to meet basic needs [61].

Stress from public health and social measures

Prolonged social isolation is known to be associated with increased morbidity and mortality [62]. In the context of mental health, these conditions may lead to anxiety, depression, psychoses, personality disorders, as well as decline in cognitive functions [63]. National and localized quarantines and physical distancing rules, which were introduced early in the pandemic to protect people's health, reduced existing social connections, resulting in isolation, loneliness, and helplessness. Recent studies confirm that current long-term health threats and imposed deprivation of social contacts associated with a feeling of lack of control lead to a significant increase in mental health issues in the global population [64].

In the context of this study, social isolation was remembered as a very emotionally difficult and lonely period, especially by immigrants with a short length of stay when the COVID-19 pandemic began:

> *So it was like this, a feeling of social isolation... plus social isolation, you know, my God... I think this issue of loneliness was too heavy for me... it was already enough that I felt isolated for so long [due to the condition of being an immigrant] and now this... Brazilian immigrant woman.*

Although the stay-at-home orders were necessary to contain the spread of COVID-19, they resulted in worsening social isolation and loneliness among certain social groups [65]. In line with the finding from this study, the social isolation has disproportionately impacted immigrants, refugees, and migrants [22, 66] as a result of a range of intermingled long-standing social issues pertaining to economic, ethnic, racial, and legal vulnerabilities of these population groups [67]. At the same time, immigrants have lower rates of health insurance coverage and limited access to healthcare services and programs. Furthermore, the social isolation for these groups was worsened by the limited access to their social, emotional, and spiritual support networks to help them cope with the stressors of the pandemic and thus exacerbated some of these problems or created new mental health and adaptation challenges [68, 69].

A set of six COVID-19-related concerns were presented to respondents in the survey ("I am concerned that others will not comply with recommended social distancing, safety and security measures", "I am concerned with the possibility of losing my job or not getting a job because of the pandemic", "I am concerned with having little help from the state", "I am concerned with delays in applications and requests from the Portuguese Immigration and Borders Service", "I am concerned with not having enough money for my basic needs", and "I am concerned with the situation of my family in the country of origin" – Fig. 2 summarizes answers to this question). The general pattern is that the level of concern is high for each of the items. However, the most frequently reported concerns were related to Portuguese immigration and border service delays and to the situation of participants' relatives living in their country of origin (58.8% and 57.7%, respectively). This concern with far-distant

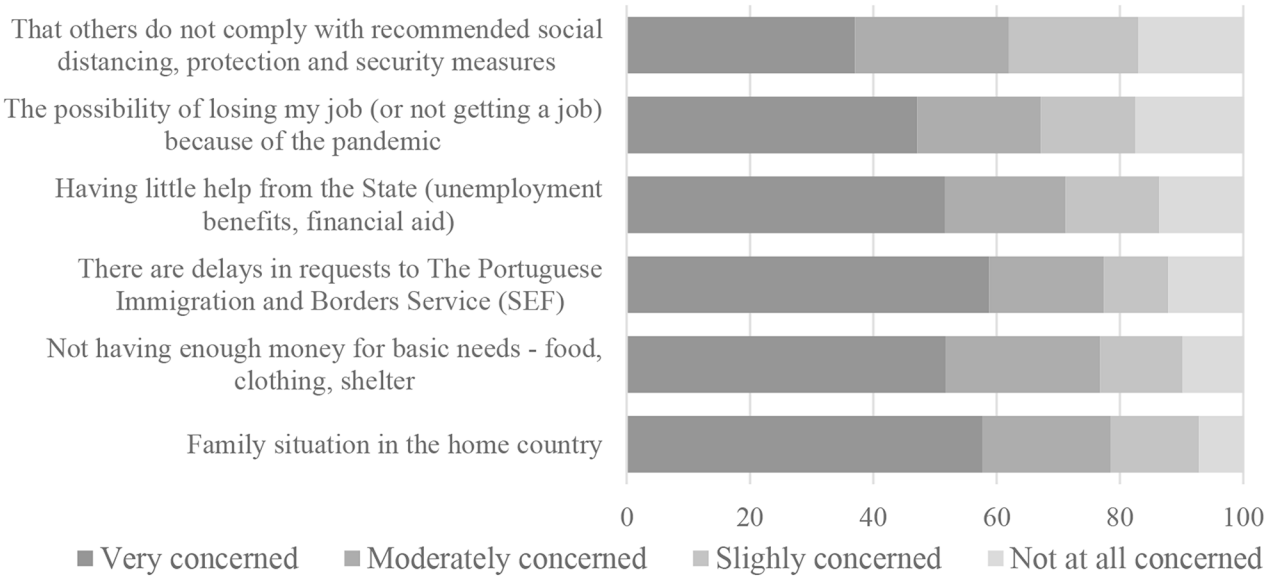

Fig. 2 COVID-19-related concerns of Brazilian and Cave Verdean immigrants

relatives was also expressed in the FG as a source of anguish, especially for Brazilians.

Similar findings were also reported from other studies conducted with migrant populations during the COVID-19 pandemic, where the stress from being physically distanced from the family was combined with the difficulty in providing financial support for the family members (such as remittances) [70]. Immigrants faced an additional challenge when sending remittances home. The stress of unemployment and underemployment made it difficult for them to both sustain their livelihoods and provide financial support to relatives [71]. Simultaneously, their relatives' economic hardship further deteriorated, increasing their need for financial support and simultaneously aggravating the psychological distress related to their migrant families due to not being able to send sufficient remittances to loved ones [72]. This made remittances a chronic social stressor for immigrant families during the COVID-19 pandemic.

The COVID-19 pandemic also affected transnational family members, those who remained in the home country, which in turn affected family members in Portugal. As a Brazilian immigrant man explained:

> *And the pandemic in Brazil, which affected us here. Because the pandemic in Brazil was a horrible thing, of neglect, even by the administration of the federal government. Anyone who has a family member in Brazil knows that we had our hearts in our hands, because we saw that news... and my elderly mother, even though she had taken all that vaccine, got sick there, and it shook me a lot; so, it was the most difficult moment of the pandemic to manage. Because the migrant has to manage two hearts: the heart that is here and the heart that is there in Brazil (...) I kept thinking that if I would lose a family member, I would not even be able to go there to say goodbye to her, because I could not even get there. Those mass burials... the person could not either open the coffin or say goodbye to their family members... all that was a horror movie in my head.Brazilian immigrant man.*

Stress from misinformation and uncertainty

"We're not just fighting an epidemic; we're fighting an infodemic", said Tedros Adhanom Ghebreyesus, WHO Director-General at the Munich Security Conference on the 15th of February 2020 [73]. The impact of the massive dissemination of disease-related information became known as "infodemic knowledge", and this phenomenon became amplified as the availability of social media (including X, Facebook, Instagram, as well as blogs or forums) enabled it to move faster and further without any type of gatekeeping [74].

In our study, the language barrier was found as a limiting factor in access and utilization of health advice and care, especially for users from countries where the Portuguese language is not spoken, but also for Cape Verdean people who do not fluently speak Portuguese and had difficulties in understanding what was communicated by the healthcare professionals and health authorities. In the absence of tailored COVID-19 information provided by official government public sources, immigrant workers were more likely to rely on informal sources, such as peer networks and social media platforms [75]. This neglect of migrant workers in the availability of reliable and tailored

information enabled the spread of misinformation that further increased migrant vulnerability [76, 77].

The results from the in-depth interviews with stakeholders suggested that the low levels of education and literacy of several immigrants, especially digital literacy, made it more difficult for those individuals to access reliable information. The management of the pandemic in Brazil may have also influenced the behaviour of many Brazilian immigrants who were in Portugal, according to some healthcare professionals who were interviewed:

> *The media in Brazil were very different, including even the medical community. During the same pandemic phase, the perception of medical colleagues from there about the risk was very different from ours. That is why I believe a Brazilian here receiving all the information from the national health service, from television, and then having the family on the other side say: ah, that is not so bad, do not worry (…).Public Health Doctor.*

The "infodemic" or the false information that was being shared online included advice with potential harm to the physical and mental health of people. As an example, scholars speculated that misinformation that was spread in the early days of the pandemic could have caused new psychiatric symptoms, such as anxiety, even among people without previous mental illness, aggravating the condition of those with preexisting mental illness and triggering panic attacks, phobias, or obsessive-compulsive disorders [78]. Furthermore, surveys published before the pandemic have shown that fear arousal due to news articles can affect people's emotions, influencing perceived risk at both the personal and societal levels [79].

Another cross-sectional study conducted among migrants from Portuguese-speaking countries living in Brazil and Portugal, who were 50 years of age or older, suggested that reception of misinformation was influenced by social, economic, and religious factors among elderly migrants with low digital literacy, thus contributing to the dissemination of false content within this population [80]. As discussed above, one of the reasons for this misinformation is that migrant workers are not appropriately targeted in health promotion campaigns and, therefore, may not receive timely and understandable information that can protect their health [81]. Participants in the FG reported that they feared seeking care because they were afraid of being reported to the immigration authorities.

Stress from unemployment and financial insecurity

In early 2020, due to the COVID-19 pandemic, an acute global recession left millions of people jobless and prompted an unprecedented rise in extreme poverty. According to the Sustainable Development Goals Report 2020, approximately 71 million people were estimated to be pushed back into extreme poverty, and approximately 1.6 billion already vulnerable workers in the informal economy – half the global workforce – had their incomes estimated to have fallen by 60% in the first month of the crisis [82]. In 2022, when data were collected, the COVID-19 pandemic was still affecting the economy, and global unemployment remained above pre-pandemic levels.

Triangulated findings from our study revealed that socioeconomic issues linked to unemployment and immigration status have increased the risk of mental suffering due to the pandemic. Participants in the FG highlighted the stress related with the loss of income at the beginning of the pandemic, with many losing their jobs or being forced to work with reduced hours, thus bringing home lower income. Moreover, participants reported that immigrants were under increased stress since they were not entitled to any kind of state support.

Immigrants' economic-related vulnerabilities during the pandemic also emerged in conversations with the FG with healthcare professionals, in which it was highlighted that job loss was the primary stressor faced by immigrant families in Portugal. More specifically, economic factors related with job insecurity and precarity, were among the factors with the greatest impact on the mental health and well-being of the migrant population. Many immigrants who are in the process of regularizing their situation in Portugal have precarious jobs; therefore, they have little labour rights and, therefore, they cannot stop working - neither when they are infected nor when they belong to risk groups - as they run the risk of losing their income [15, 83]. Healthcare professionals, especially those who worked directly in the epidemiological regular surveys throughout the pandemic, reported that many infected people could not even comply with the isolation due to economic insufficiency. In this context, one nurse underscored the economic challenges that were imposed during the pandemic:

> *One of the factors is precarious work. I think that, often, the migrant population initially has a precarious job, being poorly paid... and all this interferes with everything. In access to health, in access to education, when they are still in the process of illegality and transition... the need to remain incognito will sometimes interfere with everything. I think that precariousness at the professional level is a very big barrier to the person having the freedom to then be able to demand their rights and fulfil their duties as a citizen.Nurse.*

Knowing from past economic crises that unemployment, poverty, and adversity are known risk factors for mental health conditions [84], it was unsurprising to find that job insecurity situations, such as those imposed by the COVID-19 pandemic, lead to poorer mental health outcomes [85]. Independent systematic reviews suggested that those individuals who experienced unemployment during a recession or financial crisis were more likely to suffer from poor mental health outcomes, including increased stress levels, depression, mental hardship, anxiety, and suicidal behaviours [86–88].

> *I heard of cases where people were fired, that is, at the time they had COVID (.). Sometimes it was us from the health sector that intercepted the worker and said that it was not legal and that it could not happen (.). They hide that they were sick, they hide symptoms.Public Health Doctor.*

As a result, poverty, and job insecurity, commonly associated with immigrant populations, have forced many infected people to continue working for fear of dismissal [89]. This contributed to the increase in the numbers of contagions, in addition to the fact that many workers did not even seek help from health services. In extreme situations, deaths have occurred. This is a serious public health problem, with obvious repercussions on these people's mental health and well-being [90]. Although the phenomenon is not exclusive to the immigrant population, it gains special prominence in this context. In some cases, even those people who complied with the isolation often ended up having difficulties in maintaining isolation due to the high number of co-residents. Similar findings were reported from a recent study about the impact of governmental COVID-19 containment policies on Venezuelan immigrants' distress-related processes in Chile and Argentina [71]. Their findings show that governmental COVID-19 containment policies generated four stressors among migrants: (i) job loss and underemployment, (ii) income loss, (iii) employment status devaluation, and (iv) inability to send remittances. Moreover, the cascading and disproportionate effect of the economic challenges posed by the pandemic was aggravated by the type of jobs held by immigrants. Although the discussion is limited, reports point out that jobs typically held by immigrants do not have telecommuting flexibility, resulting in a disproportionate impact of the COVID-19 pandemic on their already vulnerable financial situations [70]. Indeed, several studies conducted during the COVID-19 pandemic encountered the effect of perceived financial stress on mental health [91, 92]. Hence, it is expected that job and income loss would lead to an increase in financial stress among Brazilian and Cape Verdean migrants in Portugal, which, in turn, would result in a higher risk of mental health problems. Therefore, obtaining an improved understanding of how the economic consequences of the COVID-19 pandemic have affected these migrant groups can guide employers and policymakers to adopt measures to address the issue [93].

Social determinants of mental health

The COVID-19 pandemic is also referred to as a "syndemic" - the consequences of the disease are determined by a variety of social and material factors and are exacerbated by social and economic disparities [94]. The mental health impacts of this pandemic have disproportionate effects on society, with some people being more affected than others. This is why this pandemic is also called the "illness of inequality" due to its disproportionately negative impact on the most vulnerable [95]. Past pandemic experience has taught us that gender is a determining health factor, with women tending to be at greater risk of health vulnerability. With the pandemic, women found new difficulties in meeting double obligations: (i) earning a living and (ii) caring for households. Furthermore, the vulnerability of migrant women arises from systematic differences in power relations and social hierarchies, as well as gender roles, which influence their socioeconomic status and level of agency [96]. Women who have continued to work during the pandemic have done so under increasingly hazardous working conditions [94]. Furthermore, they are more likely to be financially disadvantaged than their male counterparts, and they carry a large brunt of the stress at home, especially during times of school closure. In our survey, three questions related to conciliation between work, family, and personal life were included (conciliation between work and domestic tasks, conciliation between work and leisure activities, and conciliation between work with family and personal life). A gender analysis revealed that while both men and women considered that they manage to reconcile work with domestic tasks (although more men 59.6% than women 52.4%), more women than men consider that work interferes with family life (31.3%), and more men than women disagree with this statement (38.7%) (Table 1).

The female participants in the FG with immigrants acknowledged the work-family balance difficulties related to temporary school lockdowns and to generalized online teaching. A Cape Verdean immigrant woman summarized her experience as a working mother during the lockdown phase of the pandemic:

> *The pandemic has been a blow to our lives, has not it? And it was universal to everybody, to all ages, to all countries, anyway. For me, it had consequences primarily on a physical level. With the pandemic I had to come home too, because schools closed, I*

had to stay with my daughter at home (…) I was in charge of helping her study at home, I had to have video calls on Teams, do work, deliver, you cannot imagine the chaos.Cape Verdean immigrant woman.

In many migrant populations and ethnic minorities in Western countries, gender relations can be very asymmetrical, doubly penalizing women with parental responsibilities and with the obligation to reconcile professional and family life. In the context of the pandemic and the confinement associated with it, these asymmetries became even more salient and visibly burdened women in these minorities, which can be considered when trying to understand the high self-reported levels of symptoms of psychological distress and depression among them. According to several participants of our study, the economic factor was a main determinant of mental health at the time of the pandemic: the drop in income or being unemployed, the difficulty in acquiring basic goods, and the loss of housing:

We know that it [the pandemic] affected a lot of people psychologically because the financial part disappeared, their base of support disappeared. Most women, therefore, who work in providing services, stopped working. You could not go to the person's house to support that person; you could not go to your job… and the support base of the Cape Verdean family is usually the woman… who works the most.Stakeholder - President of an Immigrant Association.

Overlapping vulnerabilities

Vulnerable groups are exposed to a higher risk of illness and have limited personal and social resources to cope with its mental health consequences [97]. Although vulnerability can vary by context, groups that have often been at greater risk of adverse mental health outcomes include women, people with preexisting conditions, those from minority ethnic communities, and the socioeconomically disadvantaged. Many of these characteristics can overlap. Indeed, a relevant part of the immigrant population in Portugal is a triple disadvantaged condition: (i) low levels of education and literacy, (ii) low socioeconomic status, and (iii) status of foreigner. With the COVID-19 pandemic, each of these conditions had their respective impacts. Low levels of education and literacy made it more difficult to access reliable information, making it harder to interpret messages about the pandemic. Low socioeconomic status made immigrants more vulnerable to situations of unemployment, evictions, and low social support. The status of being a foreigner, in turn, limited access to many of the changes that were implemented in public institutions, since those modifications were not thought for the case of foreign people or people with low levels of literacy, especially digital literacy, and with reduced access to information and communication technologies in general.

Many migrants participating in our study indicated that they felt that their vulnerabilities were disregarded by the system. This experience was well described by a Brazilian immigrant man:

That was evident: that the confinement was for some; it was not for all because there were people who could not stop in the confinement, because otherwise they would not be able to survive. The people of the priority areas, and of the cleanings, of the positions that (…), the garbage had to be collected, the cleanings had to be done; the hospitals themselves could not stop. Many people who were not on the front lines were not seen in the pandemic… who had to work, and who were at risk, and who were infected by the virus, had to stop, and who were the livelihood of their family. Or solo mothers, who must keep their children. (…) However, that is it, the difficulty that we must deal with on a day-to-day basis, the adversities that we go through because we are migrants, because we are Brazilian, because we are black, because we are LGBTQIA+, because we are all these intersectionalities that we take and that we bring with us. Our body is our manifesto.Brazilian immigrant man.

Mental health literacy was a factor pointed out by the healthcare professionals and stakeholders as a possible barrier to the search for services. For example, the fact that the Cape Verdean population often considers mental health a taboo that is not talked about causes them not to recognize signs and symptoms and consequently to not seek professional help. Additionally, the lack of information on immigrant populations about their rights and the functioning of services is another important aspect to consider in the issue of access to health. The barriers become even greater in situations of illiteracy, which hinders access to information.

Considering the need for a National Health Service number for being able to have full access to public healthcare units and services, undocumented immigrants, or people without a user number, if tested positive for COVID-19, were not entitled to isolation declarations or to PCR tests and, at the vaccination stage, were placed at the bottom of the waiting lists. Considering COVID-19 vaccination, notification for vaccination was received by phone message. However, in some segments of the immigrant population, prepaid phone cards are typically used as disposables, which made their users uncontactable

and, consequently, excluded them from being vaccinated in a timely manner.

> *Everything starts from access… and especially for people in an irregular situation, it makes all the difference. Because in deontological and identity terms, it also makes a difference to be considered or not, isn't it, as a person who can or cannot access certain services of a country.Family Doctor.*

Stigmatization and discrimination of vulnerable groups

During their participation, individuals recounted various instances of discriminatory treatment. These experiences occurred not only within work settings but also within health services and social security services. When asked about psychological malaise throughout the pandemic, one Brazilian participant reported several occasions in which she and her son felt discriminated against by health service employees and doctors:

> *I do not know if because they were oversaturated or because they thought that because I was a Brazilian immigrant, they could yell at me like that. I do not even know the answer, because I only went there as an immigrant, I never went there as a Portuguese.Brazilian immigrant woman.*

Discrimination brings, consequently, high levels of stress and anguish, which create additional barriers to the use of services. Some participants reported avoiding visits to health services as much as possible for fear of unequal and discriminatory treatment, reserving the search for medical care only for emergency cases. Discrimination remains a major barrier for the immigrant population in Portugal to access healthcare services, and this was, according to the data collected in our study, intensified during the pandemic. Reports of emotional-based conflict were often mentioned, allegedly triggered by the immigrants' perception of discriminatory attitudes against them. A Brazilian participant woman reported the fear of being discriminated against when accessing health services based on her and her friends' previous experiences:

> *One thing I realized after I moved to Portugal, is the 'pretraumatic' stress… it is like this: you did not go through a situation of xenophobia or prejudice, but the simple fact that you know that this is a possibility, that you are a target, it makes you already feeling stressed… I feel uncomfortable.Brazilian immigrant woman.*

The fear of discrimination, added to the absence of a family network in Portugal, made this participant protect herself as much as possible so as not to get sick (avoiding the need for medical support): *"I have to protect myself, I cannot in any way get sick because I have no one to protect me in that case. Therefore, if I get sick in this context, I'm literally on my own."*

Asylum seekers, refugees and migrants have always been identified as vulnerable populations suffering from longstanding structural barriers and inequalities. Their vulnerabilities have become exacerbated since the pandemic [98]. Migrants' vulnerabilities are severely enhanced by social determinants of health, such as education, employment, social security and housing [99]. Within the scope of this study, the Cape Verdean and Brazilian immigrants reported that they felt that their low socioeconomic status made them more vulnerable to unemployment, evictions, and low social support. Furthermore, their foreigner status limited access to several of the changes that were implemented in public institutions, since these changes were not designed for foreigners, especially those not registered in the Portuguese health service. The healthcare professionals participating in our study noted that discrimination was a major barrier to access to healthcare services by the migrant population in Portugal, more specifically during the period of the pandemic. Furthermore, the healthcare professionals highlighted that these barriers become even greater with illiteracy.

As one public health doctor noted

> *When I was also doing contact tracing, epidemiological surveys, I actually realized that a lot of complaints of anxiety, depression, everything, also came from the lack of, or the perception of lack of, access to health care in the one hand, and then the discrimination that they often felt in the first contacts, and even to deal with issues related to SARS-CoV-2 infection. Discrimination not so much, eventually, from healthcare professionals (doctors and nurses), but throughout the administrative and nonadministrative system, from the security of a healthcare centre to the administrative care… there was in fact a very large perception of discrimination and a transmission of an implicit, and even sometimes explicit, idea that in a situation where there was a lack of resources, they should not have access to the same type of health care, nor mental health, as a national citizen.Public Health Doctor.*

Socio-psychological protective factors

There is general agreement that resilience exerts a protective effect on stressful events and that high levels of resilience are related to a lower tendency to develop psychological disorders [100]. Migrants and refugees with higher resilience scores would be expected to have lower levels of psychopathological distress and, in other words, better mental health [101]. Participants in the study reported that they adopted healthy coping mechanisms, such as outdoor activities and sports. This allowed them to interact with the local population and foster social integration. A Brazilian immigrant woman described her positive experience:

> *One thing that helped me a lot to interact with Portuguese people, to meet Portuguese people, were sports, collective activities, especially sports in an open area (obviously, because you are going through a pandemic) … what saved me was skating, gymnastics groups, outdoors… that is when I started to meet Portuguese [people]. You are having something in common, this is that sport; it breaks down barriers.Brazilian immigrant woman.*

Emerging evidence shows a general trend of resilience being negatively associated with anxiety, stress, depression and subjective distress induced throughout the pandemic [102, 103]. For example, a study by Ran et al. 2020, using a large cohort of adults from the general population and conducted at the peak of the COVID-19 pandemic, linked resilience to lower levels of anxiety and depression [104].

> *The resilience and renaissance capacity of these people is truly incredible. Some people develop, yes, many of them, serious mental health pathologies… but the vast majority manage to overcome, do not give up, they are persistent people, fighting people, very fighting (.). This positive attitude towards life, this. I believe it is somehow a protective factor.Stakeholder from nonprofit institution.*

Figures 3, 4, and 5 illustrate the social determinants of psychological distress, anxiety, and depression among Brazilian and Cape Verdean immigrant samples evaluated through our cross-sectional survey, with data collected two years after the COVID-19 pandemic.

The findings revealed that women and immigrants reporting perceived discrimination and perceived low social support had higher odds of reporting psychological distress or depression-related symptoms; higher education was associated with symptoms of anxiety; and a low/middle level of resilience was a negative predictor for the three mental health dimensions under analysis. The results show that approximately one-third of Brazilian women in the study reported higher levels of psychological distress and symptoms of depression compared to the other groups.

Furthermore, the pandemic context increased people's vulnerability to excessive alcohol consumption as a negative coping measure for increased stress and social

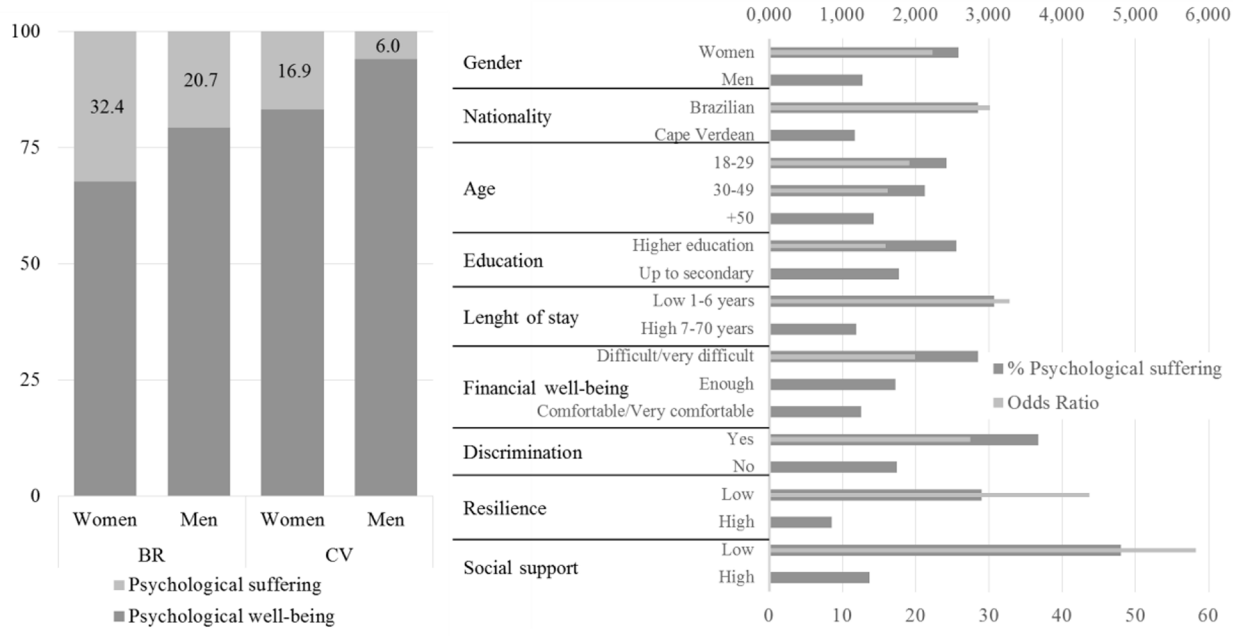

Fig. 3 Self-reported symptoms of psychological distress and associated factors

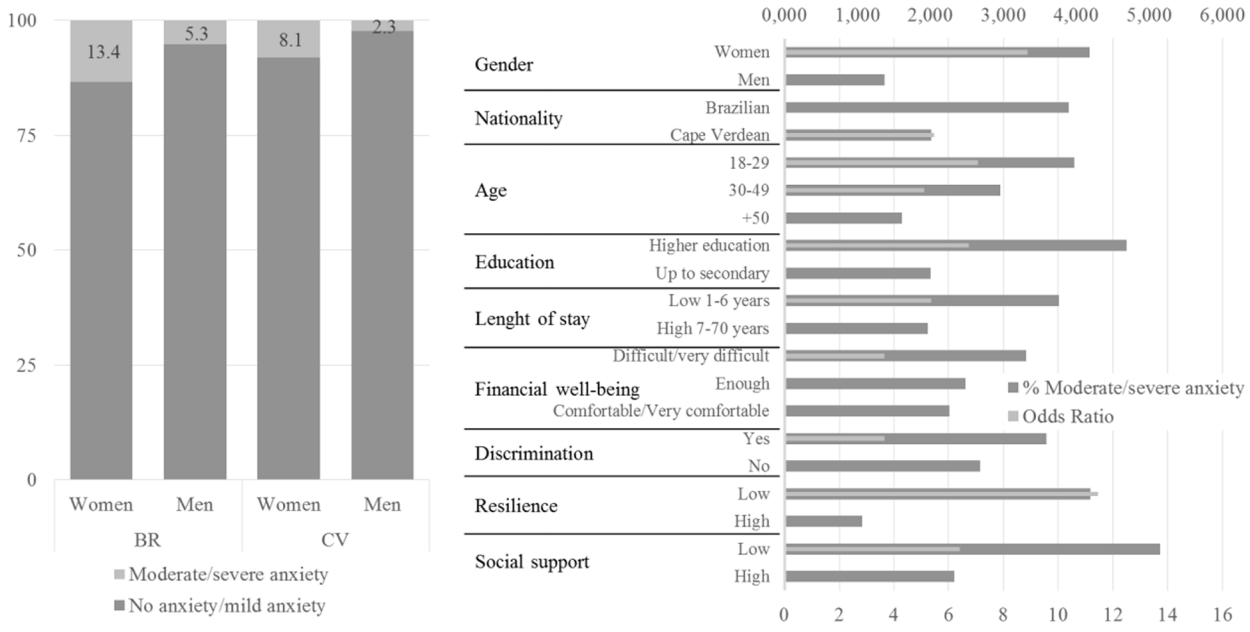

Fig. 4 Self-reported symptoms of anxiety (moderate to severe) and associated factors

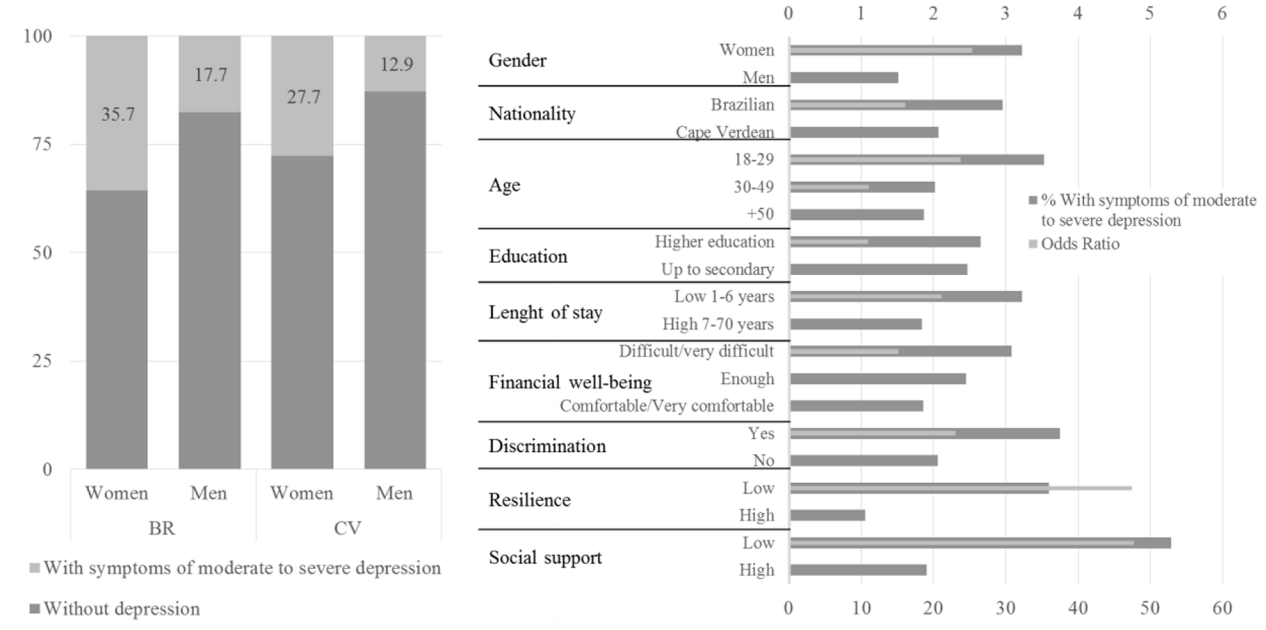

Fig. 5 Self-reported symptoms of depression (moderate to severe) and associated factors

distancing [105]. Several studies have found an increase in alcohol consumption associated with the presence of anxiety symptoms in adults during the COVID-19 pandemic [106–108]. Within the FG with immigrants, the increase in alcohol consumption was also mentioned as a coping strategy to deal with anxiety. A Brazilian man gave an illustration of this experience:

The need for the individual's survival is so much greater than any psychological disorder. Therefore, we must go over it all and silence everything that we live, psychologically, to the point of only stopping when there is some outbreak or something very big, or something much bigger. Therefore, we deal with making jokes, unfortunately we deal with it drinking like hell and stuffing our faces with beer or drink, when we can; we deal with upsetting friends having

Table 2 Recommendations emerging from the mixed-methods study

Type of support	Recommendations
General support for institutions	• Increase financial social support so that nongovernmental organizations (NGO) can match the basic needs of their target audiences and go beyond those (namely, investing in activities that enhance social support perception). • Support financially immigrant associations to ensure the stability of the human resources and the continuity and quality of services provided to communities as well as the development of their projects. • Create a service department for immigrant populations centralizing bureaucratic services (Residence, Finance, Social Security, National Health Service, etc.). • Foster collaborations between immigrant associations and local governments. • Increase the number of multidisciplinary teams, including social workers, working in the community. • Promote partnerships between academia and immigrant associations for the accurate identification of the real needs and barriers of immigrant populations in terms of access to health services. • Improve communication within the network of institutions with an active role in the integration of immigrants, such as schools, local authorities, and primary health care units.
Improving access to health	• Increase human resources in the health sector to improve the access to the health services and reduce the waiting lists. • Expand the presence of mediators of different nationalities for the provision of culturally sensitive care services. • Improve access to primary health care for immigrants without a family doctor, promoting proximity services and avoiding overcrowding in hospitals. • Bridge communication gaps with the migrant population so that information can reach everyone, namely in public health crises. • Create communication strategies that involve migrant communities, through the collaboration of immigrant associations. • Use, in all health services, signage in the main foreign languages. • Create and make available a booklet for the reception of migrants with all relevant information (e.g., access to health services, social security, rights, and duties).
Promoting mental health and access to mental health services	• Increase the number and promote a better-balanced geographic presence of mental healthcare professionals in the National Health Service. • Increase the access to educational psychologists in education settings. • Insure adequate, easily available, and affordable mental health care in places of easy access to immigrant populations. • Promote the possibility that immigrants seeking psychological support are cared for by co-nationals, mainly because of language barriers. • Integrate mental health and well-being across the curriculum and throughout school and college culture. • Enable immigrant associations to get a minimal set of mental healthcare professionals to allow the early identification of mental health problems and/or addictive behaviours and dependencies and allow the referral to NHS mental health services and/or treatment teams directed to alcohol and other addictions. • Foster the existence of projects concerning mental health promotion. • Promote mental health literacy and deconstruct mental health myths in different settings (school, work, family, community). • Create labour measures that are more protective for workers, with a positive impact on the mental health and well-being of the population.
Dissemination of services, awareness-raising and training	• Publicize in the media the existence of services provided by immigrant associations. • Disseminate the services of the High Commission for Migration (translation line, national migrant support line) in public institutions that provide services to immigrants (Finance, Social Security, Health Units) and in the media. • Promote campaigns to publicize the rights and duties of immigrants. • Stimulate training actions for professionals of public institutions that serve immigrants from different backgrounds, to inform about different cultures and respective specificities for effective healthcare. • Promote clarification and training sessions with health services (and other public services) to ensure access to health services for all immigrants. • Provide foreign languages classes, such as Cape Verdean and Guinea-Bissau Creoles classes, to professionals in the public services that deal with these target populations. • Provide professionals (including mental health professionals) in the public services with training in multiculturalism, cultural competence, and diversity. • Develop awareness-raising actions for health education for immigrants to promote access to health services. • Promote training actions for healthcare professionals taught by technicians from immigrant institutions/associations.
Reducing prejudice and discrimination	• Develop positive campaigns that talk about migration, migrants in Portugal and Portuguese migrants around the world, valuing differences, and cultures (in public services, schools, media, social networks or through digital influencers). • Listen and give voice to the migrant population, through associations, collectivities, and social movements, so that migrants are actively involved in the creation of measures directed to them from day one. • Give representation and visibility to migrants as policy makers regarding policies for the integration of migrants. • Include in school activities the theme of migration and the appreciation of cultural differences, to reduce prejudice, xenophobia, stigma, and social discrimination. • Promote training actions to improve literacy about racism and discrimination for administrative staff and other staff of public and private services in health care.

anxiety attacks, and things to talk about that all the time you will leave your life here because you can-

not take it. We deal with these stress spikes, but you must put your head in place because no one is going to take care of you if you do not take care of yourself, you know. Therefore, we must be our own doctor, our own psychologist, our own financial manager... we must be self-sufficient to the point of having a maturity greater than our problems.Brazilian immigrant man.

On the other hand, the participants in the FG discussed different positive strategies for dealing with the effects of the COVID-19 pandemic. The creation of mutual aid networks was one of them, whether in support of people who were in isolation or financial, food or psychological support. A form of these community-based initiatives and support networks was described by a Brazilian immigrant man:

We created a pseudocircular economy of support, where we, or whoever had, would share, sit down to talk, either by video call... and then everyone with a [positive] test, friends would gather in the neighbourhood to talk, and that was it... so, thanks to the universe, I always had support from wonderful people who made this pandemic not so devastating to the point of ending one's own life or committing any kind of mental insanity, because we were all at catastrophic levels of stress.Brazilian immigrant man.

In addition, during the in-depth interviews, it was reported that most of the interventions implemented by immigrant support associations covered primary needs. Few measures were directed at mental health needs. These associations managed to provide valuable and tailored support to the immigrant community in economically turbulent times.

The association, despite the pandemic, has somehow managed to implement its philosophy, which is Morabeza. Morabeza is a term that means love and beauty, even if it is in difficulty; these difficulties have been circumvented, is not it? To help precisely the neediest population that could not afford it.Representant of an immigrant support association.

Recommendations

Based on the findings from this study, a set of recommendations was defined (most of them explicitly formulated by participants of the FG or individual interviews) targeting structural changes in policy and practice and aiming to reduce stigma associated with migrants' mental health challenges, to increase proactive responses from communities and to provide opportunities for migrant populations' inclusion and social cohesion (Table 2).

Strengths and limitations

The outcomes of this research must be viewed through the lens of certain constraints. Primarily, the research was conducted using a cross-sectional framework and during a phase when government-imposed restrictions were being relaxed after an extended period of stringent measures, including lockdowns. Therefore, the reported levels of depression, anxiety, and subjective distress related to COVID-19 should not be extrapolated to a broader temporal context, as the study did not track these variables over time.

Secondly, the screening instruments employed were designed within a singular cultural milieu, drawing on participant pools exclusively from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies [109]. This origin introduces a bias towards Western cognitive models and interpretations of reality. It is therefore crucial to foster the integration of diverse ethno-psychological perspectives, including varied cross-cultural psychological approaches.

Third, the research methodology depended solely on self-reported data, which may be influenced by social desirability bias. Nonetheless, the study's incorporation of a methodological triangulation served to mitigate potential biases and to illuminate the pandemic's repercussions, pinpointing vulnerable demographics and guiding initiatives aimed at enhancing well-being and diminishing health inequities. The quantitative results of our survey revealed the extent of mental health concerns within immigrant communities. The focus groups and interviews offered a comprehensive understanding of individuals' experiences and perspectives during the pandemic, revealing the nuances of inequalities. The consensus among participants underscored the vital need to safeguard mental health amid a broader health crisis, highlighting the urgency to address the rising disparities.

Conclusion

This study contributes to and extends our understanding of the multiple and intersectional impacts of the COVID-19 pandemic on the mental health of migrant populations, revealing the positive effect of psychosocial factors such as resilience and perceived social support in the experience of adverse events during a public health emergency crisis. The experience of the COVID-19 pandemic continues to teach us the importance of understanding its implications for mental health, as well as how similar events in the future, such as public health or environmental crises, can potentially lead to mental health challenges among migrant populations.

The understanding and recommendations on migrants' mental health implications from the COVID-19 pandemic presented in this paper can inform future prevention and treatment strategies, including the allocation of resources to those most in need. Critically, they can also serve as evidence-based information for public health organizations and for the general public. We hope the results and the provided recommendations may contribute to the development of interventions that promote social integration, social cohesion, and a sense of belonging. Proposals to address the mental health issues of all populations, especially among immigrants, should be considered in the context of the necessary global changes, namely, in the delivery of mental health services, with greater involvement of patients, families, and communities in the design and delivery of such services.

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Data availability
The data used in this study are not publicly available due to potentially identifiable participant information. However, interested researchers may request access to the data by contacting the corresponding author. Requests will be evaluated based on valid research purposes, and data access may be subject to any necessary legal or ethical considerations. The data will be available for a period of 3 years after publication.

Declarations

Ethical approval and consent to participate
The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Ethics Committee of the Centro Académico de Medicina de Lisboa (287/21 approved on 20 December 2021). Informed consent was obtained from all subjects involved in the study.

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Competing interests
The authors declare no competing interests.

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