

## Commentary

**Cite this article:** Su Z, Bentley BL, McDonnell D, Cheshmehzangi A, Šegalo S, da Veiga CP and Xiang Y-T (2024). Post-COVID Mental Health Crises: Globally Minded for Solutions and Solidarity. *Disaster Medicine and Public Health Preparedness*, **18**, e295, 1–3 <https://doi.org/10.1017/dmp.2024.165>

Received: 10 February 2024

Revised: 09 May 2024

Accepted: 25 July 2024

### Keywords:




COVID-19; mental health; global health; health technologies; health equity

### Corresponding authors:

Zhaohui Su, Claudimar Pereira da Veiga and Yu-Tao Xiang;

Emails: [suzhaohuiszh@yeah.net](mailto:suzhaohuiszh@yeah.net), [szh@seu.edu.cn](mailto:szh@seu.edu.cn); [claudimar.veiga@fdc.org.br](mailto:claudimar.veiga@fdc.org.br), [claudimar.veiga@gmail.com](mailto:claudimar.veiga@gmail.com); [yxiang@um.edu.mo](mailto:yxiang@um.edu.mo)

# Post-COVID Mental Health Crises: Globally Minded for Solutions and Solidarity

Zhaohui Su PhD<sup>1</sup> , Barry L. Bentley PhD<sup>2,3</sup> , Dean McDonnell PhD<sup>4</sup>, Ali Cheshmehzangi PhD<sup>5</sup>, Sabina Šegalo PhD<sup>6</sup> , Claudimar Pereira da Veiga PhD<sup>7</sup> and Yu-Tao Xiang PhD, MD<sup>8</sup>

<sup>1</sup>School of Public Health; Key Laboratory of Environmental Medicine Engineering, Ministry of Education, School of Public Health, Southeast University, Nanjing 210009, China; <sup>2</sup>Bioengineering Research Group, Cardiff School of Technologies, Cardiff Metropolitan University, Cardiff, UK; <sup>3</sup>Collaboration for the Advancement of Sustainable Medical Innovation, University College London, London, UK; <sup>4</sup>Department of Humanities, South East Technological University, Carlow, Ireland; <sup>5</sup>School of Architecture, Design and Planning, The University of Queensland, Brisbane, Australia; <sup>6</sup>Faculty of Health Studies, University of Sarajevo, Sarajevo, Bosnia and Herzegovina; <sup>7</sup>Fundação Dom Cabral - FDC, Nova Lima, MG, Brazil and <sup>8</sup>Unit of Psychiatry, Department of Public Health and Medicinal Administration, University of Macau, Macao SAR, China

## Abstract

Mental health is deteriorating quickly and significantly globally post-COVID. Though there were already over 1 billion people living with mental disorders pre-pandemic, in the first year of COVID-19 alone, the prevalence of anxiety and depression soared by 25% worldwide. In light of the chronic shortages of mental health provider and resources, along with disruptions of available health services caused by the pandemic and COVID-related restrictions, technology is widely believed to hold the key to addressing rising mental health crises. However, hurdles such as fragmented and often suboptimal patient protection measures substantially undermine technology's potential to address the global mental health crises effectively, reliably, and at scale. To shed light on these issues, this paper aims to discuss the post-pandemic challenges and opportunities the global community could leverage to improve society's mental health *en masse*.

Mental health is deteriorating quickly and significantly globally. The World Health Organization (WHO) estimates that approximately 1 billion people were living with mental disorders in 2019.<sup>1</sup> To make an already daunting situation worse, in the first year of COVID-19 alone, the prevalence of anxiety and depression soared by 25% worldwide.<sup>1</sup> In a meta-analysis of studies published between 2020 and 2021, for instance, researchers found that 76.2 million cases of anxiety and 53.2 million cases of major depressive disorder were added to the global mental health burden, which caused a loss of 44.5 million and 49.4 million disability-adjusted life years, respectively, in 2020 alone.<sup>2</sup> While effective in curbing and containing virus spread,<sup>3</sup> COVID-19 countermeasures like lockdowns have introduced a cascade of unintended consequences, ranging from disruptions of already limited mental health services to deteriorations of affected communities' psychological wellbeing. An analysis of longitudinal data shows that lockdowns in the United Kingdom (UK) may have caused 29% of the participants to develop mental disorders, challenges that have lasted even after the restrictions were lifted.<sup>4</sup> Preliminary findings in the UK also show that, due to the pandemic, around 44.6% of people aged between 17 and 22 who face mental health challenges did not seek help.<sup>5</sup>

At a time when in-person interactions could become fatally contagious, technology was considered ideal for delivering contactless mental health services timely and efficiently.<sup>6</sup> Starting from the early days of the pandemic, virtual chat services and online self-help that could be accessed via everyday technologies like smartphones have provided much-needed interventions for people across the world, especially communities living under constant lockdowns or facing mobility difficulties, such as elderly people in China.<sup>7</sup> Advanced analytical tools such as artificial intelligence (AI) also helped health experts identify people who experience acute mental health crises such as suicidal ideation via analyzing social media posts in a near-time manner.<sup>6</sup> However, fragmented and oftentimes suboptimal patient protection measures,<sup>8,9</sup> along with equity issues, question whether technologies that aim to help may introduce preventable harm that compromises people's mental health. In a study of the 23 most popular women's health apps on the Apple Store and Google Play in terms of download frequency, for instance, researchers found that 87% of the apps share user data with third parties, often both without the users' consent or awareness.<sup>10</sup> Furthermore, disparities in technologies and high-speed Internet access within society mean that many vulnerable populations, such as older people living in rural areas, may have limited or no access to mental health technologies,<sup>11</sup> effectively further exacerbating health inequities and inequalities that digital health solutions should help bridge.

Although daunting, these hurdles can be addressed with global solutions. First, greater and more impactful investments in the development of mental health talents and resources could materially and meaningfully improve the availability and accessibility of mental health services worldwide. In its June 2022 report, the WHO reveals that, on average, governments across the globe allocate roughly 2% of their overall health budgets to mental health services.<sup>1</sup> This meagre investment both explains why many people still face access issues though mental health technologies are becoming increasingly ubiquitous for some, and underscores the critical need to build mental health infrastructures—like universal access to high-speed Internet, smart electronic devices, as well as eHealth and telepsychiatry literacy education programs—particularly in underserved communities such as youths, rural residents, domestic victims, and older people. Furthermore, considering the size and scale of the global population that faces mental health challenges, better integration of mental health education and awareness programs, such as in the form of mental health resilience courses for students across school levels and tailored interventions for domestic victims,<sup>12</sup> should also be developed to mobilize the agency and ability of individual members of society. When optimally implemented, timely and effective education could not only ensure mental health issues become less stigmatized, but also can help people become more vigilant in identifying and addressing their mental health needs. Not to mention that an increase in talents and resources could substantially alleviate some of the worst debilitating hurdles faced by the medical community—around half of the world’s population lives in societies where there are fewer than 1 psychiatrist for every 200 000 people.<sup>1</sup>

Another way to ensure society is well-equipped to meet people’s rising mental health concerns centers on healthcare capacity building, starting from expanding the global mental health workforce, from mental health physicians and nurses, psychologists and counsellors, to psychiatric social workers and volunteers. To motivate interested individuals, government and health officials should also improve incentives to ensure mental health professionals are more committed to their narrow day-to-day tasks and broader responsibilities to society, such as pay packages, affordable housing and

childcare, worthwhile career aspects, and forward-looking social welfare. Moreover, society should also strive for equal pay on a global level to ensure talents trained in low- and middle-income countries are both morally and financially incentivized to serve the local communities to prevent global mental health disparities from worsening. In addition to pay standards, mental health education, training, and regulations should also be comparable on a global level, so that talents and resources can be readily mobilized across the globe in times of crisis.

Take regulations for instance. While technology could shorten geographical distances between service providers and users, regulatory barriers such as access limitations exerted by individual governments, app stores, or even incompatible operating systems could prevent people from accessing mental health services in a timely fashion. Having a global mental health regulation system in terms of protection of patient safety, security, and privacy, in turn, has the potential to make interventions readily accessible to users across borders.

Comparable training should also apply to technologists who develop mental health technologies. Rather than solely relying on a limited number of AI ethicists or policymakers as oversight mechanisms, the global community could and should ensure technologists receive mandatory training in ethics to reduce preventable harms in mental health technologies, as well as improve the interoperability of these interventions across contexts. For instance, without a consensus in terms of what “sentient” entails for advanced AI systems among technologists,<sup>13</sup> let alone whether and to what extent AI technologies can be regulated as “sentient entities”, it could be considerably difficult to protect patients worldwide from erroneous advice or treatment insights generated by AI systems that are developed without rigorously vetted guidelines. The global presence and prevalence of mental illnesses require a whole-of-society approach to tackle. Essentially, it is in every nation’s interest to, preferably via fully and sustainably leveraging the potential of advanced technologies like AI, mitigate the mental health challenges faced by their residents, visitors, as well as physical and virtual neighbors for the betterment of humanity and society, if not productivity and the economy.

**Table 1.** Key determinants of health

Concept	Definition
<b>Social Determinants of Health</b> <b>Examples:</b> Education, occupation, and socio-economic status	Social-economic influences that impact people’s physical health and psychological well-being. Social determinants of health are relatively <b>mutable</b> , the negative impacts of which can be counteracted with personal decisions, ranging from lifestyle changes (e.g., diet, exercise regime, career change).
<b>Environmental Determinants of Health</b> <b>Examples:</b> Zoonotic diseases, air pollution, microplastic density, and climate disasters	Environmental influences that shape people’s physical health and psychological well-being. Different from social determinants of health, environmental determinants of health are <b>less mutable</b> to individual decisions. For instance, while countermeasures like mask-wearing can mitigate the impact of outdoor air pollution or microplastic intake, these protective mechanisms often cannot eliminate the negative influences of most, let alone all, of the all-encompassing elements in the environment.
<b>Technological Determinants of Health</b> <b>Examples:</b> Information and communication technology infrastructure, accessibility and inclusiveness of technologies, and data privacy and security protection.	Technological factors that shape people’s physical health and psychological well-being. Different from social and environmental determinants of health, technological determinants of health could be <b>relatively mutable</b> when technological policies and infrastructures are developed serving the interests of the end-users as the ultimate objective. For example, if smart health devices are defaulted and programmed to prioritize data privacy and safety (e.g., not collecting identifiable personal information), individual users would be less likely to become victims of data breaches.

Last but not least, the global mental health community needs to be more vigilant and ready for the compounding threats—social, environmental, and technological influences—that have either been introduced, unearthed, or intensified by COVID-19. Increasingly, as seen amid COVID-19 and beyond, people’s physical health and psychological well-being are being shaped by an ever-interacting and interdependent set of factors that often know no borders. Rather than merely focusing on social determinants of health, environmental and technological determinants of health may hold even greater potential to shake and shape global health (please see Table 1). The cascading impacts of COVID-19 on global mental health may be just one of many examples of when environmental determinants of health overpower the scientific community’s collective ability to protect society from imminent and existential crises. A growing body of research suggests that, as climate change worsens, both zoonotic diseases and climate disasters are on the rise,<sup>14</sup> effectively suggesting that the global health community must evolve as fast as these deadly “curveballs” like Disease X or Pathogen X,<sup>15</sup> if not faster, to prevent other COVID-like emergencies from taking root.

Another group of make-or-break factors that could shape the contour of global health are technological determinants of health. The “black box” nature of many AI tools and techniques means that taking a laissez-faire approach towards governance and management of AI use and application in healthcare could lead to greater uncertainties—which often translate into the loss of productivity, livelihoods, and lives—compared to more ingrained double-edged inventions, such as social media and smart devices. An added danger of AI technologies is the mere fact that the world is more virtually connected than ever, which means it becomes ever more difficult to contain and manage a specific AI application in a set context. Subsequently, how to ensure AI-enabled healthcare products and services deliver—first, do no harm; second, do substantial good—is a question that can only be effectively and empathetically addressed with global collaboration and cooperation.

## Conclusion

Global mental health issues demand global solutions, which are integral to global health solidarity. In the era of post-COVID, a time when polarizing forces like geopolitical tensions and anti-Asian sentiments come in waves, the last things the scientific community can afford are inertia and complacency. There is no health without mental health. Every one of us in the global health ecosystem can make a positive difference in our individual and collective mental health. Together, we can make our society stronger and better, mentally and physically. Ideally, actions should have been taken before watershed events like COVID-19, the next best time is now: Let us make waves and protect mental health for all.

**Data availability statement.** Data are available upon reasonable request.

**Acknowledgements.** The authors wish to express their gratitude to the editors and reviewers for their constructive input and insightful feedback.

**Author contribution.** ZS, BLB, DMD, AC, SS, CPdV, and YTX conceived the work, reviewed the literature, drafted, and edited the manuscript. All authors approved the manuscript for submission.

**Funding statement.** This project is supported by “The Fundamental Research Funds for the Central Universities” (4025002306).

**Competing interest.** The authors have no competing interests to declare.

## References

1. **World Health Organization.** *World mental health report: transforming mental health for all.* Geneva: World Health Organization, 2022.
2. **Santomauro DF, Mantilla Herrera AM, Shadid J, et al.** Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *The Lancet.* 2021;**398** (10312):1700–1712.
3. **Chu DK, Akl EA, Duda S, et al.** Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. *The Lancet.* 2020;**395** (10242):1973–1987.
4. **Chandola T, Kumari M, Booker CL, et al.** The mental health impact of COVID-19 and lockdown-related stressors among adults in the UK. *Psychol Med.* 2020:1–10.
5. **Newlove-Delgado T, McManus S, Sadler K, et al.** Child mental health in England before and during the COVID-19 lockdown. *Lancet Psychiatry.* 2021;**8**(5):353–354.
6. **Liu S, Yang L, Zhang C, et al.** Online mental health services in China during the COVID-19 outbreak. *Lancet Psychiatry.* 2020;**7**(4) e17–e8.
7. **Yang Y, Li W, Zhang Q, et al.** Mental health services for older adults in China during the COVID-19 outbreak. *Lancet Psychiatry.* 2020;**7**(4):e19.
8. **Su Z, Cheshmehzangi A, McDonnell D, et al.** Facial recognition law in China. *J Med Ethics.* 2022:medethics-2022-108130.
9. **Su Z, Bentley BL, McDonnell D, et al.** China’s algorithmic regulations: public-facing communication is needed. *Health Policy Technol.* 2022: 100719.
10. **Alfawzan N, Christen M, Spitale G, et al.** Privacy, data sharing, and data security policies of women’s mhealth apps: scoping review and content analysis. *JMIR Mhealth Uhealth.* 2022;**10**(5):e33735.
11. **Zhou X-f, Chen L.** Digital health care in China and access for older people. *Lancet Public Health.* 2021;**6**(12): e873–e4.
12. **Su Z, McDonnell D, Roth S, et al.** Mental health solutions for domestic violence victims amid COVID-19: a review of the literature. *Globalization and Health.* 2021;**17**(1):67.
13. **McGee P.** Google places engineer on leave after he claims group’s chatbot is ‘sentient’. Published June 13, 2022. Accessed June 13, 2022. <https://www.ft.com/content/bedd75a8-3068-49f0-b5bc-e691b28a1d1b>
14. **Mora C, McKenzie T, Gaw IM, et al.** Over half of known human pathogenic diseases can be aggravated by climate change. *Nature Climate Change.* 2022; **12**(9): 869–875.
15. **World Health Organization.** Research response to pathogen X during a pandemic. Published January 19, 2024. Accessed February 22, 2024. <https://www.who.int/news-room/events/detail/2024/01/19/default-calendar/Research-response-to-pathogen-X-during-a-pandemic>