

# Depression and anxiety during the pandemic: knowns and unknowns

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The COVID-19 pandemic has taken a toll on people's mental health. Yet the global extent of this impact remained largely unknown. By leveraging the best available data from surveys around the world with measurements of anxiety and depression both before and during the pandemic, and analysing these data with the global burden of disease (GBD) model, Santomauro and colleagues provide the first global insight into the burden of depression and anxiety during the pandemic to date.<sup>1</sup> The data reveal a significant and alarming increase in the prevalence of both depression (with an estimated additional 53.2 million cases worldwide, i.e. a 27.6% increase) and anxiety (76.2 million additional cases, i.e. a 25.6% increase) during the pandemic. Findings are all the more concerning as depressive and anxiety disorders were already leading causes of disability worldwide.<sup>2</sup>

The study has unique strengths. First, by using the GBD model, it translates crude estimates from heterogeneous surveys into numbers of additional cases and disability-adjusted life years. This makes the findings more tangible for policymakers, academics, charities, and the general public. Second, the study leverages data on COVID-19 impact indicators (i.e. human mobility, COVID-19 infection rates, and excess mortality). These indicators are estimated for *all* countries and used to inform the extrapolation of changes in prevalence to countries with no available survey data. Further, the study provides a leave-one-country-out-cross-validation to assess the generalizability of the estimates to countries with no available surveys.

The study also has a few key limitations, largely resulting from the available data rather than the approach used to analyse them. First, there is a lack of direct measurements on changes in prevalence in large regions of the world (e.g. within South America and Africa). For these regions, the GBD model has to extrapolate estimates from other regions (e.g. USA or Europe) which are very different on many levels (economical, demographic, political, cultural, etc). This extrapolation might be unreliable as shown in the cross-validation results. For instance, the GBD model predicts a substantial increase in depression prevalence in Denmark and almost no change in China whereas the opposite is observed in surveys (Figure S9). Second, the available data are based on self-report scales (e.g. PHQ-9 and GAD-7) which measure *symptoms* rather than *disorders*. While both are important, the difference between them is relevant in the pandemic context. An ICD-10 diagnosis of anxiety disorder requires that individuals recognise their emotional distress as excessive or unreasonable. GAD-7 does not capture that aspect. For an individual at high risk of COVID-19 complications to constantly feel nervous and afraid would not be unreasonable (hence not meeting requirements for an anxiety disorder), yet it would yield a high GAD-7 score. Finally, the study is unable to identify what is *causing* the increased burden of depression and anxiety. In particular, the relative contributions to the prevalence of depression and anxiety from COVID-19 illnesses,<sup>3</sup> some measures used to curb the propagation of the virus (e.g. lockdowns),<sup>4</sup> and other correlates of the pandemic (e.g. economic austerity) remain elusive.

By synthesising the best available data, this study therefore not only reveals what we do know, but also – crucially – exposes what we still don't know. These known unknowns have implications for interpretation of the findings. The lack of direct measurements in most countries implies that the findings are unable to inform on specific countries to be targeted by aid programmes aimed at improving the population's mental health. Measurement of clinical diagnoses will be needed to plan service provision, ascertain the burden of the pandemic in terms of mental disorders, and forecast social and economic consequences. Critically, identifying causal mechanisms – and modifiable mechanisms in particular – will be important to design and deliver the right interventions to the right people.<sup>5</sup>

The first global insight into the burden of depression and anxiety during the pandemic by Santomauro and colleagues starkly highlights the impact of the pandemic on mental health globally. We agree “taking no action to address [this] burden [...] should not be an option”. The study should therefore urgently incentivise more research to determine the fuller geographic distribution of depression and anxiety, the prevalence of depressive and anxiety disorders, and the underpinning mechanisms to improve mental health in the context of the COVID-19 pandemic globally.

### **Conflict of interest statement**

The authors report no conflict of interest.

### **References**

- 1 Santomauro DF, Herrera AMM, Shadid J, *et al.* Estimating the global prevalence and burden of depressive and anxiety disorders in 2020 due to the COVID-19 pandemic. *Lancet* 2021
- 2 Murray CJL, Vos T, Lozano R, *et al.* Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012; **380**: 2197–223.
- 3 Taquet M, Geddes JR, Husain M, Luciano S, Harrison PJ. 6-month neurological and psychiatric outcomes in 236 379 survivors of COVID-19: a retrospective cohort study using electronic health records. *Lancet Psychiatry* 2021; **8**: 416–27.
- 4 Marroquín B, Vine V, Morgan R. Mental health during the COVID-19 pandemic: Effects of stay-at-home policies, social distancing behavior, and social resources. *Psychiatry Res* 2020; **293**: 113419.
- 5 Holmes EA, O’Connor RC, Perry VH, *et al.* Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *Lancet Psychiatry* 2020; **7**: 547–60.