

Effects of the COVID-19 pandemic on mental health: A multinational network study

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Background

The COVID-19 pandemic has resulted in great mental health consequences worldwide.¹⁻³ However, existing evidence on the changes in the incidence of specific mental health conditions is mixed. A recent meta-analysis has estimated an increase of 27.6% and 25.6% in cases of major depressive and anxiety disorders, respectively.⁴ Nonetheless, there are concerns about the decrease in mental health diagnoses during the pandemic as healthcare services were prioritized for COVID-19 cases. Additionally, containment strategies such as lockdowns and physical distancing, COVID-19-related fears, and the worsening financial insecurity may exacerbate undiagnosed mental health conditions.^{1,5} Studies in the UK suggested significant reductions in primary care contacts for mental health conditions during the pandemic compared with the pre-pandemic level.⁵⁻⁷ However, only a few specific mental health conditions (i.e., anxiety, depression, and eating disorders) or broad categories (i.e., severe mental illness and common mental health problems) were examined in these UK studies. In addition, different countries may have been affected by the pandemic differently and the corresponding impact on mental health is unclear. In this population-based multinational network study, we investigated the changes in the incidence of seven mental health conditions before and during the COVID-19 pandemic in six countries.

Methods

Electronic health records in IQVIA Longitudinal Patient Database France (France IQVIA), IQVIA Disease Analyser Germany (Germany IQVIA), Longitudinal Patient Database Italy (Italy IQVIA), Ajou University School of Medicine database from South Korea (South Korea AUSOM), Kangwon National University database from South Korea (South Korea KUN), and

IQVIA Medical Research Data UK (UK IMRD), and claims data in IBM MarketScan Multi-State Medicaid Database from the US (US MDCD), IBM MarketScan Medicare Supplemental and Coordination of Benefits Database from the US (US MDCR), and IQVIA Open Claims US (US Open Claims), between 2017 and 2021, were mapped to the Observational Medical Outcomes Partnership (OMOP) common data model.

France IQVIA and Germany IQVIA consisted of data collected from proprietary practice management software used by general practitioners (GPs) and selected specialists. Italy IQVIA and UK IMRD contained patient records from GP practices. South Korea AUSOM and KUN included monthly updated records from general hospitals in South Korea. US MDCD was comprised of records from Medicaid enrollees from multiple states in the US. US MDCR consisted of data collected from retirees in the US with primary or Medicare supplemental coverage through privately insured fee-for-service, point-of-service, or capitated health plans. US Open Claims included pre-adjudicated health insurance claims at the anonymized patient-level collected from office-based GPs and specialists via office management software and clearinghouse switch sources for the purpose of reimbursement.

Individuals who had a diagnosis of depressive disorders, anxiety disorders, alcohol misuse or dependence, substance misuse or dependence, bipolar disorders, personality disorders, or psychoses between 2017 and 2021, and had at least 365 days of observation time before the first diagnosis, were extracted from the databases. The total number of cases per month was divided by the total number of unique individuals in each dataset during the same period to calculate the monthly incidence of mental health conditions for each dataset. The year 2016 was used as a screening period for potential prevalent cases. We used interrupted time-series analyses to compare changes in the incidence of mental health conditions after (Apr 2020 to the latest available date of each database) and before (Jan 2017 to Feb 2020) the introduction of national restrictions.

Results

We included 629,712,954 individuals from nine datasets. Declines in the incidence of mental health conditions were observed at the early stage of the pandemic in all datasets, except for: anxiety and bipolar disorders, and psychoses in France, depressive and bipolar disorders, alcohol

misuse or dependence, and psychoses in South Korea KUN, alcohol misuse or dependence in the UK, and all conditions in Germany and South Korea AUSOM. Compared with the corresponding months in 2019, the most considerable reduction was found in substance misuse or dependence in US MDCR for April (Rate ratio [RR] = 0.24 [95% CI 0.22-0.26]) and May (0.31 [0.28-0.33]) in 2020. Results from interrupted time-series analyses showed substantial decreases in the incidence of all mental health conditions immediately following the introduction of restrictions in France, Germany, US MDCR, and US Open Claims (Figure 1). The largest reductions were observed in depressive disorders in France (0.10 [0.05-0.19]), UK (0.07 [0.02-0.21]), and US MDCD (0.30 [0.11-0.83]), anxiety disorders in South Korea KUN (0.29 [0.10-0.87]), substance misuse or dependence in US MDCR (0.001 [0-0.01]) and Open Claims (0.30 [0.23-0.40]), bipolar disorders in Germany (0.22 [0.10-0.46]), and personality disorders in Italy (0.10 [0.05-0.19]) and KR AUSOM (0.004 [0-0.28]). After the introduction of restrictions, the incidence of most conditions increased gradually over time in France, Germany, Italy, the UK, US MDCR, and US Open Claims (Figure 2).

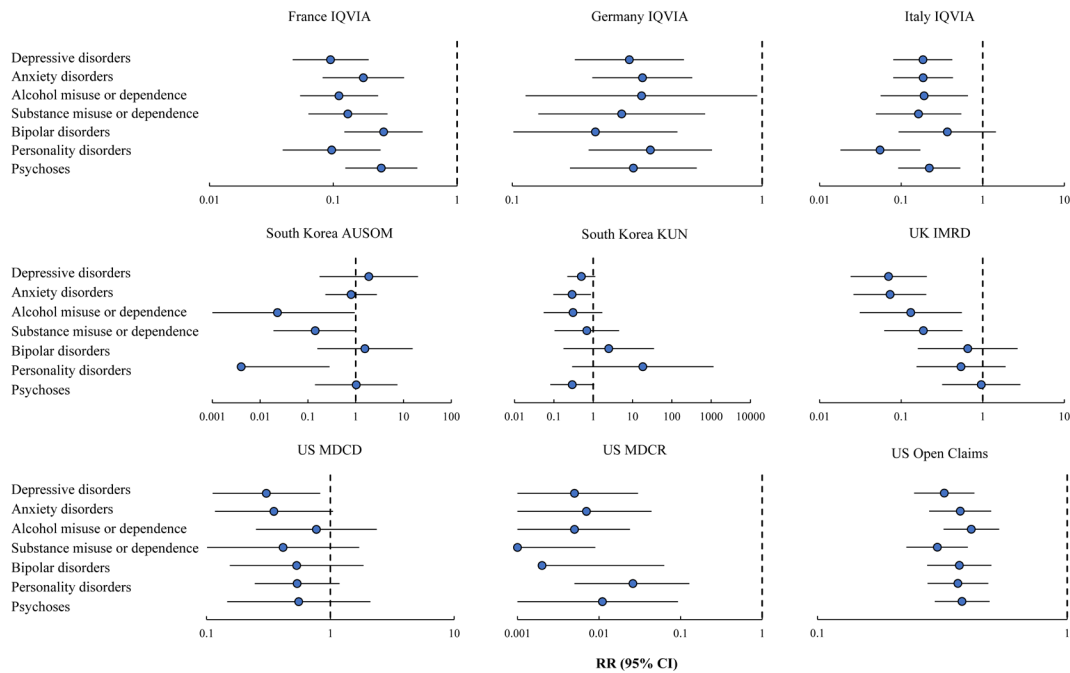


Figure 1. Estimates of the relative reduction in the incidence of mental health conditions (level change) after the introduction of restrictions compared with the pre-restriction level.

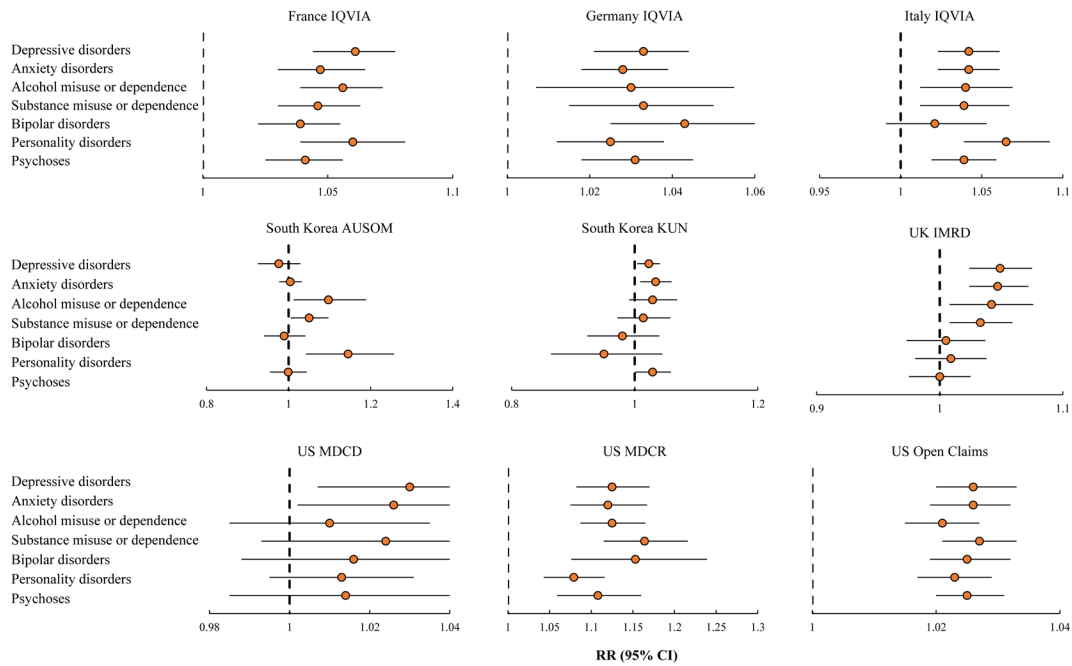


Figure 2. Estimates of the time effects (slope change) following the introduction of restrictions.

Conclusion

We found that the incidence of mental health conditions reduced in many countries during the period when stringent national COVID-19 containment strategies were imposed. These may have created a hidden backlog in patients that require care but are not diagnosed. Patients with delayed care may result in more severe complications, leading to greater demand for health services. Healthcare providers should be better prepared to cope with the increased demands for mental health care services as the pandemic restrictions are gradually lifted. Rapidly adapting multipronged strategies should also be considered to ensure the acceptability and satisfaction of mental health care demand.

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