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these platforms can be enhanced by including the administration of self-rated symptom scales, automated appointment reminders, and electronic prescription of medication.⁸ More advanced opportunities include leveraging technology for digital phenotyping (eg, the use of biosensors paired with smartphones), algorithm-based support, and machine learning for optimisation of treatment.⁹ It is noteworthy that some digital platforms have integrated expert clinician interventions, recovery and vocational support, and peer-to-peer social networking.¹⁰ Video-based telepsychiatry will face challenges to scale-up because of its reliance on highly skilled mental health professionals. Teleconferencing platforms might be able to facilitate more scalable models of care, for example, enabling specialists to promote remote supervision to non-specialist health-care workers. The mechanisms necessary to finance and sustain these novel approaches need to be considered.

What will happen in psychiatry after COVID-19? Although face-to-face mental health services are crucially important, we anticipate that health-care facilities that have established digital platforms ranging from text messaging to videoconferencing will continue to employ these, given favourable perceptions among both clinicians and patients. We would encourage ongoing emphasis on equitable access, appropriate regulation and reimbursement, and quality assurance. Quality assurance could be supported by building new capacities, particularly the incorporation of measurement-based care and learning models for implementation that continuously assess and improve outcomes.¹ COVID-19 has accelerated the digital progression in mental health; collaborative efforts from

health care and academic institutions, policy makers and funding agencies, clinicians, technology developers, and patient advocates are needed to fully leverage this opportunity to achieve sustained delivery of quality mental health care.

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The hidden burden of eating disorders during the COVID-19 pandemic



Eating disorders are disabling, potentially fatal, and costly mental disorders that substantially impair physical health and disrupt psychosocial functioning.¹ Both international disease classification systems (DSM-5 and ICD-11) list seven major eating disorders. These include the well known diagnostic categories of anorexia nervosa and bulimia nervosa, binge-eating disorder, and three additional disorders: avoidant/

restrictive food intake disorder, pica, and rumination disorder. There is also a category of otherwise specified feeding or eating disorders (OSFED).

In *The Lancet Psychiatry* Santomauro and colleagues² reported on the hidden burden of eating disorders and showed that the inclusion of binge-eating disorder and OSFED in the analysis of the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2019, resulted in



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41.9 million additional, previously unrepresented cases of eating disorders in 2019, with a revised estimate of the global prevalence of eating disorders four times higher than had been thought. Thus, eating disorders have a prevalence comparable to drug use disorders and are more common than bipolar disorders, autism spectrum disorders, and conduct disorders. The authors highlighted that due to insufficient data, they were unable to include other eating disorder diagnoses (avoidant/restrictive food intake disorder, rumination disorder, and pica).

Wu and colleagues³ analysed trends in prevalence and disability-adjusted life years of eating disorders from 1990 to 2017, on the basis of the GBD 2017 data. As expected, the authors found that the burden of eating disorders was highest in high-income countries, but a trend towards increasing eating disorder burden was observed globally, especially in east and south Asia.

One aspect contributing to the notion that eating disorders constitute a hidden burden is inherent in the disorders themselves: similar to other mental disorders and obesity, eating disorders are associated with considerable stigma and self-stigmatisation, typically as trivial and self-inflicted disorders. Such stigma might obstruct help-seeking behaviour and contribute to decreased visibility and poor general awareness of these disorders in society.

The COVID-19 pandemic has exacerbated the burden of eating disorders and simultaneously has highlighted the urgent need to raise awareness of these disorders. While the pandemic has impaired population mental health globally, it seems to have had particularly detrimental effects on people with or at risk of eating disorders. Multiple reports from different countries, in Europe, Australia, and North America, have shown an increase in the incidence of eating disorder behaviours or diagnoses in the community, or deterioration of eating disorders in patient populations, often with more severe symptoms and comorbidities since the start of the COVID-19 pandemic. Using electronic health records of 5.2 million young people, Taquet and colleagues⁴ demonstrated that the overall incidence of eating disorders increased during the COVID-19 pandemic by 15.3% in 2020, compared with previous years. The relative risk of eating disorders increased steadily from March, 2020, onwards, exceeding 1.5 by the end of the year. The increase occurred solely in women and

girls and was primarily observed in adolescents and for anorexia nervosa. Lin and colleagues⁵ observed for their tertiary care children's hospital in the USA, an increase in adolescents and young adults presenting with eating disorders who needed inpatient or outpatient care during the pandemic.

Knowledge about the magnitude or the burden of any disorder is not sufficient to derive the necessary steps for action on research, treatment, and services. Writing about the links between the COVID-19 pandemic and eating disorders, Katzman⁶ stated, "unfortunately, it took a disaster like the COVID-19 pandemic to put the spotlight on eating disorders", and "it is a wake-up call for making eating disorders a priority". These necessary steps, however, require a clear agenda and corresponding funding, which we formulated for Europe in 2016.⁷ In the UK, a report by the All-Party Parliamentary Group on Eating Disorders called for action to break the vicious cycle of stigma and underfunding of research into eating disorders. Colleagues from Australia and the UK have also highlighted the need for a joined-up research agenda on eating disorders, to match increasing service demand among young people during the pandemic, with appropriately funded innovative clinical research.⁸

Even before the COVID-19 pandemic, meta-analyses⁹ indicated the need to critically review and consistently develop treatment programmes, especially for adults with anorexia nervosa. For optimal care pathways, five steps are needed: first, an improvement in awareness and recognition in primary care to facilitate early engagement in treatment; second, a reduction in the time to access specialist treatment; third, an increase in the effectiveness of routine treatment with precision planning and continuous monitoring with the provision of augmentation strategies; fourth, optimisation of inpatient care by interventions that bridge the transition from inpatient services to home-based care and increase community support; and fifth, new rehabilitation approaches and treatment strategies for individuals who do not respond to standard treatment.¹⁰

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Immunopsychiatry in 2021: premise to promise, and back again



2021 was another busy year for the nascent field of immunopsychiatry. A key premise of the contemporary agenda lies in bottom-up pathways: immune mechanisms can affect brain function and contribute to psychiatric illness. An argument follows that irrespective of their origins, these signals can be targeted therapeutically. In turn, there is seemingly a promise of novel precision therapeutics for common and often otherwise treatment-resistant psychiatric disorders. This optimistic vision is not unfounded; there is a growing body of observational, mechanistic, and interventional findings spanning multiple psychopathologies and immune mechanisms.¹ However, some recent treatment trials have yielded more sobering findings. We argue that although this should provoke pause for thought, it is far too early to despair.

There have been several recent examples of large randomised controlled trials—for example, of minocycline in schizophrenia—that have failed to separate anti-inflammatory treatment from placebo based on improvements in psychopathology.² A favoured explanation is that subgroups in whom these mediators are abnormally raised have been lost amidst those without this inflammatory component.³ Attempts have therefore been made to stratify clinical groups into putative biological entities, often using circulating biomarker concentration thresholds for classification. There are nonetheless examples of stratified well-powered studies testing anti-cytokine monoclonal antibodies, such as infliximab for bipolar

depression⁴ and sirukumab in unipolar depression,⁵ that have also struggled to find a benefit, despite the clear disease-modifying actions of these treatments in prototypical inflammatory diseases.

Peripheral blood markers do not necessarily reflect what is happening in the brain, so it could simply be that better biomarker approaches are needed, perhaps involving multi-modal panels that include cerebrospinal fluid, or it might be that something more fundamental is amiss. Even in brain diseases where neuroinflammation is undoubted, such as multiple sclerosis, the road to effective immune therapies has been both long and winding. For primary psychiatric disorders where immunopathology, if present, is likely to be more subtle, the model might need adjustment. The use of biomarkers as a bold objective approach encapsulates a vision of immunopsychiatry as a modernising scientific force for therapeutic good. However, a starting point of categorical diagnoses, encompassing considerable underlying heterogeneity, might mean that relevant signals are obscured. An illustrative comparison comes from NMDAR-antibody encephalitis, a brain disease with a psychiatric onset where causative immune mechanisms are well characterised. Here there is a clinical structure—it just does not map very well onto the classifications of diagnostic manuals.⁶

2021 saw a return to emphasising the potential utility of psychiatric phenotype to enrich for therapeutically tractable neuroimmune mechanisms. For example, with findings reminiscent of the overlap between sickness