

Patients with metabolic illnesses are more likely to develop new mental disorders following the COVID-19 pandemic

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Abstract

After the COVID-19 pandemic, little is known about new-onset mental illnesses among individuals with metabolic conditions. Here, we sought to determine the parameters linked to the emergence of new-onset mental diseases and investigate the shifts in mental health after the COVID-19 pandemic. Changes in mental health scores and new-onset alcohol use disorder, anxiety, and depression after the COVID-19 pandemic were evaluated. Additionally, their relationship to exposures relevant to sociodemographic, clinical, and self-perceived emotional states was investigated. The risk of developing new-onset depression (hypertension: odds ratio [OR], 1.22; 95% CI 1.01–1.47; diabetes: OR 1.8; 95% CI 1.25–2.6; obesity: OR 1.66; 95% CI 1.43–1.95) and anxiety (hypertension: OR 1.32; 95% CI 1.06–1.63; diabetes: OR 1.66; 95% CI 1.06–2.62; obesity: OR 1.2; 95% CI 0.99–1.44) after the COVID-19 pandemic was substantially correlated with prevalent metabolic diseases. While the Alcohol Use Disorder Identification Test (AUDIT) score declined over time (beta, - 0.24; 95% CI - 0.30 to - 0.18), the Patient Health Questionnaire-9 (PHQ-9; beta, 0.32; 95% CI 0.29–0.35) and Generalized Anxiety Disorder-7 (GAD-7; beta, 0.10; 95% CI 0.06–0.13) scores significantly increased during the COVID-19 pandemic. The increased rise in PHQ-9 and GAD-7 scores after the pandemic was linked to preexisting metabolic illnesses. After the COVID-19 pandemic, adults with metabolic diseases are more likely to experience new-onset anxiety, depression, and alcohol use problems.

Key Words: COVID-19, Mental health, Depression, Anxiety.

1. Introduction

A worldwide health concern, mental illnesses are linked to poor health outcomes and impose a significant socioeconomic cost. Environmental factors have a significant impact on mental health, and the COVID-19 pandemic has put mental health at risk worldwide by causing a significant change in public policy that aims to stop viral spread by imposing social and physical restrictions (such as mask requirements, lockdowns, and physical distancing). Neuropsychiatric aftereffects of COVID-19, including exhaustion, depression, anxiety, and cognitive dysfunctions, may appear in connection with neuroinflammation or invasion of the central nervous system (Global, 2022; Szcześniak, 2021).

The intricate interplay of physical, socioeconomic, and genetic factors appears to put people with metabolic diseases such as diabetes, hypertension, and obesity at higher risk for mental disorders. These conditions are also associated with

significant short- and long-term complications and negative outcomes. To reduce illness burden, stop mental health from getting worse, and direct focused intervention, it is essential to recognize patterns of mental health change in patients with metabolic disorders after the pandemic and comprehend the socioeconomic ramifications of these changes. Significant increases in anxiety, depression, sleep issues, and substance use disorders were found in a systematic review of mental health issues during the pandemic; however, the majority of studies were carried out in the general population, students, and healthcare professionals, and they concentrated on the short-term prevalence following COVID-19 infection. extensive, well monitored longitudinal (Penninx, 2022).

In addition to extensive demographic, biochemical, and genetic data, the UK Biobank is a prospective study that includes a newly published 6-year interval longitudinal follow-up mental well-being questionnaire (Aly, 2021). In this study, we looked at how mental health changed over time during the COVID-19 pandemic and investigated a wide range of characteristics linked to the emergence of new-onset mental disorders in almost 60,000 UK Biobank participants. We postulated that people with common metabolic diseases would be more susceptible to mental health issues that deteriorate and develop new ones.

2. Methods:

A series of self-report questions known as the Mental Health Web Questionnaire (MHQ) is designed to identify symptoms of potential mental illnesses, primarily anxiety and depression, even in those without a formal diagnosis or medical records in the associated national health databases. Approximately one-third of the participants completed the baseline MHQ, which included the domains of current depression, anxiety disorder, and alcohol misuse. About 330,000 individuals received follow-up surveys to track changes in psychiatric symptoms and experiences related to mental health over time.

Evaluation of alcohol use disorder, anxiety, and depression:

MHQ, which combines recognized screening and severity assessment instruments to assess the participants' mental health, was used to assess depression, anxiety, and alcohol use disorder at baseline and follow-up.

Mental health following the COVID-19:

We investigated the factors linked to new-onset depression, anxiety, and alcohol use disorder, the change in mental health after the COVID-19 pandemic, and the accelerated deterioration of mental health in almost 60,000 persons with a COVID-19 diagnosis in the UK Biobank. In comparison to those without such comorbidities, we found that adults with common metabolic disorders, such as obesity, diabetes, and hypertension, had a higher risk of developing new-onset depression, anxiety, and alcohol use disorder during the pandemic. While AUDIT scores declined with time, PHQ-9 and GAD-7 scores often rose. The rate at which PHQ-9 and GAD-7 scores declined was significantly higher in patients with metabolic illness. A lower risk of developing a new mental illness and its progression was substantially associated with social interactions, loneliness, and resilience.

When compared to the pre-pandemic period, the COVID-19 pandemic significantly increased the prevalence of anxiety and depression, changing the global mental health picture. Comorbidities are linked to a higher risk of mental disease, according to mounting data on the COVID-19 pandemic's effects on mental health (Szcześniak, 2021). Patients with underlying comorbidities are especially vulnerable to the negative impact of financial instability and social isolation, which can have a significant negative impact on mental health. In addition to being more likely to experience mental health issues during the post-pandemic period, individuals with metabolic diseases are also more likely to experience negative biological reactions, including high blood pressure, insulin resistance, and the activation of stress and inflammatory signaling, which may have negative consequences (Ceban, 2022). In order to risk-stratify the population, identify high-risk groups and modifiable risk factors of new-onset mental disorders, conduct effective interventions, and establish post-pandemic public health strategies, it is imperative to show the longitudinal change of mental health throughout the COVID-19 era. This is because the world is still recovering from the pandemic's aftermath (Young, 2016; Szcześniak, 2021).

Mental health management strategies:

Indicated a higher chance of developing anxiety and depression after the pandemic was linked to widespread obesity, diabetes, and hypertension. Prior to the pandemic, these patients had higher preexisting risks for mental disorders; it is evident that these preexisting risks increased dramatically during the pandemic, resulting in a significant decline in mental health and a rise in newly diagnosed mental disorders after the pandemic. Obese people are 1.75 times more likely to be admitted to the intensive care unit, and patients with type 2 diabetes and hypertension are more prone to

acquire serious illnesses and have higher fatality rates linked to COVID (Ceban, 2022) that patients with metabolic illnesses should start post-pandemic mental health management techniques early. Furthermore, by examining the correlation between mental health, social contacts with friends and family, and self-perceived emotional states, our study showed that these variables are strongly linked to changes in mental health that occur after a pandemic. People with a COVID-19 diagnosis frequently suffer from social isolation and strained relationships. Nonetheless, disparities in the degree of social engagement were associated with different risks of mental problems even within this cohort. These results underline the importance of self-perceived emotional status and social involvement in reducing psychological distress and the necessity of specialized interventions to promote mental health in impacted groups (Bădescu, 2016; Li, Z., 2015).

Early period of the COVID-19 pandemic:

Numerous studies documented a notable increase in alcohol use disorder and associated mortality during the early stages of the COVID-19 pandemic. Although our study reveals a contradictory result of a decrease in AUDIT score throughout the pandemic, the highest increase in high-risk drinking was noted among those who were under lockdown or stay-at-home restrictions, possibly due to the increased emotional strains of being confined with other family members (Walker, 2015; Penninx, 2022).

Since the majority of research were conducted during the lockdown or when social constraints were strong, this could be explained by the difference timing of data collection. On the other hand, the current study looked at how alcohol abuse changed over time before and during the epidemic. According to our research, although the risk of alcohol use disorder increased during the pandemic, the general decline in alcohol use disorder after the pandemic may have been influenced by the easing of societal restrictions and public initiatives to treat alcohol-related problems.

The COVID-19 pandemic's effects on mental health:

The already significant treatment disparity in mental health among LMICs has been brought to light by the COVID-19 epidemic and is in danger of getting worse. These nations' frail health systems, limited staff and resource capacity, social unrest and violence in response to COVID-19 containment measures, and general limited and unequal access to evidence-based interventions all connect with the new demands for mental health care. Since there was essentially no access to mental health care prior to the pandemic, it is possible that the long-term effects on mental health will be more severe in the world's poorest and least resourced places (Racine, 2021; Robinson, 2020).

Direct effects:

The rise in mental health distress symptoms has been the main focus of recent research on the COVID-19 pandemic's effects on mental health. This may be a normal reaction to the unusual uncertainty and challenges that people are facing. For instance, studies have shown that psychological distress is more common among medical personnel and is linked to stigma and disease dread. However, these reports may also indicate a change in the distribution of distress in the community and, as a result, a rise in the prevalence of mental health issues that are clinically severe. The limited studies we have found on the prevalence of mental health illnesses are consistent with this notion (Cénat, 2021).

The response to mental health needs:

The majority of programs are being implemented in the midst of real public health emergencies without sufficient resources for evaluation, the COVID-19 pandemic is still spreading in many countries, and there hasn't been enough time since the pandemic began to complete and publish comprehensive evaluations. Evaluation of implementation procedures and outcomes will be essential to inform the mental health response to upcoming public health catastrophes. Determining whether low-cost positive psychology techniques effectively address the population's mental health needs or whether the transition from in-person to remote care delivery equitably fulfills each person's clinical needs, for instance, will be critical (Anderson, 2001, Cénat, 2022).

3. Results:

Both PHQ-9 and GAD-7 ratings increased more in participants who regularly felt alone or companioned and who did not have regular touch with friends or relatives. On the other hand, there was a noticeably smaller degree of improvement in these scores among those who said they frequently feel "in tune" with people or recover quickly from stressful situations.

We performed sensitivity analysis for the subset of 72,167 persons who were free of mental disorders at baseline in order to assess the strength of the association between the change in mental health and a number of parameters

throughout the COVID-19 pandemic. In the fully-adjusted models, the relationships between new-onset mental disorder and the variables looked at in the main analysis largely remained significant. The sensitivity analysis repeatedly found patterns of change in mental health assessment scores, including a decline in AUDIT scores and an increase in PHQ-9 and GAD-7 scores. PHQ-9 ratings increased more among participants who were female, smoked, worked shifts, had common comorbidities, or were emotionally fragile, according to the interaction term analysis.

4. Recommendations:

There are some limitations to this study:

First off, because the study only included participants from the UK Biobank, the results could not be indicative of changes in mental health around the world.

Second, the prevalence of mental problems in individuals with metabolic diseases may be somewhat overestimated when mental health evaluation instruments are used to define cases of mental illnesses.

Nonetheless, our analysis successfully illustrates population-based longitudinal patterns of mental health change during the COVID-19 pandemic, especially when taking into account the cohort size of more than 300,000 persons who finished the MHQ from the UK Biobank. Furthermore, the current study did not look at the reciprocal effects of mental illnesses on the development of metabolic diseases. It is conceivable that newly diagnosed mental disorders could worsen the severity of preexisting metabolic diseases and lead to negative health outcomes, given the established links between mental and metabolic disorders—mediated by behavioral, pharmacological, genetic, and healthcare factors. To clarify the reciprocal interaction between these conditions, more investigation is necessary.

5. Conclusion:

In conclusion, we discovered that individuals with metabolic problems had a higher chance of developing anxiety and depression at a later age, as well as a faster pace of mental health deterioration after the COVID-19 pandemic. Self-perceived emotional state and social interactions are modifiable risk factors. A public health priority is to pay more attention to the risk assessment and mental health interventions for these people.

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