



RESEARCH ARTICLE

# COVID-19 and Mental Health in Ohio: Trends from 2017 to 2021

Megan E. Roberts<sup>1</sup>; Dushka Crane<sup>2</sup>; Lauren Elliott-Dorans<sup>2</sup>; Townsend Price-Spratlen<sup>2</sup>; Thomas Albani<sup>2</sup>; Timothy R. Sahr<sup>2</sup>; Jill M. Singer<sup>1</sup>; Kraig Knudsen<sup>3</sup>; Michael Nau<sup>2</sup>; Leyla Tosun<sup>2</sup>; Mary Applegate<sup>4</sup>

<sup>1</sup>College of Public Health, The Ohio State University, Columbus, OH

<sup>2</sup>Ohio Colleges of Medicine Government Resource Center, The Ohio State University Wexner Medical Center, Columbus, OH

<sup>3</sup>Ohio Department of Mental Health and Addiction Services, Columbus, OH

<sup>4</sup>Ohio Department of Medicaid, Columbus, OH

Corresponding Author: Megan E. Roberts, 1841 Neil Avenue, Columbus, OH 43210, [roberts.1558@osu.edu](mailto:roberts.1558@osu.edu)

Submitted June 20, 2023 Accepted December 6, 2023 Published February 1, 2024 <https://doi.org/10.18061/ojph.v6i1.9563>

## ABSTRACT

**Background:** Mental health impairment (MHI) refers to a high threshold of mental health diagnosis, whereby individuals are unable to participate in work or other usual activities due to a mental health condition or emotional problem. This study aimed to estimate COVID-19-related trends and disparities in high MHI for Ohio adults throughout the COVID-19 pandemic. An additional goal was to identify modifiable factors associated with high MHI.

**Methods:** Analyses were conducted using data from the 2017, 2019, and 2021 Ohio Medicaid Assessment Survey (OMAS). This a repeated, cross-sectional random probability survey of noninstitutionalized adults assessing the health of residential Ohioans, with a concentration on Ohio's Medicaid, potentially Medicaid eligible, and non-Medicaid populations.

**Results:** The prevalence of high MHI among Ohio adults rose between 2017 (6.4%) and 2021 (8.2%). This increase was particularly pronounced among Black and Hispanic individuals; 2021 also saw high MHI among young women. In adjusted analysis, indicators of low fiscal stability and having unmet health care needs were associated with greater prevalence of high MHI.

**Conclusion:** Pandemic-related mental health trends and disparities extended to those at the highest levels of mental illness severity and treatment need. Several modifiable factors could be targeted to potentially improve mental health symptoms and to be better prepared for the next public health crisis.

**Keywords:** COVID-19; Mental health; Mental health impairment; Disparities; Survey

## INTRODUCTION

The COVID-19 pandemic has, thus far, resulted in over 6.8 million deaths worldwide, including over 1.1 million deaths in the United States<sup>1</sup> and over 42 thousand deaths in Ohio.<sup>2</sup> In addition to this direct impact, the indirect impacts of the pandemic have been widespread and serious concern has been directed to the consequences for mental health.<sup>3-6</sup> Indeed, a meta-analysis of 2020 data indicates a population-level rise in negative mental health symp-

toms, particularly in the months immediately following the initial outbreak.<sup>7</sup> Although these rates declined by the end of the 2020 calendar year,<sup>7</sup> negative mental health symptoms appeared to rise again during the upsurge of the Delta variant of COVID-19 in 2021.<sup>8</sup>

Having established that the prevalence of poor mental health increased during the COVID-19 pandemic, it is important to further understand the consequences of these pandemic-associated





trends. Mental health impairment (MHI) can be defined as the inability to participate in work or other usual activities due to a mental health condition or emotional problem.<sup>9</sup> As a higher threshold than mental health diagnosis, this definition helps distinguish the highly-impaired from those who meet criteria for a mental disorder but who do not exhibit significant impairment; it also helps identify individuals with a high treatment need.<sup>10-12</sup>

Beyond examining population-level trends in MHI overall, it is imperative to also test for subgroup differences across sociodemographic characteristics. Several studies have, in fact, documented greater mental health concerns among racial and ethnic minority groups during the COVID-19 pandemic.<sup>8,13,14</sup> Females and young adults also appear to be groups who have experienced particularly heightened negative mental health outcomes during the pandemic.<sup>8,15</sup> Whether MHI is also heightened among these and other sociodemographic subgroups is, to our knowledge, an unexplored question.

Finally, in order to move toward addressing pandemic-related MHI, it is necessary to identify factors that are associated with MHI and that could be targeted with health and social services. Such modifiable factors may include indicators of fiscal stability (eg, employment) and indicators of an unmet health care need (eg, reporting an unmet drug treatment need) as both have well-documented associations with mental health outcomes and disparities.<sup>16-20</sup> A better understanding of these modifiable factors could be used to help guide treatment, interventions, and public policy.

Given the ongoing questions and concerns about pandemic-associated MHI, the purpose of this study was to examine trends, patterns, and factors associated with high MHI among Ohio adults throughout the COVID-19 pandemic. Specifically, we sought to: (1) estimate trends in the prevalence of MHI associated with the onset of the COVID-19 pandemic, (2) identify populations disproportionately affected by MHI by examining how pandemic-related trends in MHI differed across sociodemographic groups, and (3) identify modifiable factors associated with high MHI.

## METHODS

### Data and Participants

Data came from the 2017, 2019, and 2021 adult Ohio Medicaid Assessment Survey (OMAS). This a repeated (recently, biannual) cross-sectional random probability survey of noninstitutionalized adults (aged 19 and older) in Ohio that provides information about the health of residential Ohioans, with a concentration on Ohio's Medicaid, potentially Medicaid eligible, and non-Medicaid populations. The OMAS uses a complex, stratified, probability-based sampling design and a combination of random-digit-dialing to landline telephones, random sampling of cell phone numbers, and address-based sampling. A detailed description of survey procedures is provided on the OMAS website,<sup>21</sup> where deidentified OMAS data are also made publicly available. We obtained ethical

approval for conducting the present analyses from The Ohio State University Institutional Review Board (IRB) (#2023B0158). The IRB also approved a waiver of the consent process, as this study comprised secondary data analysis.

### Measures

#### Mental Health Impairment (MHI)

All participants were asked the number of days in the past 30 days prior to being interviewed that a mental health condition or emotional problem kept them from participating in work or other usual activities (ie, functional impairment). Those who reported at least 14 days of functional impairment due to mental health or emotional problems were classified as having high MHI. The 14-day threshold aligns with the US Centers for Disease Control and Prevention (CDC) recommendations for measurement classification.<sup>9</sup>

#### Fiscal Stability Indicators

A participant's health insurance status was categorized as Medicaid, uninsured, and other (the latter included insurance that was directly purchased, employer-sponsored insurance, or self-reported other insurance plans). The OMAS also assessed employment (working vs not working) and increased difficulty paying rent in the past 12 months (classified as whether it had gotten harder vs gotten easier or stayed the same). Finally, participants were classified as whether their income was less than 100% of the federal poverty level (FPL); this value was based on annual family income and the number of family members in the household.

#### Unmet Health Care Need

To investigate participants' unmet health care needs, we used OMAS items assessing whether, during the past 12 months, there was a time when participants needed but could not get (1) mental or emotional health care or counseling services and (2) alcohol or other drug treatment (both items were classified as yes vs no or did not need that type of care).

#### Sociodemographic Characteristics

The OMAS assesses gender (male, female), race and ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, Asian, another race or ethnicity), age (years), and educational attainment (high school or below, some college or an associate degree, college degree or higher). Due to unstable estimates from small cell sizes, we were ultimately only able to examine 3 racial and ethnic groups in our trend analyses: non-Hispanic White ("White"), non-Hispanic Black ("Black") and Hispanic. In addition, we examined county of residence, which was classified as metropolitan, rural Appalachian, rural non-Appalachian, or suburban in accordance with guidance from the Appalachian Regional Commission (ARC), US Census Bureau, and the Federal Office of Rural Health Policy at the Health Resources and Services Administration (HRSA).



## Data Analysis

We began with descriptive statistics to identify the prevalence of high MHI over time (2017, 2019, and 2021) and among priority populations (based on gender, race and ethnicity, age, county of residence, and education). Next, to quantify subgroup differences, we conducted a series of Pearson's chi-square tests to compare mean prevalence estimates. Finally, in order to identify factors associated with high MHI, we conducted logistic regressions in which our measures of fiscal stability and health status were the independent variables and high MHI in 2021 was the dependent variable; in adjusted analyses, we further controlled for gender, age, race/ethnicity, county type, and educational status. Due to differing financial supports available for elderly adults in the United States, all analyses were restricted to nonelderly adults (ie, aged 19-64). All analyses were adjusted for the complex sampling design using weights to be representative of Ohio's noninstitutionalized working-age adult population.

## RESULTS

### Trends and Descriptive Statistics

The prevalence of high MHI among Ohio adults aged 19 to 64 grew from 6.4% in 2017 and 7.5% in 2019 to a high of 8.2% in 2021 (Table 1). This represents a 28% proportionate increase in MHI across the 4 years.

Trends in the prevalence of high MHI differed by race and ethnicity. As illustrated in Figure 1, the prevalence of high MHI showed a steep 39% increase among Black adults between 2019 and 2021; Hispanic adults experienced notable increases in high MHI between 2017 and 2019 as well as between 2019 and 2021 (31% between 2017 and 2019; 21% between 2019 and 2021). Consistently over time, a greater prevalence of high MHI was seen among Hispanic and Black adults compared to White adults. Demographic differences were also observed by gender and age (Figure 2). In particular, in 2021, women aged 19 to 24 experienced the greatest prevalence of high MHI.

### Subgroup Comparisons

High MHI status was significantly associated with all sociodemographic factors that were examined (Table 1). Specifically, individuals with high MHI were disproportionately female, Black, aged 19 to 24, and with less than a college degree. Conversely, subgroups with disproportionately low levels of high-MHI prevalence were males, non-Hispanic White adults, those aged 55 to 64, those living in rural non-Appalachian counties, and those with 4-year or advanced college degrees.

### Regression Outcomes

Adjusted logistic regressions indicated that all measures of fiscal stability were significantly associated with high MHI (Table 2).

**Table 1. Prevalence of Sociodemographic Characteristics by High Versus No/Low Mental Health Impairment: 2021**

Characteristic	No/Low Mental Distress % (90% CI)	High Mental Distress % (90% CI)	Test Statistic for Significant Difference (P value)
<b>Gender</b>			
Male	50.6 (49.7–51.4)	40.7 (38.1–43.4)	32.32 (0.000)
Female	49.4 (48.6–50.3)	59.3 (56.6–61.9)	
<b>Race or Ethnicity</b>			
Black	12.1 (11.6–12.6)	15.2 (13.5–17.0)	3.86 (0.006)
Hispanic	3.7 (3.4–4.0)	4.9 (3.9–6.2)	
Non-Hispanic White	79.1 (78.4–79.8)	74.6 (72.3–76.8)	
Asian	2.9 (2.6–3.2)	2.1 (1.3–3.5)	
Another racial/ethnic group	2.3 (2.1–2.6)	3.2 (2.5–4.0)	
<b>Age</b>			
19-24	12.7 (11.9-13.5)	17.2 (14.9-19.6)	3.64 (0.000)
25-34	22.0 (21.3-22.8)	23.5 (21.3-25.7)	
35-44	20.1 (19.4-20.7)	21.0 (18.9-23.2)	
45-54	21.4 (20.8-22.1)	21.2 (19.3-23.1)	
55-64	23.8 (23.2-24.4)	17.0 (15.4-18.6)	
<b>County type</b>			
Appalachian	14.6 (14.1-15.1)	17.2 (15.4-18.9)	2.92 (0.002)
Metropolitan	55.4 (54.7-56.1)	58.4 (55.9-60.9)	
Rural non-Appalachian	13.1 (12.7-13.6)	10.1 (8.6-11.6)	
Suburban	16.8 (16.3-17.4)	14.3 (12.3-16.3)	
<b>Education</b>			
Less than high school	8.5 (7.9-9.2)	16.7 (14.7-18.7)	4.47 (0.000)
High school or GED	30.5 (29.6-31.4)	39.2 (36.5-41.8)	
Some college	18.0 (17.3-18.6)	22.0 (20.0-24.1)	
Associate degree	12.6 (12.1-13.1)	11.3 (9.9-12.7)	
4-year college graduate	17.5 (16.9-18.0)	7.1 (6.2-8.1)	
Advanced degree	13.0 (12.5-13.4)	3.7 (2.9-4.4)	

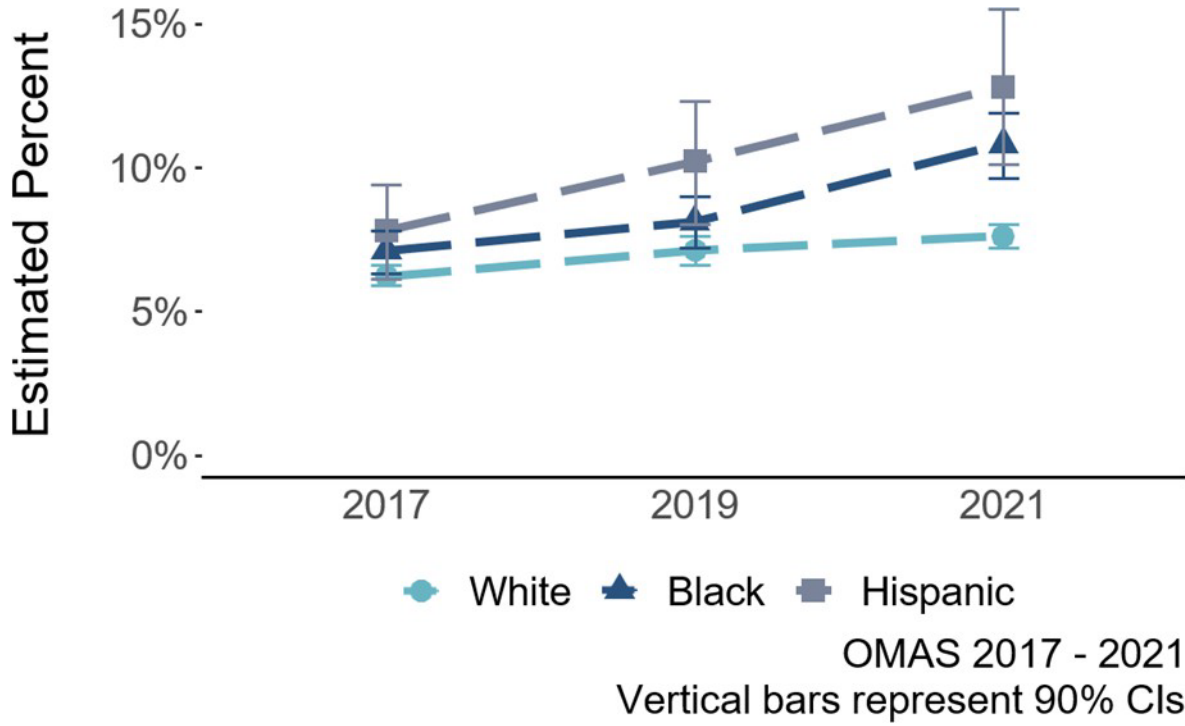


Figure 1. Trend in Percentage of Adults (aged 19-64) with High Mental Health Impairment, by Race and Ethnicity: 2021

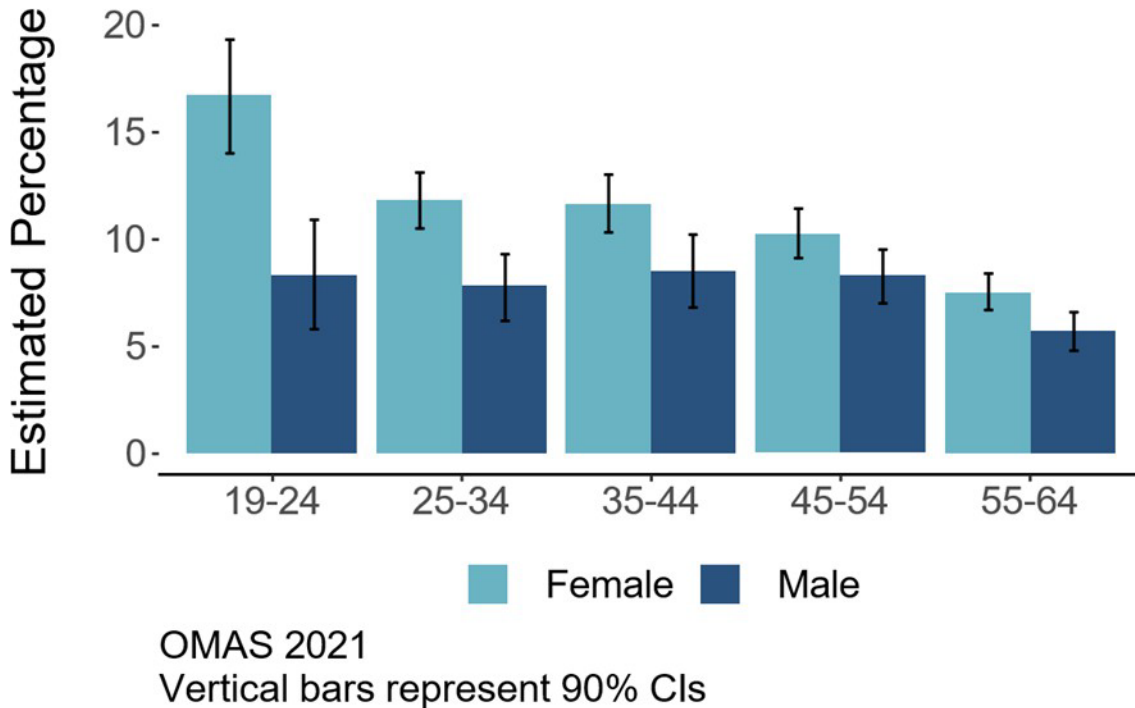


Figure 2. Prevalence of Adults (aged 19-64) with High Mental Health Impairment, by Age and Gender: 2021


**Table 2. Unadjusted and Adjusted Associations of Fiscal Stability and Health Status Indicators with High Mental Health Impairment: 2021**

Indicator	Unadjusted Values			Adjusted Values		
	OR	95% CI	p	OR	95% CI	p
<b>Insurance status</b>						
Medicaid	0.23	0.20–0.26	<0.001	0.29	0.25–0.33	<0.001
Other insurance	1.10	0.90–1.34	0.370	1.12	0.91–1.37	0.289
Uninsured	1.60	1.25–2.05	<0.001	1.30	1.01–1.68	0.042
<b>Unemployed</b>	3.13	2.76–3.54	<0.001	2.59	2.27–2.95	<0.001
<b>Income less than 100% federal poverty level (FPL)</b>	2.99	2.65–3.38	<0.001	2.33	2.05–2.66	<0.001
<b>Harder to pay rent in past 12 months</b>	3.63	3.21–4.12	<0.001	3.21	2.82–3.65	<0.001
<b>Unmet mental health needs</b>	7.62	6.54–8.88	<0.001	7.35	6.24–8.64	<0.001
<b>Unmet drug or alcohol treatment needs</b>	5.60	3.64–8.62	<0.001	5.13	3.21–8.19	<0.001

Adjusted analyses control for gender, age group, race and ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, Asian, another race or ethnicity), county type, and education.

Accounting for the role of other factors (eg, poverty, education), adults with Medicaid insurance (vs adults with other insurance or who were uninsured) were less likely to have high MHI. Being unemployed, having an income less than 100% FPL, and experiencing increased difficulty paying rent in the past 12 months were all associated with high MHI.

Both measures of unmet health care need (ie, mental or emotional health care or counseling services; alcohol or other drug treatment) were also significant in adjusted logistic regression. After adjusting for sociodemographic predictors, adults reporting an unmet health need had over 7 times the odds of having high MHI than those without an unmet health need; adults reporting an unmet drug or alcohol treatment need had over 5 times the odds of having high MHI than those without an unmet drug or alcohol treatment need.

## DISCUSSION

Findings from this study demonstrate that the prevalence of MHI among Ohio adults rose substantially between 2017 (6.4%) and 2021 (8.2%). These findings are consistent with previous work indicating a population-level rise in mental health symptoms that occurred concurrently with the timing of the COVID-19 pandemic.<sup>7,8</sup> Yet, as the majority of work on mental health and COVID-19 concerns the first several months of 2020, the present findings are noteworthy because they indicate a trend that extended (at least) through the end of 2021—nearly 2 years after the pandemic's onset. Our focus on MHI (a higher threshold than mental health diagnosis) also resulted in the important finding that pandemic-related mental health trends include those at the highest levels of mental illness severity and treatment need.

Findings additionally indicated that the increase observed in MHI was particularly pronounced among Black and Hispanic individuals (compared to White individuals), and among young women (compared to other age and gender groups). These disparities align with previous findings indicating that pandemic-related mental health concerns have been greater among these subgroups.<sup>8,13–15</sup> The reasons for these disparities are likely multifac-

eted. Suggested factors include the exacerbation of systematic differences in socioeconomic hardships,<sup>22</sup> the loss of informal community support services,<sup>14</sup> heightened experiences of structural and interpersonal racism,<sup>23–25</sup> as well as developmental and cohort differences.<sup>26</sup> As an example of the latter, some speculate that high amounts of time spent on social media could be partly responsible for the rise in mental health symptoms among young adults during the pandemic.<sup>27</sup>

Our findings additionally indicate that, in adjusted analysis that accounts for the role of sociodemographic characteristics, individuals with low fiscal stability and unmet health care needs were more likely to have high MHI in 2021. These outcomes provide public health practitioners and policymakers with modifiable factors (eg, health care access, food and housing insecurity) that could be enhanced with health and social services in order to potentially improve mental health symptoms.

## Implications

The findings from this study are consistent with longstanding historical trends in which the prevalence of negative mental health symptoms aligns with changes in the economy (eg, the 2008 financial crisis) and health policies (eg, Medicaid expansion) that influence financial stress and access to health care.<sup>28–30</sup> This prior research also indicates that individuals with preexisting mental health concerns are more vulnerable to negative economic and social events.<sup>31,32</sup> Accordingly, the COVID-19 pandemic, which escalated economic stress and barriers to health care, appears to have increased the prevalence and negative impact of MHI. The change was also particularly pronounced among members of historically marginalized groups. Moving forward, it is critical that, as the COVID-19 pandemic wanes, health-serving institutions learn from this experience in order to be better prepared for the next medical or economic crisis.

## Limitations

It is important to note the limitations to this study. First, although our research characterizes trends in MHI over time, the repeated





cross-sectional design of the OMAS does not allow the temporal ordering of events at an individual level. Causal relationships between the pandemic onset, MHI, and other associated factors should, therefore, be interpreted with caution. Our analyses were also limited to variables available in the OMAS datasets; we were thus unable to assess additional sociodemographic factors (eg, LGBTQ+ identity) that could signal additional disparities. Findings may not be generalizable to other states and should be evaluated considering state-by-state variations in COVID-19 response and mental health care treatment and access. Finally, the last time point of data available is from 2021; as COVID-19 outbreaks persist, continued longitudinal data are needed to characterize enduring effects of the pandemic into 2022 and beyond. Future research will be necessary to understand and address long-term pandemic-related mental health outcomes and treatment (such as the toll on resilience) as well as the complexity of dual diagnoses (eg, the overlap between depression, anxiety, and substance use disorder).

### PUBLIC HEALTH IMPLICATIONS

During the early months of the pandemic, there were many strong examples of changes in mental health policy and other emergency reforms designed to rapidly respond to mental health concerns.<sup>33,34</sup> Yet there is also data indicating that the unmet demand for mental health services grew during the pandemic.<sup>35</sup> Difficulties have also been reported by many states in terms of making quick pivots during the pandemic, including issues like delays in implementing billing code adjustments and approving emergency waivers to support telehealth services.<sup>36</sup> To be better prepared for the future, experts have made several recommendations, including: (1) increasing the dollar amount and infrastructure surrounding financial aid at the federal, state, and local level so that it can be rapidly issued for community-led approaches to mental health service delivery and crisis response;<sup>23</sup> (2) optimizing crisis-led response interventions, including training for law enforcement on how to effectively interact with people experiencing a health crisis;<sup>23</sup> (3) continued growth and development of telehealth services and infrastructure for mental health;<sup>37,38</sup> (4) prioritizing access to health care services that go beyond mental health care and that are integral to holistic health, such as primary care services;<sup>39</sup> (5) prioritizing access to “upstream” services that are strongly related to mental health, including social safety nets, food and housing security, eldercare, and care and schooling for children;<sup>14,37</sup> and (6) improving care and promoting wellbeing across all health and social care systems; this would include greater investment in mental health screening and access to care while also supplementing existing mental health care with well-being promotion.<sup>37</sup> Investing in these improvements now will help us—come the next public health crisis—to address mental health concerns in a way that is more rapid, effective, and equitable.

### DISCLOSURES

The authors report no conflicts of interest.

### REFERENCES

- World Health Organization. WHO COVID-19 Dashboard. Published online 2022. <https://covid19.who.int/>
- Ohio Department of Health. Coronavirus Disease 2019 (COVID-19) Dashboard. Accessed June 20, 2024. <https://coronavirus.ohio.gov/dashboards/overview>
- Pfefferbaum B, North CS. Mental health and the Covid-19 pandemic. *N Engl J Med*. 2020;383(6):510-512. <https://doi.org/10.1056/NEJMp2008017>
- Cullen W, Gulati G, Kelly BD. Mental health in the COVID-19 pandemic. *QJM*. 2020;113(5):311-312. <https://doi.org/10.1093/qjmed/hcaa110>
- Moreno C, Wykes T, Galderisi S, et al. How mental health care should change as a consequence of the COVID-19 pandemic. *Lancet Psychiatry*. 2020;7(9):813-824. [https://doi.org/10.1016/S2215-0366\(20\)30307-2](https://doi.org/10.1016/S2215-0366(20)30307-2)
- Frazier LA, Seiber E, Harlow KJ, Attipoe S, O'Rourke B, Team OC 19 S. The Ohio COVID-19 Survey: preliminary findings and their use during the pandemic. *Ohio J Public Health*. 2021;4(1):11-22. <https://doi.org/10.18061/ojph.v4i1.8067>
- Robinson E, Sutin AR, Daly M, Jones A. A systematic review and meta-analysis of longitudinal cohort studies comparing mental health before versus during the COVID-19 pandemic in 2020. *J Affect Disord*. 2022;296:567-576. <https://doi.org/10.1016/j.jad.2021.09.098>
- Anderson KN, Radhakrishnan L, Lane RI, et al. Changes and inequities in adult mental health-related emergency department visits during the COVID-19 pandemic in the US. *JAMA Psychiatry*. 2022;79(5):475-485. <https://doi.org/10.1001/jamapsychiatry.2022.0164>
- Centers for Disease Control and Prevention. Measuring healthy days. Atlanta, GA. 2000;CDC.
- Regier DA, Kaelber CT, Rae DS, et al. Limitations of diagnostic criteria and assessment instruments for mental disorders: implications for research and policy. *Arch Gen Psychiatry*. 1998;55(2):109-115. <https://doi.org/10.1001/archpsyc.55.2.109>
- Kessler RC, Merikangas KR, Berglund P, Eaton WW, Koretz DS, Walters EE. Mild disorders should not be eliminated from the DSM-V. *Arch Gen Psychiatry*. 2003;60(11):1117-1122. <https://doi.org/10.1001/archpsyc.60.11.1117>
- Novak SP, Colpe LJ, Barker PR, Gfroerer JC. Development of a brief mental health impairment scale using a nationally representative sample in the USA. *Int J Methods Psychiatr Res*. 2010;19 Suppl 1:49-60. <https://doi.org/10.1002/mpr.313>
- McKnight-Eily LR, Okoro CA, Strine TW, et al. Racial and ethnic disparities in the prevalence of stress and worry, mental health conditions, and increased substance use among adults during the COVID-19 pandemic — United States, April and May 2020. *MMWR Morb Mortal Wkly Rep*. 2021;70(5):162-166. <https://doi.org/10.15585/mmwr.mm7005a3>
- Thomeer MB, Moody MD, Yahirun J. Racial and ethnic disparities in mental health and mental health care during the COVID-19 pandemic. *J Racial and Ethnic Health Disparities*. Published online March 22, 2022. <https://doi.org/10.1007/s40615-022-01284-9>
- Gibson B, Schneider J, Talamonti D, Forshaw M. The impact of inequality on mental health outcomes during the COVID-19 pandemic: a sys-



- tematic review. *Can Psychol.* 2021;62:101-126.  
<https://doi.org/10.1037/cap0000272>
16. Evans J, Repper J. Employment, social inclusion and mental health. *J Psychiatr Ment Health Nurs.* 2000;7(1):15-24.  
<https://doi.org/10.1046/j.1365-2850.2000.00260.x>
  17. Modini M, Joyce S, Mykletun A, et al. The mental health benefits of employment: results of a systematic meta-review. *Australas Psychiatry.* 2016;24(4):331-336.  
<https://doi.org/10.1177/1039856215618523>
  18. Knifton L, Inglis G. Poverty and mental health: policy, practice and research implications. *BJPsych Bull.* 2020;44(5):193-196.  
<https://doi.org/10.1192/bjb.2020.78>
  19. Mechanic D, Olfson M. The relevance of the Affordable Care Act for improving mental health care. *Annu Rev Clin Psychol.* 2016;12:515-542.  
<https://doi.org/10.1146/annurev-clinpsy-021815-092936>
  20. Mongelli F, Georgakopoulos P, Pato MT. Challenges and opportunities to meet the mental health needs of underserved and disenfranchised populations in the United States. *Focus (Am Psychiatr Publ).* 2020;18(1):16-24.  
<https://doi.org/10.1176/appi.focus.20190028>
  21. Ohio Medicaid Assessment Survey | Ohio Colleges of Medicine Government Resource Center. Accessed May 31, 2019.  
<http://grc.osu.edu/OMAS>
  22. Park J. Who is hardest hit by a pandemic? Racial disparities in COVID-19 hardship in the US. *IJUS.* 2021;25(2):149-177.  
<https://doi.org/10.1080/12265934.2021.1877566>
  23. Shim RS, Starks SM. COVID-19, Structural racism, and mental health inequities: policy implications for an emerging syndemic. *Psychiatr Serv.* 2021;72(10):1193-1198.  
<https://doi.org/10.1176/appi.ps.202000725>
  24. Chae DH, Yip T, Martz CD, et al. Vicarious racism and vigilance during the COVID-19 pandemic: mental health implications among Asian and Black Americans. *Public Health Rep.* 2021;136(4):508-517.  
<https://doi.org/10.1177/003335492111018675>
  25. Mpofo JJ, Cooper AC, Ashley C, et al. Perceived racism and demographic, mental health, and behavioral characteristics among high school students during the COVID-19 pandemic—adolescent behaviors and experiences survey, United States, January–June 2021. *MMWR Suppl.* 2022;71(3):22-27.  
<https://doi.org/10.15585/mmwr.su7103a4>
  26. Bruine de Bruin W. Age Differences in COVID-19 risk perceptions and mental health: evidence from a national US survey conducted in March 2020. *J Gerontol B Psychol Sci Soc Sci.* 2021;76(2):e24-e29.  
<https://doi.org/10.1093/geronb/gbaa074>
  27. Lee Y, Jeon YJ, Kang S, Shin JI, Jung YC, Jung SJ. Social media use and mental health during the COVID-19 pandemic in young adults: a meta-analysis of 14 cross-sectional studies. *BMC Public Health.* 2022;22(1):995.  
<https://doi.org/10.1186/s12889-022-13409-0>
  28. Forbes MK, Krueger RF. The Great Recession and mental health in the United States. *Clin Psychol Sci.* 2019;7(5):900-913.  
<https://doi.org/10.1177/2167702619859337>
  29. Thomas KC, Shartzler A, Kurth NK, Hall JP. Impact of ACA health reforms for people with mental health conditions. *Psychiatr Serv.* 2018;69(2):231-234.  
<https://doi.org/10.1176/appi.ps.201700044>
  30. Fry CE, Sommers BD. Effect of Medicaid expansion on health insurance coverage and access to care among adults with depression. *Psychiatr Serv.* 2018;69(11):1146-1152.  
<https://doi.org/10.1176/appi.ps.201800181>
  31. Frasquilho D, Matos MG, Salonna F, et al. Mental health outcomes in times of economic recession: a systematic literature review. *BMC Public Health.* 2016;16(1):115.  
<https://doi.org/10.1186/s12889-016-2720-y>
  32. Sullivan G, Vasterling JJ, Han X, et al. Preexisting mental illness and risk for developing a new disorder after Hurricane Katrina. *J Nerv Ment Dis.* 2013;201(2):161-166.  
<https://doi.org/10.1097/NMD.0b013e31827f636d>
  33. Bartels SJ, Baggett TP, Freudenreich O, Bird BL. COVID-19 emergency reforms in Massachusetts to support behavioral health care and reduce mortality of people with serious mental illness. *Psychiatr Serv.* 2020;71(10):1078-1081.  
<https://doi.org/10.1176/appi.ps.202000244>
  34. Goldman ML, Druss BG, Horvitz-Lennon M, et al. Mental health policy in the era of COVID-19. *Psychiatr Serv.* 2020;71(11):1158-1162.  
<https://doi.org/10.1176/appi.ps.202000219>
  35. Zhu JM, Myers R, McConnell KJ, Levander X, Lin SC. Trend in outpatient mental health services use before and during the COVID-19 pandemic. *Health Aff.* 2022;41(4):573-580.  
<https://doi.org/10.1377/hlthaff.2021.01297>
  36. Pinals DA, Hepburn B, Parks J, Stephenson AH. The behavioral health system and its response to COVID-19: a snapshot perspective. *Psychiatr Serv.* 2020;71(10):1070-1074.  
<https://doi.org/10.1176/appi.ps.202000264>
  37. Aknin LB, De Neve JE, Dunn EW, et al. Mental health during the first year of the COVID-19 pandemic: a review and recommendations for moving forward. *Perspect Psychol Sci.* 2022;17(4):915-936.  
<https://doi.org/10.1177/174569162111029964>
  38. Zhai Y. A Call for addressing barriers to telemedicine: Health disparities during the COVID-19 pandemic. *Psychother Psychosom.* Published online June 4, 2020:1-3.  
<https://doi.org/10.1159/000509000>
  39. Britz JB, Huffstetler AN, Henry TL, et al. Primary care: a critical stopgap of mental health services during the COVID-19 pandemic. *J Am Board Fam Med.* 2022;35(5):891-896.  
<https://www.jabfm.org/content/35/5/891>