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# The impact of the COVID-19 pandemic on the mental health and daily life of adults with behavioral health disorders

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## Abstract

People with behavioral health disorders may be particularly vulnerable to the impact of the COVID-19 pandemic, yet little is known about how they are faring. A mixed-methods, anonymous needs assessment was conducted to understand changes in the lives of adults with mental health and substance use disorders since the pandemic onset. A cross-sectional, online survey was completed by 272 adults in April and May 2020, recruited from statewide networks of community programs in New Jersey and New York. Measures included the Patient Health Questionnaire-2 and the Generalized Anxiety Disorder-2 to screen for depressive and anxiety disorders. Also assessed was the pandemic's impact on sleep and dietary patterns, exposure to COVID-19 infection, and access to health care and medications. Finally, respondents were asked to describe in their own words any changes in their lives since the pandemic began. Over one-third (35.1%) screened positive for generalized anxiety disorder and over one-quarter (29.6%) screened positive for major depressive disorder. The majority reported pandemic-related changes in eating and sleeping patterns and exposure to COVID-19 infection. Multivariable logistic regression analysis found that many changes attributed to the pandemic were positively and significantly associated with screening positive for anxiety and depressive disorders. Qualitative analysis confirmed these findings and identified participants' resilience stemming from social support, emotion management, and self-care. These results can inform the design of services that assist this population to bolster self-management skills and reestablish daily habits to improve their lives during and following the pandemic.

## Keywords

COVID-19 pandemic, Mental health, Behavioral health

**Implications**

Practice: Pandemic-related needs of people with mental health disorders require service delivery approaches that integrate behavioral, psychosocial, and biomedical science knowledge and techniques. One such approach is evidence-based psychiatric rehabilitation that combines traditional psychiatric clinical services with interventions that promote wellness, employment, secure housing, adult education, leisure and recreation, and financial literacy.

Policy: To accommodate the significant and growing need for mental health services in the face of the current, worldwide, behavioral health workforce shortage, public policy should stimulate the training and deployment of the peer specialist, community health worker, and other lay service provider workforces. The behavioral health workforce in particular will benefit from the use of mental health peer services to meet this growing need in the pandemic and its aftermath.

Research: More large-scale, rigorous, representative surveys are needed of people with serious mental illness living in the community during the pandemic. The resulting knowledge can be used to develop culturally sensitive interventions to promote recovery from the pandemic at individual and community levels.

## INTRODUCTION

There are widespread reports of increased emotional distress since the beginning of the COVID-19 pandemic and the restrictions mandated to mitigate its impact. Recent surveys show notable prevalence of anxiety and depressive symptoms in the US general population since the pandemic onset [1–5]. These symptoms are disproportionately affecting young adults, Latinx and Black persons, health care workers, and unpaid caregivers [2, 4, 6–8]. National surveys suggest that the prevalence of depression and anxiety symptoms in the United States has been more than threefold higher during COVID-19 than prior to the pandemic [1, 3].

Early evidence also suggests that COVID-19 has disrupted Americans' health behaviors and routines. One large survey found that 38% of respondents reported poor sleep quality since the initiation of sheltering in place directives, which was attributed to increased stress, technology use, and sedentary lifestyles [9]. The population's nutritional status also has been compromised [10], with the pandemic expected to exacerbate preexisting nutritional disparities, given that millions of Americans are unemployed, and an unprecedented demand is being made at food banks [11, 12]. Regarding

elective health care, the number of visits to ambulatory care providers declined by nearly 60% early in the pandemic, and while visits have since rebounded to prepandemic levels, the use of certain specialists remains substantially below baseline, including pulmonologists, cardiologists, and behavioral health care providers [13].

Given their higher risk for emotional and physical health disparities, it is likely that adults with mental health disorders are experiencing these same impacts, with added burdens due to health and economic disparities in this group [14]. Before the pandemic, their mortality rates were two to three times higher than the general population [15–17] and had been increasing over time [18, 19]. Studies show that around 60% of this premature mortality is due to preventable and treatable factors, including chronic illnesses, such as diabetes and heart disease [20], side effects of psychotropic medications [21], poor diet and sedentary lifestyles [22, 23], high rates of smoking [24–26], lack of health screening and follow-up care [27], poor quality health care [21], and service access barriers, such as lack of transportation [28]. Additionally, people with mental health disorders are at increased risk of infections and are more likely to develop severe organ dysfunction and to die in ICUs than people without these disorders [29]. Prior to the pandemic, a well-documented shortage of mental health clinicians [30, 31] stimulated the development of a sizable workforce of peer specialists (i.e., people with lived experience of behavioral health conditions) who were trained to deliver mutual support along with services promoting health, mind–body integration, and resiliency [32–35]. To address the disproportionate morbidity and mortality likely to result from the COVID-19 pandemic, experts have called for increased availability of health and mental health care [36–38], including the expansion of peer-delivered health and wellness services for people with mental health disorders [29].

In spite of concern for this population and their risks for poorer outcomes, few surveys have been published to date on the impact of the pandemic on this group. One survey at the pandemic outset (final week of March 2020) assessed levels of self-reported distress and isolation among adults with mental health disorders, along with their fears about the pending impact of the virus and mitigation directives [39]. At that stage of the pandemic, 64% of respondents reported being fearful that their mental health would worsen, 39% that they would be unable to access mental health care, and 38% that they would run out of their medications. To our knowledge, no surveys have yet been conducted regarding how COVID-19 has affected both mental health and lifestyle routines in this group or about possible resiliency and positive coping among these individuals.

Our primary aim was to determine how adults with behavioral health disorders were faring in the early stages of the pandemic. Our first study question was whether the proportions screening positive for anxiety and depressive disorders would exceed those reported in surveys of the general population since the onset of COVID-19. Our second study question was whether pandemic-related lifestyle changes, health care access barriers, and COVID-19 infection exposure were associated with screening positive for anxiety and depressive disorders. Finally, since many respondents were both recipients and providers of peer and other behavioral health services, we were interested in resiliency and other positive coping factors they might be experiencing. This knowledge is useful for developing new behavioral medicine treatment and prevention approaches because sizable numbers of the general population are experiencing COVID-related emotional distress and disruption in their health routines and behaviors.

## METHODS

### Study design and participants

The study used a mixed-methods, cross-sectional survey design. The population was a large group of community-dwelling adults ($N$ = 272) reporting current behavioral health disorders who were members of two organizations. The first was Collaborative Support Programs of New Jersey (CSPNJ). This peer-led statewide organization offers supportive housing, wellness respite services, wellness centers, wellness education, and advocacy for people with the lived experience of behavioral health conditions. The second was the New York Association of Psychiatric Rehabilitation Services (NYAPRS). This statewide organization includes people who use and/or provide community-based psychiatric rehabilitation services, such as employment, independent living, postsecondary education, and community participation [40, 41]. The survey was delivered via SurveyMonkey, a commercial survey software program with demonstrated reliability and validity [42, 43].

### Procedures

Participants were recruited online and completed the survey from April 15, 2020 through May 13, 2020. Inclusion criteria were: (a) members of CSPNJ or NYAPRS; (b) peer specialist status and/or lived experience of behavioral health disorder (New Jersey), or reporting a current mental health or substance use disorder (New York); (c) being of age 21 or older; and 4) being able to read and understand English. Participation was voluntary and no identifying information was collected. The study was carried out in accordance with the World Medical Association Declaration of Helsinki and written consent was waived. It was also approved

by the University of Illinois at Chicago Institutional Review Board.

### Measures

The Patient Health Questionnaire-2 (PHQ-2) [44] contains two items asking about mood and anhedonia that are rated on a 4-point Likert scale, with scores of 3 or above taken to indicate major depressive disorder. Prior research has shown that the PHQ-2 is as effective as longer screening instruments, such as the Beck Depression Inventory or Zung Depression Scale, and it has been found to be up to 97% sensitive and 67% specific in adults, with a 38% positive predictive value and 93% negative predictive value [45]. The Generalized Anxiety Disorder-2 scale (GAD-2) [46] includes two items asking about core anxiety symptoms that are rated on a four-point Likert scale. It has good internal consistency and overall accuracy for identifying GAD, with 86% sensitivity and 83% specificity [47]. Additional items were drafted by the study team, asking about the impact of the pandemic on respondents' sleep and dietary patterns, exposure to COVID-19 infection, changes in residence, access to health care and medications, and demographic characteristics. All survey items are included in the Supplementary Material.

### Data analyses

Our mixed-methods approach integrated quantitative and qualitative data at the study design, methods, and interpretation and reporting levels of research following the framework of Fetters et al. [48]. At the design level, the convergent approach to integration was used, with quantitative and qualitative data collected concurrently, using separate forced-choice and open-ended items. At the methods level, the merging approach to integration was used, with separate statistical analysis of the numerical data and thematic analysis of the textual data, followed by analysis and comparison of both sets of results. Finally, the contiguous approach to integration was used at the interpretation and reporting level, with the statistical survey results presented in one part and the qualitative results concerning contextual factors relevant to all findings presented in the second part of the results.

Descriptive statistics were computed for demographic information, COVID-19-related lifestyle changes, health care barriers, and the two mental health screening instruments. Ordinal logistic regression analyses were used to test for associations between lifestyle changes and indicated anxiety and depressive disorders, first at the zero order and then in multivariable models controlling for site, gender, and age. Race was not included in the model to avoid multicollinearity given its strong association with site ($x^2[4, N = 253] = 9.81, p < .05$).

The qualitative analysis used the constant comparative method [49] following techniques for multiple investigators [50]. Three of the authors received the complete set of text responses to the open-ended question: "In your own words, please describe the effect COVID-19 has had on your life." The three independently reviewed all responses, and each generated a list of descriptive themes. After meeting to compare and discuss their lists, the authors agreed that there were seven themes represented in the responses: illness/death (family/friends/self were diagnosed with COVID-19), disrupted routines (work, eating, sleeping, exercise, and family routines), anxiety (fear and feeling anxious or uncertain), sadness, social isolation (not being able to see family, friends, and coworkers), positive impact (stay-at home restrictions and other changes were beneficial), and neutral impact (e.g., life had not changed appreciably).

Next, two of the authors and a new third author independently coded the complete set of responses using the seven themes, with the entire response to the question as the unit for coding and assigning only one or two codes to each response. A comparison of the three sets of independent coding was followed by a meeting to discuss areas of agreement and disagreement. This yielded consensus on three themes: disrupted routines, social disconnection (a more accurate term than social isolation), and positive/neutral impact (combined, as the lack of negative impact suggested resilience). A fourth theme, emotional distress, was added as a more accurate description that combined the reports of worry, anxiety, uncertainty, sadness, and fear. The authors collaborated to reduce redundancies, increase agreement, eliminate insignificant codes, unify and clarify themes, and refine descriptions of the four themes. Each author then recoded the complete data set independently using the four redefined themes as new codes. They met again to compare coding, analyze trends, and select representative quotes for each theme. These were presented and discussed with the larger study team to choose which to use when summarizing the qualitative results.

## RESULTS

### Quantitative results

#### *Characteristics of participants*

As shown in Table 1, 272 participants were included in the analysis (57% identified as female). Participants resided in New Jersey (70%) and New York state (30%). Their mean age was 50 ± 13.5 years, ranging from 21 to 80. Just over half (53%) were White, 26% were Black/African American, 3% were Asian, <1% were Native American, and 12% reported other racial identifications. Thirteen percent were Latinx. A quarter reported their highest level of education as a high school degree (25%), 23% reported some college, and 52% reported a college degree.

**Table 1** | Background characteristics and COVID-19 experiences

| Characteristics | *N* = 272 |
|---|---|
| State of residence (%) | |
| New York | 82 (30.1) |
| New Jersey | 190 (69.9) |
| Gender identification (%) | |
| Female | 155 (57.0) |
| Male | 98 (36.0) |
| Transgender | 3 (1.1) |
| Nonbinary | 1 (0.4) |
| Age (years; *x* ± *SD*) | 49.9 ± 13.5 |
| Race (%) | |
| Black/African American | 72 (26.5) |
| White | 143 (52.6) |
| Asian | 9 (3.3) |
| Native American | 1 (0.4) |
| Other | 32 (11.8) |
| Latinx ethnicity (%) | 35 (12.9) |
| Highest level of education (%) | |
| High school or less | 65 (25.3) |
| Some college | 59 (23.0) |
| College graduate | 133 (51.8) |
| Experienced a change in eating habits (%) | |
| Not at all | 103 (38.1) |
| A little bit | 47 (17.4) |
| Somewhat | 68 (25.2) |
| A lot | 52 (19.1) |
| Experienced a change in sleeping habits (%) | |
| Not at all | 87 (32.3) |
| A little bit | 57 (21.0) |
| Somewhat | 77 (28.3) |
| A lot | 48 (17.6) |
| Level of exposure to COVID-19 infection from daily activities (%) | |
| Not at all | 130 (48.1) |
| A little bit | 75 (27.8) |
| Somewhat | 38 (14.1) |
| A lot | 27 (10.0) |
| In need of health care but was unable to obtain (%) | 51 (18.8) |
| Experienced trouble getting medications (%) | 24 (8.9) |
| Experienced a change in living situation (%) | 21 (7.8) |
| Screened positive for generalized anxiety disorder (%)[a] | 92 (35.1) |
| Screened positive for major depressive disorder (%)[a] | 77 (29.6) |

*SD* standard deviation..

[a]Symptoms of anxiety and depressive disorder were assessed via the two-item Generalized Anxiety Disorder-2 (GAD-2) and the two-item Patient Health Questionnaire-2 (PHQ-2). Those who scored ≥3 out of 6 on each were considered symptomatic for that disorder.

*Lifestyle changes*

Respondents reported considerable disruption in their daily routines and activities (Table 1). The majority reported changes in eating habits (62%), with 19% characterizing these habits as having changed "a lot," 25% as "somewhat," 17% as "a little bit," and 38% as "not at all." Over two-thirds reported altered sleeping patterns (67%), with 18% characterizing their sleep as having changed "a lot," 28% as "somewhat," 21% as "a little bit," and 32% as "not at all." Regarding self-assessed exposure to COVID-19 infection, over half (52%) reported that their daily activities exposed them to some degree, with 10% rating their exposure as "a lot," 14% as "somewhat," 28% as "a little bit," and 48% as "not at all." A small but noteworthy proportion (19%) reported that they needed health care that they could not obtain due to COVID-19 restrictions, and 9% reported problems accessing prescribed medications. Finally, 8% reported changes in their living situations.

*Mental health*

Our first study question was whether the indicated prevalence of anxiety and depressive disorders was higher in our population compared to the general adult U.S. population assessed after the pandemic onset. Over a third (35.1%) of our study participants screened positive for generalized anxiety disorder (Table 1), which was higher than that found in general population studies using the GAD-2 cited earlier, which were 25.5% [2] and 30.8% [3]. The proportion screening positive for major depressive disorder was 29.6%, again higher than findings of general population studies, which were 23.5% [3], 24.3% [2], and 27.9% [1]. We tested the equivalence of our population prevalence rates and those in the general population studies using a two-proportion *z*-test for independent samples. One of the anxiety [3] and one of the depression [1] prevalence estimates did not differ statistically from our population prevalence ($p > .05$). The remaining general population prevalence estimates were lower than the prevalence in our study ($p < .05$), at 5%–6% lower for major depressive disorder [2, 3] and 10% lower for GAD-2 [2].

Turning next to associations between anxiety and depression and COVID-19-related lifestyle changes, at the zero-order, significant associations were observed between anxiety and depressive symptoms and disruptions in respondents' daily lives. Those with anxiety symptoms exceeding diagnostic threshold were significantly more likely to report changes in eating habits and sleep patterns, trouble obtaining medications and needed health care, and changes in their living situation (Table 2). These relationships remained significant in the multivariable analysis, with the exception of trouble obtaining medications and changes in living situation. The same significant relationships were present for those with depression symptoms exceeding diagnostic threshold, except for change in living situation, which was not significant. These relationships also remained significant after controlling for site, age, and gender.

**Table 2** | Associations between background variables and changes due to COVID-19: unadjusted and multivariable logistic regression odds ratios

| | Screened positive for generalized anxiety disorder | | | | Screened positive for major depressive disorder | | | |
|---|---|---|---|---|---|---|---|---|
| | Unadjusted adjusted odds ratio | 95% CI | Adjusted[a] odds ratio | 95% CI | Unadjusted adjusted odds ratio | 95% CI | Adjusted[a] odds ratio | 95% CI |
| Eating habits changed | 1.99*** | 1.25, 3.18 | 1.70* | 1.04, 2.77 | 2.51*** | 1.52, 4.14 | 2.60*** | 1.54, 4.38 |
| Sleeping habits changed | 2.81*** | 1.76, 4.50 | 2.70*** | 1.65, 4.43 | 4.47*** | 2.69, 7.43 | 4.28*** | 2.52, 7.29 |
| Needed help with health care | 3.61*** | 1.90, 6.83 | 3.12** | 1.59, 6.13 | 2.84** | 1.50, 5.40 | 2.76** | 1.41, 5.41 |
| Trouble getting medications | 2.35* | 1.01, 5.48 | 2.10 | 0.84, 5.21 | 3.14** | 1.34, 7.37 | 3.02* | 1.22, 7.49 |
| Change in living situation | 2.72* | 1.05, 7.02 | 2.68 | 0.96, 7.50 | 1.41 | 0.53, 3.73 | 1.23 | 0.43, 3.52 |
| Level of exposure to COVID-19 infection | 1.02 | 0.63, 1.64 | 0.87 | 0.52, 1.45 | 0.98 | 0.59, 1.61 | 0.83 | 0.49, 1.42 |

[a]Adjusted model controls for site, gender, and age.
*CI* confidence interval.
*$p < .05$; **$p < .01$; ***$p < .001$.

### Qualitative results

Survey respondents were asked to describe in their own words any ways in which their lives had been affected by the COVID-19 pandemic. Their responses revealed four major themes: (a) the experience and management of emotional distress; (b) feeling socially disconnected and confronting a sense of loneliness; (c) disruption of daily routines in life areas, such as school, work, and leisure time pursuits; and (d) discovering their resilience in the face of an unprecedented global health threat.

Respondents described a wide range of emotional reactions and distress using a variety of terms, including anxious, stressed, worried, afraid, and overwhelmed. For some, the threat to their own health was the source of distress. For those whose family members were impacted by COVID-19, concerns about relatives' welfare and potential mortality were an additional burden:

> [#13] Every day I wake up I am consumed by anxiety about COVID 19. My chest is tight and it's hard to relax... I'm scared all the time. I think negative thoughts about my future and my purpose... I worry that my son will get the virus. I worry that my husband will get the virus. I worry that I will get the virus. Sometimes the pandemic makes me so depressed that I do not want to get out of my bed.
>
> [#17] I'm not sure where to start. I almost lost both of my grandparents, that's the biggest effect...I have never felt as scared or as confused as I have during this pandemic.
>
> [#173] COVID-19 has had a devastating effect on my life. I have been going through grief and loss as well as fear and anxiety because I have many friends and some family that [tested] positive [for COVID]. I have been worried about my wife because she is a[n] essential worker.

Media reports added to the distress some respondents experienced:

> [#39] I also find it stressful to hear daily news in the media that the federal government is so uncoordinated and uncaring about the impact of this pandemic on all of us, especially those in direct contact with the virus.
>
> [#149]: [It's] dramatic and traumatic hearing about death and sadness. Media is overwhelming.

Stress also resulted from financial worries, children being home, and health worries.

> [#58] Terrible. I am now financially strapped and afraid of losing my housing. I am constantly anxious, overwhelmed, & starting to feel depressed. I feel like hope is fading.
>
> [#40] Incredibly stressful working [from home] with 4 children as a single Mom. Had to get a [prescription] on video for anxiety. I am overwhelmed most of the

time. Work was my break from kids; now we are all together all day every day.
[#238] ... money problems, loss of time at work, uncertain future, job may be in jeopardy.
[#49] Constant stress balancing work and children's school from home.

Mandated infection mitigation strategies, including physical distancing and lockdown, were described as affecting people both socially and emotionally. Respondents indicated that the pandemic made them feel socially disconnected and led to feelings of loneliness and isolation.

[#76] Biggest effect has been social - I live alone and my immediate family all lives out of state, so I feel more isolated without seeing coworkers and not being able to meet friends out.
[#86] I feel more isolated and lonelier... Cut off from friends & family.
[#250] I miss my family, miss going to Church. I miss seeing my recovery family [at work]. I can no longer facilitate groups and I truly miss seeing and speaking with the clients.

Some respondents commented that virtual communication through Zoom, FaceTime, or other internet platforms had been helpful, as did one respondent who was now able to access a prescription for anxiety medication through a virtual appointment. However, others found that virtual communication was not a satisfying alternative to in-person social interaction.

[#28] I can no longer see my friends, and computer mediated communication is not a substitute... the isolation and lack of personal touch with family and friends has started to become challenging... I think the biggest change has been the lack of personalization in life. Virtual works but can't replace in person.

Respondents mentioned a number of ways that their sleep was disrupted, eating habits changed, and work routines altered, causing them related stress and emotional discomfort.

[#82] I am home more. I sleep less, I bathe and shower less.
[#168] I sleep in a little longer on workdays and spend much more time in bed on weekends.
[#123] I eat more candy.
[#130] eating a lot more... stress eating.
[#132] I don't have a lot of food on hand. So I am eating what I have.
[#245] I have been making smaller meals and some days I do not have an appetite at breakfast or dinner.
[#161] lost 14 pounds over 1 month.
[#199] ... barriers that make working difficult - slow internet and no cell phone use.
[#215] Working remotely has been challenging to say the least. Getting persons to answer their phone has not been easy.
[#243] I'm working from home and find it difficult and stressful to maintain productivity without going to the office.
[#259] Every day is more stressful because my routine and the routine of everyone around me has been disrupted... I enjoy being home, however, there's a difference between choosing to stay home and being forced to stay home.

Somewhat surprisingly, several respondents felt that the pandemic's effect on their lives had been fairly minimal. Comments such as "I'm fine," "Nothing much has changed," and "I'm watching a lot of movies" were not uncommon. Some respondents described feeling resilient in the face of this worldwide adversity. This resilience took many forms. Some noted that the pandemic had offered them time to pause and reflect on what is important in life.

[#193] It's made me more aware of the fragility of life and my need to prioritize my values and goals.
[#42] I continue to pivot to positive as much as I can, looking at all of the areas in my life that I am very grateful for including my job, and [my] ability to work in the area that I have a passion for which has not changed during this COVID 19 Pandemic.
[#187] My daily needs are being met and I would say the only changes are I work from home and I have to stay in the house. Other than that, I am thankful to still have an income, medication, food and all of my needs are being met.

Other respondents described ways in which their lives had improved during the pandemic. Interestingly, some felt that they were now better able to manage upsetting feelings and emotions.

[#25] I am an introverted, often depressed person who was struggling before COVID. Working from home, not being expected to be active, etc. has been helpful to me. I also feel as if I live in anxiety and uncertainty all the time and tend to calm when there is a threat, so overall I'm actually doing better mentally since COVID started.
[#5] COVID has...given me a chance to learn to deal with my anxiety. I have been trying to reach out to the community.
[#42] I was able to tap into my strengths and use mindfulness skills to be present and provide support to my family and myself, while still being effective at work. I have increased my levels of daily journaling & meditation, and ... thought of innovative ways to cut back on things that are not priority or essential which has helped me in the financial area.
[#259] ... As someone riddled with great anxiety over the years, especially over my identity, I have found this

> time to be a good time to live more authentically (as I don't worry as much what others will think, considering the bigger world concerns at hand).

Still others commented on the practical advantages that they had experienced from the pandemic, such as time to take care of their homes and time for being with family.

> [#76] There have been positives as well. More time at home. Feeling like I have been able to slow down and feel less pressured. I have been able to arrange for some needed [repairs] for my home since I am working from home. My family is having more regular contact to check on each other and address our increased isolation.

## DISCUSSION

Our results suggest that, at the beginning stages of the pandemic, people with behavioral health disorders were struggling in the same ways as those in the general population but with somewhat higher levels of anxiety and depressive symptoms. Over a third of our respondents screened positive for anxiety disorder compared with around a quarter of the general population [2, 3]. Around 30% of our respondents screened positive for depressive disorder, again compared to around one-quarter of those in the general population [1–3]. The differences between our population and the general population may not be clinically meaningful, however, given that none were larger than 10 percentage points. This may be because respondents had access to peer supports and community mental health services, preparing them to meet the emotional challenges of the pandemic, such as isolation, uncertainty, and loss. Community programs offering peer support and virtual socialization may have provided emotional reassurance that they were not alone. Comprehensive behavioral health and social services may have connected them to resources and information that helped relieve uncertainty and worry. Finally, some respondents were also providing services to others, such as leading virtual support groups and offering wellness assistance via telephone, which may have given them a sense of meaning and purpose in their daily lives. These findings are not unexpected given that peer support and psychiatric rehabilitation services for people with mental disorders have demonstrated positive outcomes following other large-scale disasters, such as 9/11 and Hurricane Andrew [51, 52].

Respondents reported considerable disruption of normative routines and daily activities, such as eating and sleeping, as well as interruption of social relationships that had previously provided meaning and purpose in their lives. Trying to balance work, family, and childcare in these disrupted contexts were described as highly stressful. Interpersonal relationships that had previously offered support and a sense of accomplishment, such as parenting, were now fraught with challenges, such as assuming responsibility for children's schoolwork and being continuously confined in the same space. Being cut off from important activities, such as socializing in person with family, seeing friends, and attending worship services, made it difficult to remain grounded in daily rhythms and routines.

Respondents also commented about being overwhelmed with negative information and unrelenting media portrayals of rising infection and death rates, lack of effective testing and treatments, and an uncoordinated national response. On the one hand, given their experience with the drastic underfunding, widespread workforce shortages, and fragmented services that currently characterize our country's public mental health system [53, 54], some of these challenges may have seemed more familiar and expected than they were to members of the general population. At the same time, knowing how difficult these systems are to change and improve may have contributed to respondents' sense of dismay and helplessness. Other respondents found it difficult to stop worrying about losing their jobs, being evicted, reduced hours at work, and the health of relatives and friends.

At the same time, respondents displayed a noteworthy level of emotional and social resilience in the face of adversity. They expressed gratitude for their relationships with family and friends, rewarding jobs, access to medications, and food security. A variety of wellness and self-care strategies were described, such as mindfulness, journaling, meditation, and videoconferencing, to help deal with stress. Some appreciated the ability to lessen the formerly hectic pace of their lives and tend to tasks, such as needed home repairs. Others expressed new-found pride in their ability to adjust to unfolding events and noted that this experience might help them to live more authentically in the future.

### Limitations

This study has a number of limitations. The first is that we relied on self-report to assess mental health symptoms, exposure to COVID-19 infection, changes in sleep and diet, and use of health care. Self-report is subject to biases, including social desirability and selective recall, which should be taken into account when interpreting our findings. The second limitation is the use of screening measures rather than full diagnostic assessments administered by a clinician to identify generalized anxiety disorder and major depressive disorder. The third is that we did not conduct a longitudinal study with multiple measures that would have allowed us to calculate statistically the size and significance of changes from before to after pandemic onset. Fourth, our respondents are

not a representative group of adults with behavioral health disorders but are instead a self-selected group of adults living in the community and connected to community programs for people with behavioral health disorders. Finally, our respondent population was limited to two states on the east coast and there are doubtless regional variations in many of the phenomena we studied that we are unable to address. At the same time, the survey's anonymous nature, unique and sizable sample, use of valid and reliable screening measures, multisite recruitment, and data collection at an early stage of the pandemic are strengths that justify attention to our findings, albeit with caution.

### Implications for translation to practice

There are several ways that these findings could be translated into practice. First, given their level of emotional distress, many people may benefit from increased access to peer support and wellness services in addition to traditional mental health services. Especially, given the growing need for services that will overburden the existing system, behavioral health peer support services should be readily available to help people manage and cope over the long term. In addition, psychiatric rehabilitation services would help those negatively impacted by the pandemic to find and maintain secure housing, access education and vocational training, enter or return to the workforce, and identify safe ways to participate in community life [55].

Unlike other disasters that are time limited, such as earthquakes, hurricanes, and wildfires, the COVID-19 pandemic is likely to be long lasting and to have a continuing impact on the social determinants of health and mental health. Also unique is the continuing significant uncertainty, and shifting circumstances due to spikes in infection rates, that will likely contribute to additional stress and negative impacts over the long term. Peer providers and traditional mental health service providers will need to find new ways to connect virtually, and eventually in person, to help people reorient to our "new normal," much as people learn to adjust to having a disability or chronic health condition. This includes learning to handle distress while also remaining attuned to health risks over time. These providers also can translate existing health promotion and literacy strategies from the behavioral health field into innovative, accessible wellness support during the pandemic. These strategies include wellness coaching, education about a whole health lifestyle, boosting immunity through self-care, and reducing COVID-related risks [32–34,56].

We know that communication and understanding are not enough to prompt lifestyle change, and it is here that behavioral medicine has an essential role to play. Engagement with underserved communities, including those with preexisting and more recently developed mental health conditions, can use behavioral medicine strategies to address diverse determinants of preventive behavior, engagement in medical services, vaccine uptake, recovery, and rehabilitation [57, 58]. Our findings regarding emotional distress, resilience, and wellness self-management among people with behavioral health disorders can offer valuable insights for the development of responses to COVID-19 that span the biopsychosocial continuum.

## SUPPLEMENTARY MATERIAL

Supplementary material is available at *Translational Behavioral Medicine* online.

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### Compliance with Ethical Standards

**Conflicts of Interest:** All authors declare that they have no conflicts of interest.

**Author Contributions:** J.A.J. contributed to study design, interpreted results, and co-wrote first and subsequent drafts; J.A.C. contributed to study design, directed statistical analysis, interpreted results, and co-wrote first and subsequent drafts; M.S. contributed to study design, collected and analyzed data, interpreted results, and co-wrote first and subsequent drafts; P.N. collected and analyzed data, prepared results, and co-wrote first and subsequent drafts; P.J.S. processed data and conducted statistical analyses, prepared results, and edited drafts; K.A.B. analyzed qualitative data, interpreted results, and edited drafts; G.H.B. analyzed qualitative data, interpreted results, and edited drafts.

**Ethical Approval:** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This research did not use animals.

**Informed Consent:** Written informed consent was waived for the study.

**Data availability:** Deidentified data from this study are not available in a public archive. Deidentified data from this study will be made available (as allowable according to institutional review board standards) by emailing the corresponding author.

**Study registration:** This study was not formally registered.

**Analytic plan preregistration:** The specified written plan of analyses were not formally preregistered.

**Analytic code availability:** Analytic code used to conduct the analyses presented in this study are not available in a public archive. They may be available by emailing the corresponding author.

**Materials availability:** Materials used to conduct the study are not publicly available. Survey items are included in the Supplementary Material.

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