Physical and Mental Health Screening in a New York City HIV Cohort During the COVID-19 Pandemic: A Preliminary Report

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Background: Mental health consequences of the COVID-19 pandemic have been observed. Psychiatric symptoms in people living with HIV, and their relationship to physical symptomatology and prior psychopathology, are not yet reported.

Setting: An HIV cohort sheltering-in-place in New York City.

Methods: Forty-nine participants in a longitudinal study were contacted by telephone in April 2020. A structured interview queried COVID-19-associated physical symptoms, and mental health screens were performed with the generalized anxiety disorder-2 (GAD-2) and patient health questionnaire-2 (PHQ-2). Prior medical and neuropsychiatric data were obtained from preceding study visits. Post-hoc analyses were performed.

Results: The mean age of respondents was 62.1 years, 39% were women, and 35% African American, 37% Latinx, and 28% Caucasian. COVID-19-indicator symptoms were present in 69%; 41% had respiratory and 61% extra-pulmonary symptoms. Mental health symptoms were endorsed in 45% with PHQ-2 and 43% with GAD-2, although threshold for major depression was met in only 4% and for GAD in 14%. Higher PHQ scores were associated with respiratory symptoms, but not prior mood or anxiety disorders. GAD-2 scores were higher with past mood disorders, but not with prior anxiety disorders or respiratory symptoms.

Conclusions: Physical symptoms were frequent and mild psychiatric symptoms were common, but serious anxiety and depression were not often endorsed by this group of people living with HIV at the acute height of the New York City COVID-19 pandemic. Reasons for this are unclear, as this preliminary report is descriptive in nature. Short- and long-term consequences of acute mental health symptoms require further study.

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INTRODUCTION

The COVID-19 pandemic has created highly stressful changes across every stratum of society, and in the United States (US), some of its worst consequences have been experienced in New York City (NYC). As of May 18, 2020, NYC had 191,073 cases and 20,806 deaths due to COVID-19 disease, with the height of daily diagnoses and deaths occurring in April 2020.[1] New York City also has the largest population of people living with HIV (PLWH) in the US.[2] The potential for COVID-19 related stress to increase psychosocial burdens of PLWH is recognized, yet little is known about psychiatric symptoms in PLWH during acute stages of the pandemic.[3] To date, acute mental health impacts of the pandemic have been described in several large-scale, general population studies, through online computer screening, and most without reference to pre-extant medical or psychosocial risks.[4–7] Two of the largest were multi-city surveys in China, where prevalence of symptoms of depression and anxiety ranged from 17% to 48%.[4,5] A smaller analysis from China examined the relationship of COVID-19-associated psychiatric symptoms and prior mood and anxiety disorders, finding higher scores on several measures in patients with pre-extant disorders.[7] In the US, the Johns Hopkins COVID-19 Civic Life and Public Health Survey, using an online version of the Kessler 6 psychological distress scale, found that 13.6% of 1468 respondents reported serious psychological distress.[6] In this survey, psychological distress was highest in the youngest age group, present in 24% of those between 18 and 29 years, and 7.3% of those aged 55 or older, and highest in Hispanic adults.[6] Most recently, 40.9% of 5412 adult US respondents to an online survey reported at least one mental health symptom or condition; of these, 30.9% were symptoms of anxiety or depression ascertained via the patient health questionnaire 4 (PHQ-4), which combines PHQ-2 and GAD-2 screening instruments.[8] In this study, the highest rates of trauma or stress-related disorders were seen in black non-Hispanic and Hispanic adults.[8]

Currently, there is very little information regarding how acute stressors related to the COVID-19 pandemic, including physical symptomatology, are affecting the mental health of PLWH. This is particularly troublesome, because PLWH carry greater psychiatric burdens than general populations, and thus, may be potentially more vulnerable to adverse

mental health outcomes. A brief report of 16 older PLWH during early stages of the pandemic in Miami, Florida has been recently published; only 3 individuals (19%) demonstrated pulmonary symptoms, and the Likert-scale stress measure that was used, with an average value of 4.4 of 10, was not analyzed with regard to these physical phenomena.[9] COVID-19 has created a situation in which PLWH are experiencing new, acute stressors while managing their well-documented chronic medical and psychosocial burdens, and the short- and long-term mental health outcomes of this are presently unknown.

Since 1999, the Manhattan HIV Brain Bank (MHBB) has been conducting a longitudinal, observational study of PLWH in NYC, the US epicenter of the HIV, and now COVID-19, pandemics. With NYC shelter-in-place orders instituted on March 20, 2020, MHBB suspended on-site medical center activities, and reconfigured its phone interview to specifically query COVID-19-related symptoms and perform brief mental health screens, as a means of assessing the physical and mental well-being of its participants. Herein, we report preliminary results of these phone interviews in a subset of our participants, contacted in their homes at the height of the COVID-19 pandemic in NYC. In this medically and psychiatrically well-characterized cohort of PLWH, we provide descriptive analysis of their acute physical and mental health symptoms. We explore associations between symptoms and baseline medical, psychiatric, and demographic factors; and perform a preliminary analysis of which factors predict the severity of acute mental health symptoms.

MATERIALS AND METHODS

Patient Population

The MHBB (U24MH100931) operates a longitudinal, observational cohort study at the Icahn School of Medicine at Mount Sinai, with protocols approved by the Icahn School of Medicine at Mount Sinai institutional review board. As a primary mission of MHBB is to provide a bio-specimen and informational resource for HIV research, individuals are eligible for study if they agree to be organ donors upon demise; they are offered the option of entry into the longitudinal study, where they are seen for in-person visits at intervals of 6, 12, or 24 months, dependent on medical and psychosocial acuity. In addition to in-person visits during which study participants have extensive neuromedical and neurobehavioral assessments, MHBB conducts phone interviews to query interim medical changes. Medical comorbidities included in eligibility criteria have been published; briefly, these include conditions that in the judgement of the referring physician or study staff increase the risk of near-term mortality, as for example congestive heart failure, renal failure, chronic obstructive pulmonary disease, and advanced age.[10] All study participants provide written informed consent. At the time of this study, there were 170 active MHBB participants with mean age of 61.0 ± 7.7 years; 48% were women; and 31% Latinx, 44% African American, 24% Caucasian, and 1% other race/ethnicity.

In-Person Study Assessments

In-person MHBB evaluations include: neurologic examination; medical assessment and review of all medical diseases, therapies, and antiretroviral (ARV) medications; a neurocognitive test battery which generates a demographically-corrected global T score as previously described[11]; and determination of lifetime and current psychiatric and substance use disorders with either the Composite International Diagnostic Interview version 2.1, or the Psychiatric Research Interview for Substance and Mental Disorders. Apathy is assessed by patient report of less interest in or time with family and friends, or loss or little to no contact with others. Laboratory evaluations include measurement of CD4 T-cell counts and plasma HIV RNA load. Information from the last full study visit before shelter-in-place orders was used in analyses. With one exception, in-person study visits occurred within 2-years of the phone interviews, with 43 of 49 (88%) occurring within 1 year.

Phone Interview

MHBB uses a standardized phone interview for remote monitoring of medical characteristics of its study population, developed by the National NeuroAIDS Tissue Consortium. The interview was edited by MHBB in the last 2 weeks of March 2020 to include specific elaboration of COVID-19-related symptoms, and brief screens for symptoms of depression and anxiety with the PHQ-2 and the generalized anxiety disorder-2 (GAD-2).[12,13] The PHQ-2 and GAD-2 each have 2 items scored on a scale of 0 (no symptoms) to 3 (greatest symptom frequency), with total score for each ranging from 0 to 6. Using a cutoff score of 3 or more, in general populations their metrics are: for any depressive disorder, PHQ-2 is 62.3% sensitive and 95.4% specific; and for any anxiety disorder the GAD-2 is 65% sensitive and 88% specific. For our analyses, we used scores in a dichotomized fashion to indicate a potentially syndromic disorder (yes/no for a score at or above the predictive cutoff score); scores dichotomized for presence or absence of any psychiatric symptoms (yes/no for endorsing any symptom regardless of the overall score); and as continuous variables.

Medical symptoms specifically queried in the modified interviews were classified for analysis as respiratory or constitutional. Respiratory symptoms included shortness of breath, productive cough, and dry cough; constitutional symptoms included loss or decrease in taste or smell, fever, headache, sore throat, rhinorrhea, myalgia, arthralgia, sneezing, chest pain, and new onset diarrhea. Nasopharyngeal symptoms were classified as constitutional to distinguish abnormalities generated in the lower airways or bronchial tree from those originating more proximally. Symptoms were scored as present or absent based on report. Phone interviews were conducted between April 1st and April 30th by the study nurse (C.C.-P.) and nurse-practitioner (M.P.), both of whom were familiar with and known to study participants. Phone calls were made to as many participants as feasible, as staff were simultaneously redeployed into anti-COVID-19 efforts both in the medical center and the city at large.

Statistical Analysis

Descriptive statistics and bivariate analyses were generated on a Macintosh computer using Jmp version 9.0. Tests included analysis of variance with individual means testing by the Student *t* test, Wilcoxon/Kruskal–Wallis rank sum tests, and Chi squares. No analyses were planned at the time of data collection (all analyses were post-hoc), because the information was intended to be part of our interim checks on the welfare of our study participants. Therefore, preplanned hypotheses and measurements of power were not a factor in our descriptive statistics and exploratory tests of association.

RESULTS

Patient Population

The 49 interviews conducted in April 2020 represented 29% of the active study population (Table 1). Table 1 describes demographic characteristics of the sample, their immunovirologic status, prevalence of comorbid medical illnesses, and neuropsychiatric characteristics at the last full study visit before March 20, 2020. The mean age of the sample was 62.1 (7.7) years; there were 30 men and 19 women; and 35% were African American, 37% Latinx, and 28% Caucasian. The population was largely adherent and virally suppressed; all were on ARVs, only 3 had plasma HIV RNA loads over 400 copies/mL, and the mean CD4 T-cell count was 511 (227) cells/mm3. Comorbid medical illnesses were active in 86%, the most common being: hypertension in 29 (59%), osteoarthritis in 24 (49%), cardiac disease in 15 (31%), asthma and obesity each in 13 (27%), and diabetes mellitus in 12 (24%). Twenty-two (45%) were tobacco smokers. On the last neurocognitive assessment, 67% (33 people) had a normal global T score of 40 or greater [mean value 44.4 (10.9)]. Lifetime histories of mood disorders (major depression, bipolar disorder, and dysthymia), anxiety disorders (generalized anxiety and phobias) and post-traumatic stress disorder were present in 38 (78%), 30

TABLE 1. Characteristics of the Study Population Before the COVID-19 Pandemic

	Total Population, n = 49	African American, n = 17	Latinx,* n = 18	Caucasian n = 14	F/χ2	*P*
Mean age (yr)	62.1 (7.7)	60.8 (6.1)	60.8 (7.5)	65.4 (9.0)	1.886	ns
Sex (% male)	61%	53%	61%	71%	1.121	ns
HIV risk: IVDU	35%	41%	39%	21%	3.820	ns
HIV risk: Sex	63%	59%	61%	71%		
HIV risk: Other	2%	0%	0%	7%		
Mean CD4 (cells/mm^3)	511 (227)	494 (250)	477 (251)	574 (156)	0.785	ns
Median log plasma viral load†	1.28 (1.28, 1.37)	1.28 (1.28, 1.56)	1.28 (1.28, 1.41)	1.28 (1.28, 1.30)	1.171	ns
Medical comorbidities:						
Presence of any medical disorder	86%	88%	78%	93%	1.602	ns
Hypertension	59%	71%	56%	50%	1.530	ns
Cardiac disease	31%	29%	33%	29%	0.101	ns
Diabetes mellitus	24%	24%	28%	21%	0.184	ns
Obesity	27%	47%	17%	14%	5.485	0.06
Active liver disease	16%	12%	28%	7%	2.824	ns
COPD	12%	18%	6%	14%	1.383	ns
Asthma	27%	29%	28%	21%	0.281	ns
Osteoarthritis	49%	65%	39%	43%	2.655	ns
Cerebrovascular accident	16%	24%	11%	14%	1.023	ns
Smoker	45%	65%	44%	21%	6.064	<0.05
Neuropsychiatric characteristics:						
Mean global T score	44.4 (10.9)	44.6 (2.7)	44.2 (2.6)	44.4 (3.0)	0.008	ns
Lifetime history of mood disorder‡	78%	71%	78%	86%	1.038	ns
Active mood disorder	14%	6%	17%	21%	1.817	ns
Lifetime anxiety disorder§	61%	47%	61%	78%	3.325	ns
Active anxiety disorder	14%	12%	11%	21%	0.770	ns
Lifetime PTSD	39%	41%	33%	43%	0.367	ns
Active PTSD	6%	6%	6%	7%	0.036	ns
Symptoms of apathy	33%	41%	22%	36%	1.553	ns

For age, mean CD4, and mean global T score, comparison by ANOVA.
For sex, HIV risk, all medical disorders, and psychiatric disorders, comparison by χ^2.
For log plasma viral load, comparison by Wilcoxon/Kruskall–Wallis test.
*Two Latinx individuals identified as African American.
†Limits of quantitation: 20 copies/mL
‡Includes major depressive disorder, bipolar disorder, dysthymia.
§Generalized anxiety disorder, phobia.
COPD, chronic obstructive pulmonary disease; PTSD, post-traumatic stress disorder.

(61%), and 19 (39%), respectively; in contrast, these conditions were active at the last study visit before shelter-in-place orders in 7 (14%), 7 (14%), and 3 (6%). At this prior study visit, 16 (33%) endorsed symptoms of apathy.

We next determined whether baseline medical and psychiatric characteristics of our sample varied with demographic features, as demography (age, sex, race/ethnicity) has relevance to COVID-19-related phenomena, and this baseline may be important for the occurrence of acute symptoms. There were no significant differences between racial/ethnic groups in immunovirologic, medical, and neuropsychiatric on-study characteristics (Table 1); significant differences in active tobacco smoking did not persist with Bonferroni correction. Individuals with any medical condition were on average older than those without [with any medical disorder mean age = 63.1 years, without medical disorder mean age = 56.0 years, F = 5.7068, P = 0.02, analysis of variance (ANOVA)], but no individual medical disease reached significance regarding age. Individuals with active anxiety disorders at the last visit were younger than those without [mean age (SD) with active anxiety disorder = 56.2 (2.8), without = 63.1 (1.1), F = 5.1298, P = 0.03, ANOVA], but with correction, this was not significant, and no other neuropsychiatric characteristics varied by age. Only obesity and asthma were more common in women than men, with association of asthma and sex remaining significant after correction (42% of women and 17% of men were obese, χ^2 statistic (χ^2) = 3.799, P = 0.05; 53% of women and 10% of men had asthma, χ^2 = 10.904, P = 0.001).

Medical and Neuropsychiatric Symptoms in April 2020

Medical symptoms were reported in 69% of the sample (34 individuals); 20 (41%) endorsed COVID-19-related respiratory and 30 (61%) COVID-19-related constitutional symptoms (Table 2). The most common respiratory symptom was dry cough in 12 (24%); the most common constitutional symptoms were headache, rhinorrhea, and myalgia in 9 persons each (18%), sneezing in 10 (20%), and arthralgia in 12 (35%). The presence of any COVID-19-related respiratory symptom was not related to prior diagnosis of asthma or COPD, whereas arthralgia was more common in individuals with pre-extant osteoarthritis (χ^2 = 4.451, P = 0.03, all tests of association for categorical variables by χ^2). There were no significant differences in any medical symptom by race/ethnicity. Participants with any medical symptom were younger than those without [mean age (SD) with symptoms = 60.7 (1.3), without symptoms = 65.4 (1.9), F = 4.2059, P = 0.05, ANOVA]; with Bonferroni correction, this was not significant. There was no difference in age between those who did and did not endorse COVID-19-related symptoms. Loss of taste or smell was exclusively reported by men (χ^2 = 4.148, P = 0.04 without correction); there were no other sex differences in symptomatology.

Twenty-one people (43%) endorsed symptoms on the GAD-2, although only 7 (14%) met threshold for anxiety disorder. Kruskal–Wallis test showed a significant difference in median values across racial/ethnic groups (χ^2 = 6.9145, P = 0.03), with comparisons for each pair by Wilcoxon method demonstrating significant differences between Latinx and African Americans (score mean difference = 7.2059, z = 2.4046, P = 0.02), Caucasians and African Americans (score mean difference = 6.1870, z = 2.2162, P = 0.03), but not Caucasians and Latinx (score mean difference = −1.333, z = −0.4204, P = 0.67). There were no differences in GAD-2 by sex or age. Latinx and Caucasians were also more likely to endorse any symptoms on the GAD-2; symptoms of anxiety were present in 18% of African Americans, 56% Latinx, and 57% Caucasians (Likelihood ratio χ^2 = 7.229, P = 0.03). Scores on the GAD-2 were higher with lifetime histories of mood disorders (χ^2 = 5.837, P = 0.016, Kruskall–Wallis test), but not prior anxiety disorders or active respiratory symptoms.

Twenty-two people (45%) endorsed symptoms on the PHQ-2, although the threshold for depressive disorder was only met by 2 people (4%). Although endorsed symptoms and median PHQ-2 scores were generally lower in African Americans than other groups, the differences were not significant (for endorsing any symptoms on PHQ-2, χ^2 = 2.745, $P > 0.10$; for differences in median scores, χ^2 = 3.323, $P > 0.10$). There were no differences in PHQ-2 by sex or age. Scores on the PHQ-2 were higher in the presence of active respiratory symptoms (χ^2 = 4.019, P = 0.045, Kruskall–Wallis test), but not with prior mood or anxiety disorders.

DISCUSSION

With high rates of medical illnesses, advancing age, and predominantly of minority status, the MHBB cohort is an at-risk population for adverse medical consequences of COVID-19. We were able to collect information on their physical and mental health symptoms during the height of the COVID-19 epidemic in NYC, where peaks of daily cases, hospitalizations, and deaths occurred from March 30th into the first week of April 2020.[1] This offered a unique opportunity to examine real-time impacts of an unprecedented psychosocial/medical stressor on a group of psychologically well-characterized PLWH. In the interview, we balanced the need for brevity with an attempt at meaningful elaboration of symptoms, recognizing that more extensive screening may not be feasible in a first contact with study participants under the unique circumstances of the pandemic. The results of our screening demonstrated relatively high rates of physical symptomatology, and substantial numbers of participants endorsing symptoms of depressed mood and anxiety. However, only small percentages met thresholds for severe anxiety and depression.

It is useful to contextualize our sample regarding other populations during the COVID-19 pandemic, and PLWH before the global disaster. The Depression Anxiety and Stress Scale-21 was deployed as an online screening tool across 194 cities in China in the exponential phase of its epidemic.[4] Symptoms of depression were present in 30.3% of 1210 respondents, with 16.5% moderate-to-severe; symptoms of anxiety were seen in 36.4%, with 28.8% moderate-to-severe.[4] Only 10% were over the age of 40, over 90% had no health conditions, and COVID-19-related symptoms were present in 39%; physical symptoms were associated with higher stress

TABLE 2. Physical and Mental Health Symptoms in PLWH Sheltering-In-Place, April 2020

	Total Population, n = 49	African American, n = 17	Latinx, n = 18	Caucasian, n = 14
Any medical symptom	69%	71%	72%	64%
Any COVID-19-related respiratory symptom	41%	36%	44%	43%
SOB	18%	12%	28%	14%
Dry cough	24%	24%	22%	29%
Productive cough	8.2%	0%	17%	7.1%
Any COVID-19-related constitutional symptom	61%	59%	67%	57%
Loss of taste or smell	8.2%	12%	11%	0%
Headache	18%	18%	17%	21%
Fever	4.1%	0%	5.6%	7.1%
Rhinorrhea	18%	18%	22%	14%
Sore throat	8.2%	18%	5.6%	0%
Sneezing	20%	18%	22%	21%
Myalgia	18%	5.8%	28%	21%
Arthralgia	24%	35%	22%	14%
Chest pain	2.0%	5.9%	0%	0%
Diarrhea	6.1%	0%	11%	7.1%
Any symptoms on PHQ-2	45%	29%	50%	57%
Threshold for depressive disorder PHQ-2	4.1%	0%	5.6%	7.1%
Median PHQ-2 score	0 [0, 2]	0 [0, 1]	0.5 [0, 2]	1 [0, 2]
Any symptoms on GAD-2	43%	18%	56%	57%
Threshold for anxiety disorder GAD-2	14%	5.9%	22%	14%
Median GAD-2 score	0 [0, 2]	0 [0, 0]	1 [0, 2.25]	1 [0, 2.00]

and depression scales. Thus, compared with our sample, this younger and healthier Chinese population had a smaller prevalence of COVID-19-related physical and overall psychiatric symptoms, and higher prevalence severe psychiatric symptoms which were related to physical symptoms. Another online Chinese study over the same time period, using the WHO-5 well-being index (WHO-5) and GAD-7 found depression, anxiety, and co-extant depression and anxiety in 48%, 23%, and 19% of 4872 respondents, respectively.[5] Physical symptoms or underlying medical conditions were not queried, but greater exposure to social media correlated with mental health problems, which were most prevalent in individuals under 40 years of age. In the US, serious psychological distress was identified in 13.6% of 1468 adults from the NORC's AmeriSpeak Panel; symptoms were most severe in those aged 18–29 years, those with household income under $35,000 per year, and those endorsing Latinx ethnicity; physical symptoms were not recorded.[6] Most recently, the Centers for Disease Control (CDC) reported the results of online screening for anxiety and depression using the same instruments we employed (the PHQ-4), in a general population sample of 5412 adults.[8] Using cutoff scores of 3, this study demonstrated serious anxiety or depression in 30.9%, roughly double what was encountered in our population.[8] All these studies raise the question of why, in our sample of PLWH with greater prevalence of both physical symptoms and premorbid illnesses conferring risk of adverse outcome, fewer severe acute mental health responses to COVID-19 were observed.

It is possible that the greater age of our participants provided resilience to the more severe mental health sequelae seen in the younger populations of prior surveys. In the recent CDC survey, anxiety and depressive disorders were most frequently reported by persons aged 18–24 years; in those aged 45–64, anxiety was seen in only 16.1% compared with 49.1% of the younger group.[8] Thus, a frequency of serious anxiety in 14% of our sample of PLWH with a mean age of 62.1 years, is similar to the CDC findings in their comparably-aged sub-population. However, the same cannot be said for depression, present in 14.4% of the CDC sample aged 45–64 and only 4% of our PLWH. Another possibility to account for population discrepancies is that experience coping with the chronic burdens of serious disease may modulate effects of acute stress. In a small sample of PLWH in Miami, stress levels rated on a Likert scale of 1–10 averaged 4.4 during an unspecified time after March 2020.[9] Although it is unclear how this compares to validated screens and if this reflects mild or moderate stress, anecdotally, some of our participants likened their experience of the COVID-19 pandemic to their experience of the early years of the HIV pandemic. In general, PLWH live with far greater physical and psychiatric burdens than general populations. Regarding anxiety, in a nationwide survey of 654 PLWH, the Medical Monitoring Project found GAD symptoms in 19%.[14] The rate of active anxiety disorders in our MHBB sample prior to COVID-19 (14%) is consistent with this nationwide sample. Of interest, although the percentage of patients meeting threshold for anxiety disorder was the same during the pandemic (14%), these severe symptoms did not manifest exclusively in those with prior GAD. Of 7 individuals meeting the GAD-2 threshold, only 4 had pre-extant GAD, although all had lifetime mood disorders. Co-morbid

psychopathology with depression and anxiety is well-documented, and factors that result in variable phenotypes are not understood.[15] In addition, the recency of psychiatric diagnoses in our sample had no bearing on symptom severity during the pandemic; of 11 individuals who were psychiatrically symptomatic at their pre-COVID-19 visit, only 2 met thresholds for GAD during the pandemic. This disconnection of recent psychopathology and acute, stress-actuated abnormality raises the issue of whether greater resilience or coping mechanisms are active in individuals dealing with ongoing burdens of mental health disorders, in contrast to an underlying predilection represented by the relationship between acute stress abnormality and lifetime history of depression. It is striking that with the high lifetime frequency of both mood and anxiety disorders in our population (78% and 61%, respectively), these did not seem to "reactivate" in the setting of the COVID-19 pandemic—participants with prior GAD were not those at risk of GAD during the pandemic; those with prior depression were not those at risk of COVID-19-associated depression. Our study population is actively engaged in care (48 of the 49 reported compliance with their medications during these phone interviews), and it seems that with care, having a remote psychiatric diagnosis did not constitute a vulnerability for relapse. However, the association of COVID-associated anxiety in individuals with prior mood disorders may indicate that there are as of yet unexplained factors that contribute to adverse mental health outcomes predicated on inherent vulnerabilities not clearly delineated in simple diagnostic categories.

Our study also revealed lower prevalence and severity of anxiety symptoms in African Americans, despite equivalent comorbid illnesses putting them at risk for severe COVID-19, and equal prevalence of acute medical symptoms. This observation must be tempered by the preliminary nature of this study, the small numbers of participants, and the post-hoc nature of the analyses; it needs to be validated with larger populations of PLWH. It also stands in contrast to the larger CDC study in which African Americans and Latinx evidenced the highest rates of trauma or stress-related disorders, albeit only Latinx demonstrated higher rates of severe anxiety and depression on the PHQ-4.[8]

A concern regarding the validity of our observations may also arise from the use of screening measures in varied races and ethnicities. The PHQ-2 and GAD-2 combined, rechristened as the PHQ-4, have demonstrated excellent internal reliability and construct validity in large populations, in different sexes, and in Latinx Americans, and the 2 PHQ-2 items show no differential functioning in African Americans.[15–18] Construct validity of the GAD-2 is less certain; although most studies see no differential function of the larger GAD-7 and GAD-4, one group reported generally lower GAD-7 scores in African Americans.[19,20] Use of screening measures may also account for some of the variability between the frequency of disorders in our study and prior population analyses (this is not applicable to the most recent CDC study, which also used the PHQ-4). Although the predictive power of the PHQ-4 for GAD and mood disorders is known, there is no literature to reliably comment on its metrics relative to the Depression Anxiety and Stress Scale-21, WHO-5, or Kessler scale, although the GAD-2 generally seems to have similar receiver-operating characteristics to the GAD-7 despite potential subpopulation discrepancies.[12]

Another concern is whether symptoms observed in cross sectional analysis can be appropriately assumed to be related to the COVID-19 pandemic—that is, does temporal coincidence imply causality? This is a caveat for our study and the large-scale studies of general populations that have been previously reported.[6,7] However, our population is uniquely suited to examining the question of whether the observed symptoms, in the context of COVID-19, are new or continuations of previously observed phenomena, because we have extensively categorized our participants' prepandemic psychiatric/psychologic symptoms and diagnoses. Our findings, that symptoms of anxiety were not associated with prepandemic diagnoses of GAD, may suggest they were related to the stresses experienced during the peak of COVID-19 in our city.

There are other caveats with regard applicability of this report to more general populations and broader samples of PLWH. MHBB is enriched in medical illnesses and may not be representative of healthier HIV populations. The brevity of our mental health screens likely reduced ascertainment of the full extent of depression and anxiety symptoms. Our group continues to develop and employ longer interviews to explore these effects. We could not test our population for SARS-CoV-2 infection, and thus, can only comment on symptoms, but not actual infection. Finally, we are not reporting perceptions and circumstances of unique COVID-19-related stressors, which limits what can be inferred about generation of psychopathology. As we continue remote assessment of our population, we hope to further elucidate short- and long-term mechanisms and outcomes of this unique challenge to the mental health of PLWH.

In summary, our findings, using the same screening instruments as the most recent large-scale CDC survey, suggest that PLWH are experiencing equivalent or possibly smaller rates of COVID-19-associated GAD and depressive disorders when compared with the general population. This is remarkable given the greater frequency of lifetime psychiatric disorders in our HIV population. This may reflect the influences of being in active care at the onset of the pandemic, or benefits that may be conferred by aging and the development of coping mechanisms necessary to exist with chronic medical disease. The factors leading to vulnerability in those who experienced significant psychiatric symptoms are unclear, and more study is necessary to elucidate and mitigate these adverse mental health consequences experienced during the COVID-19 pandemic.

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