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# Using Rapid Research Implementation and Collaborations to Assess the Mental Health Impact of the COVID-19 Pandemic Among Community and Clinical Cohorts

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## Abstract

A research initiative was launched during the initial coronavirus disease (COVID-19) outbreak by 3 New York metropolitan area institutions. Collaborators recruited community members and patients from previous research studies to examine COVID-19 experiences and mental health symptoms through self-report surveys. The current report descriptively presents findings from the initial survey characterized by both community and clinical cohorts, and discusses challenges encountered with rapid implementation. The clinical cohort exhibited higher rates of symptoms of mental health difficulties (depression, anxiety, and posttraumatic stress disorder [PTSD]) as compared to the community cohort. COVID-19 positivity rates were similar among both groups and lower than the national average. While both groups reported low rates of job loss, community members reported higher rates of financial difficulty resulting from the pandemic. Findings indicate the need for further collaborative research on the mental health impact of COVID-19.

## Introduction

As of April 9, 2021, the United States has exceeded over 31 million confirmed cases of coronavirus disease (COVID-19), with New York, Texas, and Pennsylvania accounting for almost a quarter (125 454) of the 560 825 US deaths.[1] The initial peak of the pandemic placed an alarming physical and financial burden upon the United States, especially in New York, the initial epicenter of the COVID-19 outbreak.[2] This resulted in severe anxiety, fear, and panic as COVID-19 spread throughout the country.[3] To address the need for community-based mental health research during this pandemic, a collaborative research protocol across 3 major New York academic medical centers (comprising the Center for Disaster Health, Trauma and Resilience) was initiated to understand the psychosocial impact of COVID-19, leveraging existing collaborative relationships, joint institutional review board (IRB) protocols, and existing cohorts where participants consented to be re-contacted. Our joint center was able to quickly mobilize and implement an initial assessment across several different cohorts who were previously exposed to other traumatic events, such as Hurricane Sandy. Baseline data collection from our community and clinical cohorts began in May 2020 and will continue to occur at 2 additional time points over the course of 1 year.

This report characterizes our cohorts' COVID-19 experiences and mental health symptoms, and discusses challenges and lessons learned during the rapid implementation of this project.

## Methods

Participants from existing community and clinical cohorts were re-contacted and re-consented for this study. The community cohorts consisted of community members who had participated in previous research studies either within the New York tri-state area, the greater Houston area, or Pittsburgh, as previously described.[4–7] The clinical cohort consisted of patients from the Stony

Brook University Mind–Body Clinical Research Center, an outpatient mental health clinic that integrates research into practice. Patients presenting for treatment were recruited for research at admission. Approval for the study was given by the IRBs of each of the collaborating institutions. All participants for the current study completed a 30-minute, self-administered COVID-19 survey, either online or by mail, that queried participants' basic demographics, residency information, exercise and lifestyle, employment and financial information, social media usage, previous and current health status, and mental health history. Symptoms of depression were assessed using the 2-item, self-report Patient Health Questionnaire-2 (PHQ-2). Probable depression symptoms were indicated by a score of 3 or greater on the 0–6 PHQ-2 scale. Symptoms of anxiety were assessed using the Generalized Anxiety Disorder 7-item (GAD-7) scale, in which participants recorded how often over the last 2 weeks they were bothered by 7 different items/questions (sum score range 0–21). Symptoms of PTSD were assessed using the PC-PTSD-5, a 5-item measure ranging from 0–5 tailored to COVID-19. Likely, PTSD was defined as a score of $\geq 3$. The short form of the Posttraumatic Growth Inventory (PTGI) was also completed. COVID-19-specific assessments were measured with newly created tools not yet validated due to the rapid emergence of COVID-19. Participants completed a true/false 9-item COVID-19 Knowledge Questionnaire and were given a point for each correct response (knowledge score range 0–9). Respondents also completed a series of questions asking about COVID-19 preventive behavior, impact, and diagnosis. The frequency and percentages for categorical variables were computed according to community and clinical cohorts. For continuous variables, mean and standard deviations, or median and interquartile range (IQR), were calculated. All analyses were conducted using SAS software, version 9.4 of the SAS system[8] (SAS Institute, Inc., Cary, NC) and SPSS[9] (IBM Corp, Armonk, NY).

## Results

The study population (N = 167) consisted of participants from the Northwell Health cohorts (n = 45), Mount Sinai Health System cohorts (n = 17), and Stony Brook University cohort (n = 105). All 3 sites consisted of predominantly white (57.8%, 94.1%, and 82.9%, respectively), non-Hispanic (73.3%, 94.1%, and 86.7%), and female (64.4%, 64.7%, 81.0%) participants (Table 1). The average age for the Northwell Health cohort was 53.4 years (SD = 17.72), Mount Sinai 54.4 years (SD = 13.1), and Stony Brook 39.0 years (SD = 16.1). A majority of participants across all 3 sites were US born (88.9%, 88.2%, and 92.4%), high school graduates (84.4%, 100%, and 97.1%), and had a yearly household income of at least US $78 000 (33.3%, 70.6%, and 47.6%). The community cohort resided in cities (48.4%) and suburbs (41.9%), and the clinical cohort resided mostly in the suburbs (84.8%).

The majority of the clinical cohort (60.0%) and 38.7% of the community cohort participants indicated they drank alcohol weekly; 79% of the community and 62.9% of the clinical cohorts endorsed that they did not misuse drugs in the past year. Clinical cohort participants reported depression symptom rates of 83.8%, anxiety symptom rates of 91.4%, and PTSD symptom rates of 80.0%. Corresponding values in the community cohort participants were 8.0%, 14.5%, and 14.5%, respectively. In the clinical cohort, 76.2% of participants reported having prior mental health difficulties versus 29.0% of the community cohort; 59.0% of the clinical cohort and 25.8% of the community cohort were currently in treatment for mental health difficulties. The clinical cohort reported a mean PTGI score of 24.5 (SD = 12.7) versus 23.0 (SD = 13.7) in the community cohort.

Both community and clinical cohorts reported high levels of COVID-19 preventive behaviors, including increased frequency of cleaning surfaces, handwashing, and social distancing inside and outside of the home (see Table 1). In the community cohort, 12.5% of participants reported high levels of occupational exposure risk to COVID-19 versus 8.5% of clinical cohort participants. The COVID-19 diagnosis rate was 6.5% for community cohort and 5.7% for clinical cohort participants. Both community (81.6%) and clinical (82.6%) cohorts reported not experiencing job loss as a result of COVID-19; however, half (50%) of community cohort and 13.6% of clinical cohort participants reported a loss in wages due to COVID-19; 66.7% of the community cohort and 32.4% of the clinical cohort reported that COVID-19 had a moderate or large financial impact on them. In the community cohort, 12.9% of participants reported that they had difficulty paying bills pre-COVID-19 versus 25.8% post-COVID-19. In the clinical cohort, 81% of participants reported difficulty paying bills pre-COVID-19 versus 41.9% post-COVID-19.

## Limitations

The ability to extrapolate our findings is limited due to the descriptive nature of our results and small sample sizes. In addition, these results are from a cross-sectional, self-report survey, representing a snapshot of time during the COVID-19 pandemic. Furthermore, we cannot exclude sampling bias, as participants were recruited from larger cohorts, which were established using convenience sampling.

## Discussion

Consistent with the current literature, which shows that higher mental health symptomatology is associated with higher posttraumatic growth,[10] both cohorts experienced relatively high rates of depression, anxiety, and PTSD symptoms and posttraumatic growth. Our findings show that loss in wages, as well as moderate or large financial impacts due to COVID-19, has occurred despite low rates of self-reported COVID-19-related job loss. While a higher percentage of community members reported difficulty paying their bills as compared to pre-COVID-19, the percentage of clinical participants reporting difficulty in paying their bills decreased. These findings could be explained by the fact that the community participants primarily resided in cities as compared to the predominantly suburban dwelling clinical cohort or the geography variability where those from states like Texas and Pennsylvania experienced initial waves later than those from New York. The financial impact of COVID-19 appears to be negatively affecting large cities,[11] with New York City reporting an exodus of wealthy residents.[12] The clinical cohorts, who are engaged in routine mental health care, might also be more likely to be medically insured and financially stable.

Our findings show that using existing cohorts or registry data and leveraging existing institutional collaborative relationships are key to mobilizing rapid data collection and understanding traumatic stress reactions in real time. There is a clear need for collaborative research that can optimize resources to further the understanding of how COVID-19 has impacted and continues to impact mental health. Because many participants in these previous cohorts provided e-mail addresses, we could use a survey tool

**Table 1.** Mental health and COVID-19 measures by community and clinical cohort

| | Community Cohort (Northwell & Mount Sinai) | Clinical Cohort (Stony Brook University) |
|---|---|---|
| | **n = 62 n (%)** | **n = 105 n (%)** |
| *Mental Health Measures* | | |
| **Weekly Alcohol Drinker** | | |
| Missing | 2 (3.23) | 0 (0.00) |
| No | 36 (58.06) | 42 (40) |
| Yes | 24 (38.71) | 63 (60) |
| **Drug Use in the Past Year** | | |
| Missing | 1 (1.61) | 0 (0.00) |
| No | 49 (79.03) | 66 (62.9) |
| Yes | 12 (19.35) | 39 (37.1) |
| **Prior Mental Health History** | | |
| Missing | 8 (12.90) | 1 (0.00) |
| No | 36 (58.06) | 24 (22.9) |
| Yes | 18 (29.03) | 80 (76.2) |
| **Currently in Mental Health Treatment** | | |
| Missing | 0 (0.00) | 2 (1.9) |
| No | 46 (74.19) | 41 (39) |
| Yes | 16 (25.81) | 62 (59) |
| **Depression Symptoms PHQ-2** | | |
| Missing | 2 (3.23) | 0 (0.00) |
| No | 55 (88.71) | 17 (16.2) |
| Yes | 5 (8.06) | 88 (83.8) |
| **Anxiety Symptoms GAD-7** | | |
| Missing | 2 (3.23) | 0 (0.00) |
| No | 51 (82.26) | 9 (8.6) |
| Yes | 9 (14.52) | 96 (91.4) |
| **PTSD Symptoms PC-PTSD-5** | | |
| Missing | 1 (1.61) | 0 (0.00) |
| No | 52 (83.87) | 21 (20) |
| Yes | 9 (14.52) | 84 (80) |
| **Posttraumatic Growth Sum Score PTGI – Mean (SD)** | 23.04 (13.67) | 24.52 (12.77) |
| *COVID-19 Measures* | | |
| **Frequency of Cleaning Surfaces** | | |
| Missing | 0 (0.00) | 1 (1.00) |
| 1 (Same frequency as before the pandemic) | 15 (24.19) | 28 (26.7) |
| 2 | 10 (16.13) | 13 (12.4) |
| 3 | 11 (17.74) | 30 (28.6) |
| 4 | 11 (17.74) | 18 (17.1) |
| 5 (Constantly, as often as possible) | 15 (24.19) | 15 (14.3) |
| **Frequency of Handwashing** | | |
| Missing | 0 (0.00) | 0 (0.00) |
| 1 (Same frequency as before the pandemic) | 3 (4.84) | 6 (5.7) |
| 2 | 4 (6.45) | 11 (10.5) |
| 3 | 11 (17.74) | 22 (21.0) |
| 4 | 12 (19.35) | 31 (29.5) |
| 5 (Constantly, as often as possible) | 32 (51.61) | 35 (33.3) |
| **Social Distancing Inside the Home** | | |
| Missing | 0 (0.00) | 1 (1.0) |
| 1 (Close-contact interactions with multiple people inside the home) | 16 (25.81) | 34 (32.4) |
| 2 | 13 (20.97) | 20 (19.0) |
| 3 | 9 (14.51) | 20 (19.0) |

*(Continued)*

**Table 1.** (*Continued*)

| | Community Cohort (Northwell & Mount Sinai) | Clinical Cohort (Stony Brook University) |
|---|---|---|
| | **n = 62 n (%)** | **n = 105 n (%)** |
| 4 | 11 (17.74) | 17 (16.2) |
| 5 (Live alone or are completely isolated inside) | 13 (20.97) | 13 (12.4) |
| **Social Distancing Outside the Home** | | |
| Missing | 0 (0.00) | 0 (0.00) |
| 1 (Same social interactions as before the pandemic) | 1 (1.61) | 3 (2.9) |
| 2 | 1 (1.61) | 4 (3.8) |
| 3 | 13 (20.97) | 37 (35.2) |
| 4 | 36 (58.06) | 47 (44.8) |
| 5 (No leaving the house except for emergencies) | 11 (17.74) | 14 (13.3) |
| **Job Loss Due to COVID-19*** | | |
| Missing | 0 (0.00) | 0 (0.00) |
| No | 31 (81.58) | 38 (82.6) |
| Yes | 7 (18.42) | 8 (17.4) |
| **Loss in Wages Due to COVID-19*** | | |
| Missing | 1 (4.17) | 0 (0.00) |
| No | 11 (45.83) | 51 (86.4) |
| Yes | 12 (50.00) | 8 (13.6) |
| **Occupational Exposure Risk of COVID-19*** | | |
| Missing | 0 (0.00) | 0 (0.00) |
| Low/NA | 11 (45.83) | 33 (55.93) |
| Medium/high | 13 (54.17) | 26 (44.07) |
| **Difficulty Paying Bills Pre-COVID-19** | | |
| Missing | 1 (1.61) | 3 (2.9) |
| No | 53 (85.48) | 17 (16.1) |
| Yes | 8 (12.90) | 85 (81.0) |
| **Difficulty Paying Bills Post-COVID-19** | | |
| Missing | 2 (3.23) | 3 (2.9) |
| No | 44 (70.97) | 58 (55.2) |
| Yes | 16 (25.81) | 44 (41.9) |
| **Financial Impact of COVID-19** | | |
| Missing | 2 (3.23) | 1 (1.0) |
| None/a slight impact | 30 (48.40) | 70 (66.67) |
| A moderate impact/a large impact | 30 (48.40) | 34 (32.38) |
| **Received Medical Diagnosis of COVID-19** | | |
| Missing | 0 (0.00) | 0 (0.00) |
| No | 58 (93.55) | 99 (94.3) |
| Yes | 4 (6.45) | 6 (5.7) |
| **COVID-19 Knowledge Sum Score – Median (IQR)** | 9 (8-9) | 8 (8-9) |

*Item completed by only participants for whom it applied.

using HIPAA-compliant data management software. This allowed for rapid survey administration, without direct contact during this time of distancing and conferred lower rates of data entry errors.

We are fortunate that our research teams and academic institutions have a long and productive history of collaborating through our center prior to the pandemic, which serve both geographically and demographically diverse populations. In addition, institutional support allowed our center to rely on resources and policies, which facilitated rapid implementation of research in the event of a sudden and large-scale crisis. Our centers' collaborative work helps restructure potential individual research silos and leads to stronger and demographically representative studies, which are particularly critical in the midst of traumatic events, such as the current pandemic.

There is great urgency to address the psychological toll of this pandemic, an unprecedented prolonged disaster, especially among financially vulnerable community members and those with pre-existing mental health difficulties. During this time, mental health concerns are being prioritized and addressed nationally[13] and within New York State,[14] but empirical studies are needed to support these efforts. The goal of the current collaborative work is to help inform interventions, guide response initiatives and policy decisions, and assist with resource development, especially for potentially vulnerable subgroups.

## Conclusions

Data suggest the importance of continued mental health monitoring in community and clinical samples. Follow-up measurements at the 6- and 12-month post-baseline time point are in the process of being collected and analyzed for our samples. The longitudinal data will help elucidate the long-term mental health impacts of COVID-19 and assist in hypothesis generation for larger projects, as well as design appropriate public health interventions. Research on the mental health impact of COVID-19 needs to be conducted on a larger scale in order to yield generalizable findings to support evidence-based interventions to address an urgent need that will likely have long-lasting mental health impacts even as the pandemic wanes.

**Conflict(s) of Interest.** The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this paper.

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