Psychological Trauma: Theory, Research, Practice, and Policy

Fear of COVID-19 and the Mental Health Consequences in America

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CITATION

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The intent of this work was to examine the intersection of COVID-19 fear with social vulnerabilities and mental health consequences among adults living in the United States. Data are from a nationally representative sample (n = 10,368) of U.S. adults surveyed online during demographic subgroups (gender, age, income, race and ethnicity, geography). The sample week of March 23, 2020. The sample was poststratification weighted to ensure a balanced representation across social and demographic subgroups (gender, age, income, race or ethnicity, geography). The sample comprised 51% female; 23% non-White; 18% Hispanic; 25% of households with children under 18 years of age; 55% unmarried; and nearly 20% unemployed, laid off, or furloughed at the time of the interview. Respondents were fearful, averaging a score of nearly 7 on a scale of 10 when asked how fearful they were of COVID-19. Preliminary analysis suggests clear spatial diffusion of COVID-19 fear. Fear appears to be concentrated in regions with the highest reported COVID-19 cases. Significant differences across several U.S. census regions are noted ($p < .01$). Additionally, significant bivariate relationships were found between socially vulnerable respondents (female, Asians, Hispanic, foreign-born, families with children) and fear, as well as with mental health consequences (anxiety and depressive symptoms). Depressive symptoms, on average, were high (16+ on the Center for Epidemiologic Studies Depression scale), and more than 25% of the sample reported moderate to severe anxiety symptoms. More in-depth psychosocial research is needed using nationally representative samples that can help to inform potential mental health risks, as well as by targeting specific mental health interventions.

Keywords: fear, COVID-19 pandemic, mental health, depression, anxiety

America's mental health is being threatened by the current public health crisis. The COVID-19 pandemic has claimed more than 70,000 lives in 4 short months and hospitalized hundreds of thousands of people, and there are now over 1.3 million confirmed cases reported in the United States ("Coronavirus in the U.S.," 2020). As these numbers continue to grow, this public health crisis has already taken and will continue to take a mental toll on America's families, communities of color, and the at-risk (Kaiser Family Foundation, 2020). Indeed, the coming months will likely mimic the experiences of other outbreak locations because recent work coming out of Europe and China has started to provide preliminary evidence from population surveys showing significantly elevated symptomatology levels in depression, anxiety, general stress, and posttraumatic stress related to COVID-19 (Cowan, 2020; Huang & Zhao, 2020; Qiu et al., 2020; Sønderskov, Dinesen, Santini, & Østergaard, 2020; Stankovska, Memedi, & Dimitrovski, 2020; C. Wang et al., 2020; Y. Wang, Di, Ye, & Wei, 2020; Zhang et al., 2020). Unsurprisingly, the impact of the COVID-19 pandemic is beginning to be felt across multiple occupational, social, economic, and geographic boundaries in the United States—uncertainty, fear, and a new level of stress may be slowly seeping into the American psyche, with consequences that have yet to be fully understood. As the pandemic continues to wear on, it is likely that widespread negative mental health consequences will be reported with the potential for long-lasting effects. For instance, evidence from a recent poll by the Kaiser Family Foundation reported that nearly half of the adults surveyed indicated their mental health was being negatively impacted because of worry, stress, and anxiety caused by the coronavirus (Kaiser Family Foundation, 2020), and a National Public Radio poll found similar results even before a pandemic was declared (National Public Radio, 2020).

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Method

Data

In an effort to better understand some of the mental health consequences of the COVID-19 pandemic, we have begun a comprehensive study examining the diffusion of fear across both time and place in the United States. Specifically, our work is interested in documenting the variation in COVID-19 fear across geographic boundaries (i.e., regions, states, counties), while also describing the variability of fear across socially vulnerable population sub-

groups, its causes, and the mental health and social–behavioral consequences among adults living in the United States.

A nationally representative sample of 10,368 adults (ages 18 and over) provides the data reported in this work. An online survey was released on March 23, 2020, through Qualtrics Inc. to a national panel of U.S. residents who participated in the institutional review board–approved survey. Questions assessed general fear, worry, and anxiety related to COVID-19 and social and behavioral health changes, as well as physical and mental health assessments. The final sample was post-stratification-weighted across gender, age, race, income, and geography (state) to ensure the equitable contribution to our estimates of respondents across their individual demographic and geographic strata relative to their representation in the overall population of the United States.

Measurement

A number of measures were used in this preliminary analysis of COVID-19 fear, social vulnerabilities, and mental health consequences. For the current study, respondents were asked to rank, on a sliding scale of 0–10, "How would you currently rate your fear of COVID-19 where 0 = not at all fearful to 10 = very fearful?" In addition to the nine-category U.S. region variable (Northeast New England, Northeast Mid-Atlantic, Midwest East North Central, Midwest West North Central, South-South Atlantic, South East South Central, South West South Central, West Mountain, West Pacific), several social vulnerability variables were included in the analysis: gender, race, Hispanic status, nativity, marital status, household composition, and work status. Finally, two highly reliable and valid mental health measures were included. One was the Center for Epidemiologic Studies Depression scale (Radloff, 1977), which measures depressive symptomatology; for the current data, the internal reliability score was .94. The other mental health consequence was the seven-item Generalized Anxiety Disorder (GAD-7) scale (Löwe et al., 2008; Spitzer, Kroenke, Williams, & Löwe, 2006), which screens for generalized anxiety and for the current data had an internal reliability score of .94.

Results

What follows are some observations in the early weeks of our yearlong study of COVID-19 in America. Paralleling the findings of the Kaiser Family Foundation (Kaiser Family Foundation, 2020) and other researchers (e.g., Cowan, 2020; Qiu et al., 2020; C. Wang et al., 2020), we observed a population that is worried, fearful, and uncertain about COVID-19 and the consequences it will have for themselves, their families, communities, and nation. Yet, unique to our study, COVID-19 fear is not uniformly distributed across the country, and there are clear pockets of concentrated COVID-19 fear in more densely populated communities, communities with higher presumptive and reported COVID-19 case concentrations, and urban locations. COVID-19 fear has not escaped the rest of the country; it has just become more elevated in places with specific population and place-based circumstances.

Gleaned from Figure 1, there are higher concentrations of COVID-19 fear in the Northeast New England region, North-east Mid-Atlantic region, South-South Atlantic Region, and West Pacific. Not surprising, these regions and the major cities located within those regions also reported some of the highest densities in terms of confirmed COVID-19 cases.

To examine the details of Figure 1 more closely, Table 1 reports average fear in each of the nine U.S. Census regions. A one-way analysis of variance found a significant difference (F test) across regions ($p < .000$); specifically Scheffé's multiple comparisons ($p < .05$) found statistically significant differences in COVID-19 fear levels between the Northeast New England and West Mountain regions, Northeast Mid-Atlantic and West Mountain regions, South-South Atlantic and West Mountain regions, and West Mountain and West Pacific regions.

Moreover, COVID-19 fear is not equally distributed across the population: female, Asian, Hispanic, foreign-born individuals; families with children; married persons; and persons who are currently laid off or furloughed reported much higher levels of COVID-19 fear than did their counterparts. These population subgroup differences are noted in Table 2 using a difference of means test (t test). Finally, in addition to these varying population subgroup differences, we found that COVID-19 fear is clearly linked to both depression and anxiety symptomatology; persons reporting more COVID-19 fear reported more mental health symptoms.

Discussion

COVID-19 fear has a number of ramifications beyond mental health. We were particularly interested in the relationship between COVID-19 fear, social vulnerabilities, and mental health consequences, and the preliminary analyses highlight some significant relationships between a variety of social vulnerabilities and COVID-19 fear, as well as COVID-19 fear and mental health symptomatology. Surveyed respondents reported mean depressive symptom levels that are in the clinical caseness territory (16+). Although anxiety scores for the entire sample are mild, more than 25% of respondents reported moderate to severe anxiety symptom scores, where clinical treatment is warranted.

COVID-19 fear, and the poor mental health that accompanies it, also means some communities will face a steeper uphill battle to recover from this public health crisis. Additional preliminary data analysis (not shown here) reveal individuals experiencing greater levels of depression amid the pandemic are also less likely to support quarantine measures (voluntary or mandatory), canceling of mass gatherings and events, or closing businesses. Of course, without extreme physical distancing measures in place, recovery may be incomplete, with the door open for a second wave of coronavirus infections or a surge in the current wave due to government reopenings. In short, fear of the virus, and subsequent mental health problems that follow, remain entangled with the types of policies and measures used to combat the virus, both now and as recovery unfolds and the United States begins to slowly move forward.

We believe that the findings reported here provide a "first impact" glimpse into how the COVID-19 pandemic is being processed and reacted to by the general U.S. adult population. Although these early findings are important, there are some limitations that should be noted. One, although these data
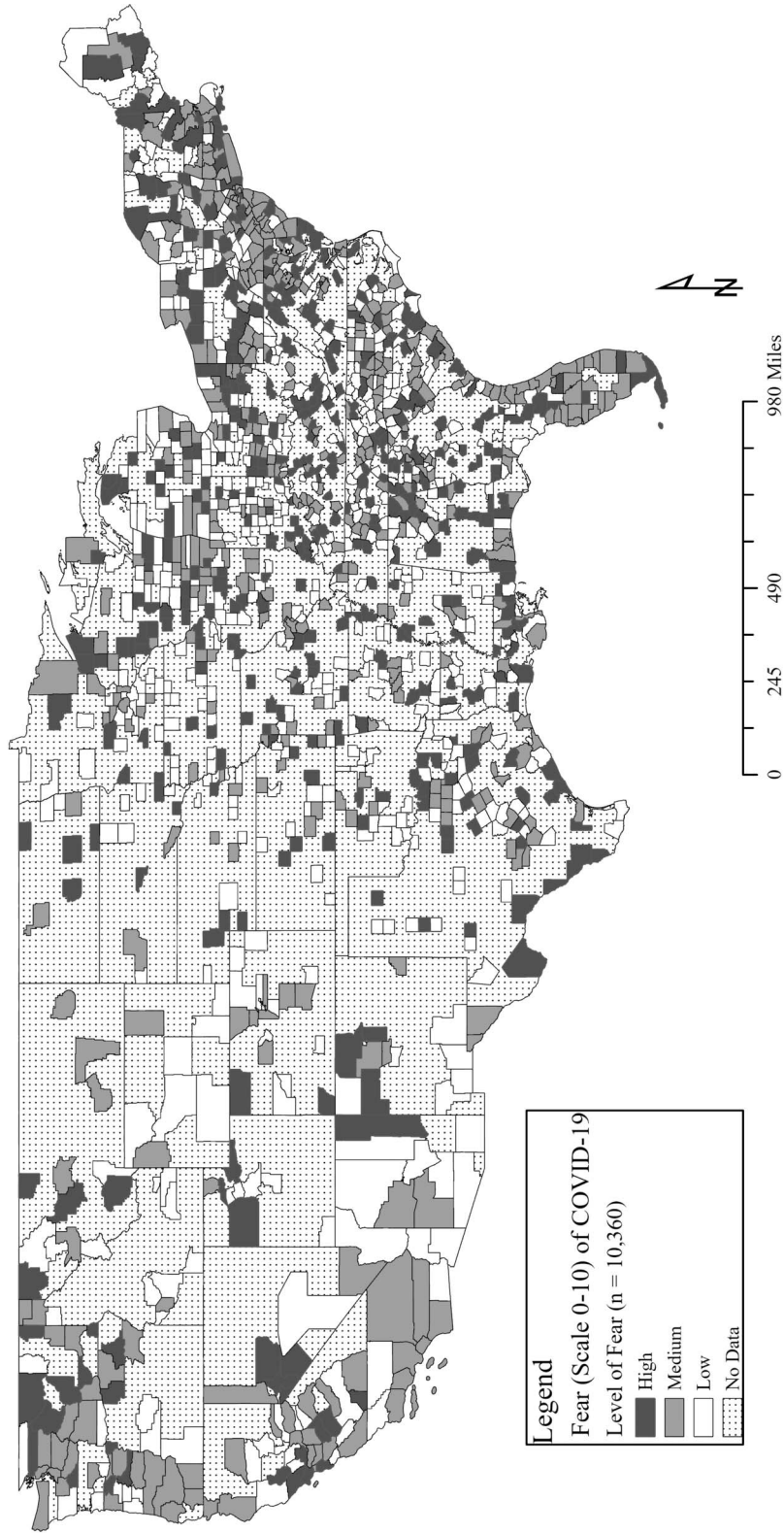
Figure 1. Aggregated individual fear of COVID-19 across U.S. counties.

provide an important snapshot of individuals' perspectives and reactions, it is only that. These cross-sectional data do not allow for longitudinal conclusions that might be related to cause and effect. Nevertheless, having these snapshots of population behavior and reaction are critical for marking this important public health crisis and its impact on the country's collective mental health. Two, there are a number of other measures regarding fear, attitude, mental health, and circumstance that could have been used. We recognize some of the shortcomings in our single-item measures; however, the immediacy of getting into the field, coupled with the need to limit the amount of time that respondents needed to complete the survey, impacted our decision-making and ultimately the survey design. Finally, we acknowledge that although this survey was poststratification-weighted to ensure adequate representation across the U.S. population, because of the online platform used to collect data, it is likely that the data overrepresent urban, middle-class residents and underrepresents rural, lower class residents. Despite these and other shortcomings, we believe that these data, to our knowledge, provide an important early look at the developing mental health tsunami that is likely to impact the U.S. mental health care system in the weeks and months ahead.

Do we have a mental health care system that is prepared to adequately respond to these elevated needs? There is already a severe shortage of mental health care workers in the United States. Moreover, the U.S. medical insurance system often does not adequately cover the mental health needs of millions of its residents, whereas job loss, business shutdowns, and other circumstances that are well beyond individuals' control likely eliminated what little coverage and access existed for many. The impact that is being felt is immediate, though its consequences are going to be long-lasting. Our medical care system needs to be ready to ramp up for the onslaught of persons with severe mental health care needs, particularly in light of widespread (but unequal) fear of COVID-19 and the symptomology that follows, requiring sustained assistance and support.

Table 1

Bivariate Measures of Subjective COVID-19 Fear With Region of the Country (n = 10,368)

U.S. region	M_{fear}	p
All nine regions		.000[a]
Northeast New England	7.2	.000[b]
Northeast Mid-Atlantic	7.0	.000[c]
Midwest East North Central	6.6	
Midwest West North Central	6.6	
South-South Atlantic	6.7	.000[d]
South East South Central	6.6	
South West South Central	6.7	
West Mountain	6.3	.000[e]
West Pacific	6.8	

[a] One-way analysis of variance (*F* test) was used to test for differences between region and COVID-19 fear. [b] Scheffe's significant differences between Northeast New England and West Mountain. [c] Scheffe's significant differences between Northeast Mid-Atlantic and Midwest East North Central; Northeast Mid-Atlantic and West Mountain. [d] Scheffe's significant differences between South-South Atlantic and West Mountain. [e] Scheffe's significant differences between West Mountain and West Pacific.

Table 2

Bivariate Measures of Subjective COVID-19 Fear With Social Vulnerabilities and Mental Health Measures (n = 10,368)

Variables	M_{fear}	p^a
Social vulnerabilities		
Gender		
1 = female	6.8	.000
0 = male	6.3	
Race		
1 = Black	6.5	.250
0 = Nonblack	6.6	
1 = Asian	7.3	.000
0 = Non-Asian	6.5	
1 = Native American	5.4	.001
0 = Non-Native American	6.6	
1 = Other Races	5.1	.000
0 = Non-Other Races	6.6	
Hispanic status		
1 = Hispanic	6.8	.000
0 = Non-Hispanic	6.5	
Nativity		
1 = Foreign-born	7.0	.000
0 = Non-Foreign-born	6.5	
Families with children		
1 = Yes	6.9	.000
0 = No	6.5	
Marital status		
1 = Unmarried	6.4	.000
0 = Married	6.8	
Work status		
1 = Not Working	6.6	.220
0 = Working	6.6	
Mental health measures[b]		
CES-D symptomatology	.20	.000
GAD-7 symptomatology	.31	.000

Note. CES-D = Center for Epidemiologic Studies Depression scale; GAD-7 = seven-item Generalized Anxiety Disorder scale.
[a] Chi-square analysis was used to test for statistically significant differences between categorical variables and COVID-19 fear. [b] Pearson correlations between mental health scales and COVID-19 fear.

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