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Racial, Ethnic, and Socioeconomic Disparities in COVID-19 Pandemic Worries

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Abstract

Background Racial, ethnic, and socioeconomic health disparities became evident during the COVID-19 pandemic. This study explores whether these disparities extend to the content of worries.

Methods We surveyed 1,222 participants from three metropolitan New York City (NYC) based cohorts through telephone interviews conducted from March to September 2020. Worries were assessed using 37 dichotomous questionnaire items, and exploratory factor analysis derived ten categories of worry. Factor scores were analyzed in generalized linear mixed models to examine their associations with race/ethnicity and household income, adjusting for covariates.

Results The most prevalent worry items pertained to U.S. and world politics, American values, health concerns, and return to normalcy. Higher household income was associated with lower worry about economic needs, job/employment, and violence/victimization, while violence/victimization worries were strongly associated with Asian, Hispanic, Black, and multiracial or other race/ethnicity.

Conclusions During early COVID-19, lower-income and minoritized race and ethnic groups were disproportionately affected by economic and violence/victimization worries, while other worries showed minor variations by income or race/ethnicity.

Keywords COVID-19 · Worry · Health Disparities · Socioeconomic Status · Race · Ethnicity

Introduction

Racial and socioeconomic health inequalities persist in the U.S., and the COVID-19 pandemic highlighted these disparities [2, 7, 24]. This study examines whether these disparities also exist in the content of worries experienced during the COVID-19 pandemic. Pandemics like COVID-19 are ominous and frightening to most people, and the associated disease-containment responses may create conditions that some people find traumatic [19, 32]. Worries tie threat and fear to mental health outcomes and health behaviors. Worries are defined as repetitive thoughts about future negative events or threats, capturing the perceived probability of the negative event occurring and its perceived impact should it happen [9]. Thus, examining their content may provide a unique insight into related mental health effects [48]. Worries are ubiquitous and may be beneficial (e.g., facilitating planning for a negative event) [42] and harmful in some cases. In particular, severe, persistent worrying is a feature of psychiatric disorders, including anxiety, depression, and obsessive–compulsive disorders (OCD) [5].

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Prior studies in the U.S. and globally found an association between COVID-19-related worries and a higher prevalence of generalized anxiety disorder, depressive symptoms, and OCD [15, 21, 33, 49].

We collected information about mental health and prevalence of worries in a metropolitan NYC study, epicenter of the U.S. COVID-19 pandemic, in the spring and summer of 2020 [23]. The first laboratory-confirmed COVID-19 case was registered on February 29, 2020 [23, 45]; the first COVID-19 death on March 14, 2020 [23]. Indicating the exponential growth of cases and deaths, by June 1, 2020, there were 18,600 laboratory confirmed case-deaths and 4,516 probable case-deaths [45]. By April 2020, the NYC morgues were so overrun that refrigerator truck-morgues were set up to contain the dead [16]. Racial/ethnic minorities and those from low socioeconomic status (SES) groups were disproportionally affected in terms of morbidity and mortality from COVID-19 [2, 24].

Other conditions related to the COVID-19 pandemic and its associated lockdown, also gave rise to worries among NYC residents. A wide range of COVID-19 related stressors arose such as job loss [36], and, as a result, accumulating debt and food scarcity [25]. Specifically, unemployment rose from 3.4% before the COVID-19 pandemic in February to 21.4% in May 2020 [35, 47], coupled with a delay in unemployment benefits. Black, Hispanic, and Asian individuals experienced greater job loss than White individuals [27]. Additionally, it was particularly stressful for Black and Hispanic communities because of the murder of George Floyd by police on May 25th, 2020, and the social unrest that event ignited. Disproportionally, Black and Hispanic protesters (>42%) were arrested, exemplifying interpersonal and structural racism faced by Black and Hispanic individuals in the U.S. [6, 28, 39]. In addition discriminatory acts and hate crimes toward Asian individuals in the U.S. increased dramatically [29, 51]. Furthermore, because it was a presidential election year, there was concern and uncertainty about the political future of the U.S.

The focus of this paper is to determine whether and how the content of worries during the first months of COVID-19 were influenced by race/ethnicity and socioeconomic status in a NYC-based population. We hypothesized that factors derived from the individual worry items would be structured by race/ethnicity and socioeconomic status. Furthermore, we hypothesized that Black respondents would worry the most about health, given the racial health disparities apparent from the beginning of the COVID-19 pandemic.

Methods

Study Design and Participants

We conducted a cross-sectional study with 1,222 participants randomly selected from three metropolitan NYC-based cohorts [3, 18] between March and September 2020. The participants of the original studies, initially designed to assess the effects of stress and trauma on children and adolescents over the life course, were adolescents (now young adults) and the parents of these adolescents. Participants in the current study were surveyed via telephone interviews about their worries related to COVID-19.

Procedures

The study of origin was stripped from the contact information to blind the interviewers in order to minimize potential interviewer bias. The interviews were conducted by phone in the participant's chosen language (English, 91%; Spanish, 8% and Mandarin, 1%). With no identifying information, the responses were entered directly into a Qualtrics password-protected survey. Participants were not compensated for their participation in the study. However, they were given an electronic resource guide and assistance obtaining help for relevant concerns, such as clinical issues or food insecurity. Consent was waived as all participants had enrolled in previous studies where they had consented to be contacted for other studies. The Institutional Review Board of the New York State Psychiatric Institute approved all procedures involving human subjects.

Measures

Worries were examined as dependent variables. The content of worries was assessed using a set of 37 dichotomous items following the stem question: "Everyone worries about lots of different things. These are some of the things people might worry about. Please tell me which things you are currently worried about." (Supplementary Fig. 1). These items were selected a priori, following several themes: COVID-19 and other health concerns, economic security, racial/ethnic discrimination, violence and victimization, interference with ordinary life, and meta-worries about society and the future.

Participant characteristics were examined as independent variables. Race/ethnicity was based on self-report and categorized as non-Hispanic White, non-Hispanic Black, Hispanic, Asian, or Multiracial or other race/ethnicity (including unknown). Socioeconomic status was based on participant reported past-year total household income, categorized as Low (< $35,000), Medium ($35,000—$99,999), and High (≥ $100,000) according to categories available for selection on the questionnaire. Gender at birth (male, female) and age at the time of the interview were self-reported. We included the month of the interview as a categorical covariate (March to April, May, June, July to September 2020).

Analysis

The prevalence of each specific worry was calculated by race/ethnicity and household income category and compared using chi-square tests, with the significance level Bonferroni adjusted for the total number of worries examined.

An exploratory factor analysis (EFA) [14] was used to identify a reduced number of variables explaining the variance and covariance among the 37 observed worries. Observations with missing information on worries (n = 7) were addressed using listwise deletion, and a robust weighted least squares estimator [34] was used. Ten factors were extracted based on eigenvalues > 1 (RMSEA = 0.016), and a promax rotation was applied. Promax is an oblique rotation, meaning that the factors may be correlated. Factor scores were calculated as the sum of the responses for each worry (0/1) weighted by the factor loading. Specific worries contributed to calculating a given factor score if the absolute value of the loading on that factor was ≥ 0.3. Scores for each factor were then standardized to facilitate interpretation. Supplementary Table 1 and Supplementary Table 2 provide factor loadings by item and correlation between the factors, respectively. Among the ten factors, seven were most interpretable (see Supplementary Fig. 1): life after COVID-19, US and world political worries, violence/victimization worries, health worries, travel worries, economic worries, and financial worries. The generalized linear mixed models used these seven-factor scores as dependent variables. Our goal was to assess if race/ethnicity and household income are associated with these factors.

For each worry factor, we fitted a generalized linear mixed model [13] to estimate the difference in mean standardized factor scores for each racial/ethnic group relative to non-Hispanic White respondents. We fitted multivariable regression models to estimate differences in factor scores (dependent variables) for race/ethnic groups and income categories (independent variables), adjusting for other covariates, including source study, gender, interview month, age, and response type. Missing variables (see footnote to Table 1) were handled using listwise deletion. Potential correlation between related individuals was addressed by including a random intercept for the family. Analyses were conducted using SAS, version 9.4 [41], MPlus, version 7.11 [34], and Matlab version 2020a (The MathWorks, Inc., Natick, MA).

Results

Population Characteristics and Prevalence of Worries

There were 1,222 participants, ages 16 to 81 years, in our sample. Of these, 63.1% were female, 50.6% had a household income ≥ $100,000, and 51.9% were non-Hispanic White (Table 1). Among the most prevalent health-related worry items were family health problems (66.6%), concern about self-getting COVID-19 (62.6%), and concern about parents getting COVID-19 (60.9%) (Fig. 1). Worries about life after COVID-19 and the political situation in the U.S. and the world were also common, including the following items: the state of the country after COVID-19 (79.3%), the U.S. political situation (76.8%), what is happening to American values (75.0%), that life after COVID-19 will never be normal again (58.0%), and current world conflicts and wars (57.0%) (Fig. 1).

Table 1 Characteristics of the study population (n = 1,222)

	Total	
	n	%
Race/ethnicity		
Non-Hispanic White	634	51.9
Non-Hispanic Black	109	8.9
Hispanic	340	27.8
Asian	86	7.04
Multiracial or other group	53	4.34
Age quartile (range)[a]		
1st (16–25 years)	316	26.0
2nd (26–46 years)	300	24.7
3rd (47–57 years)	283	23.3
4th (58–81 years)	315	26.0
Gender at birth		
Male	451	36.9
Female	771	63.1
Household income level[a]		
Low (< $35,000)	175	15.9
Medium ($35,000—$99,999)	367	33.4
High (≥ $100,000)	556	50.6
Month of interview		
March—April	341	27.9
May	327	26.8
June	415	34.0
July—September	139	11.4
Source study		
Study 1	465	38.1
Study 2	258	21.1
Study 3	499	40.8

[a] Data was missing for age, n = 8 observations, and household income, n = 124 observations

Worry Items by Race/Ethnicity

The prevalence of worry items stratified by race/ethnicity, are shown in Supplementary Table 3. Of the 37 individual

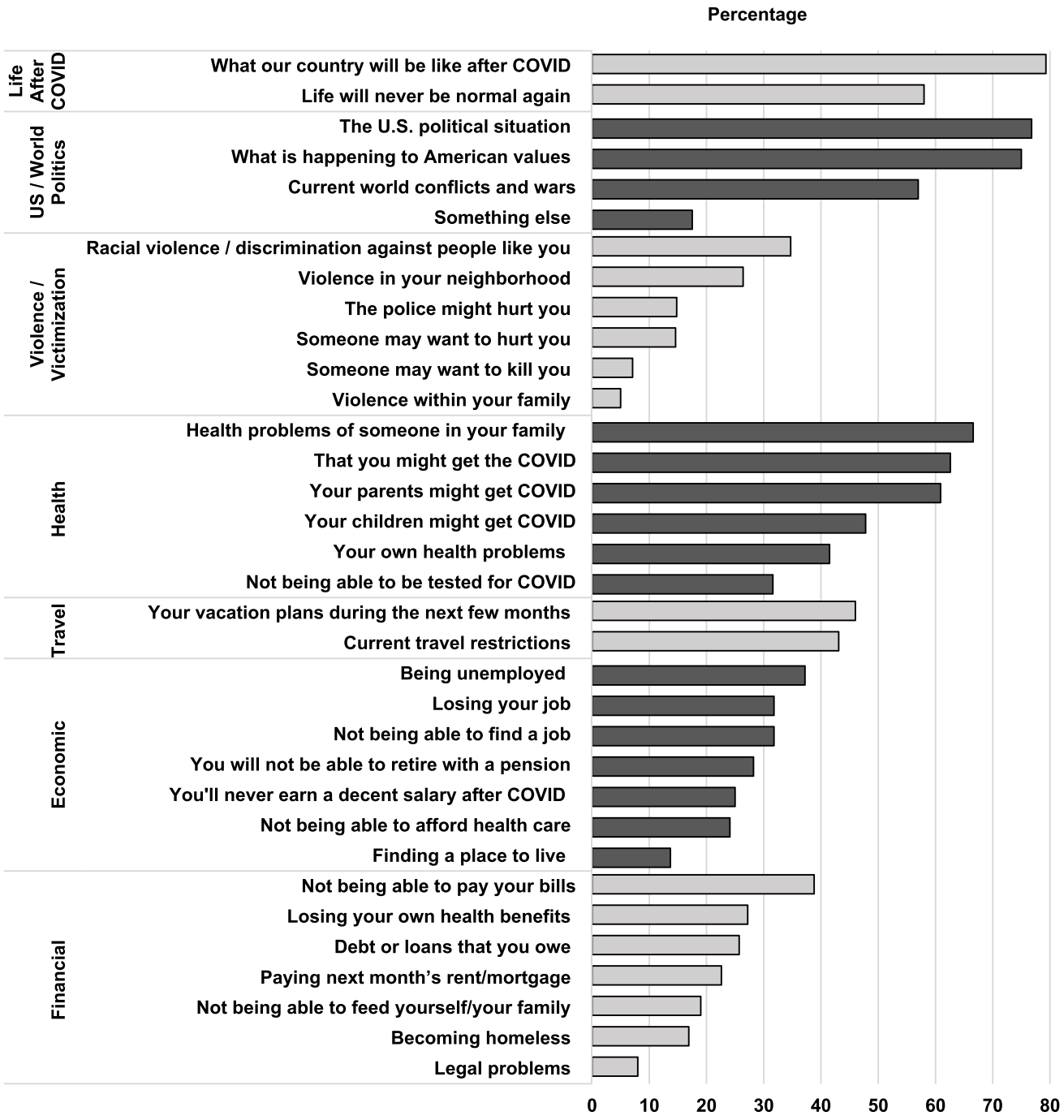

Fig. 1 Prevalence of individual worry items

worry items, 26 showed statistically significant differences by race/ethnicity ($p < 0.05$).

In most instances where we detected significant statistical differences by race/ethnicity, non-Hispanic White respondents had lower worry prevalence than non-Hispanic Black, Hispanic, Asian, and Multiracial or other respondents. There were several exceptions to this pattern. For example, regarding worries about the U.S. political situation, non-Hispanic White respondents were more worried than non-Hispanic Black respondents (82.9% vs. 60.7%). Still, they were similar to Asian and Multiracial or Other respondents (80.2% and 83.0%, respectively). White respondents were also more worried than non-Hispanic Black respondents about the current world conflicts and wars (56.5% vs. 43.1%), being killed (3.6% vs. 2.8%), and something else (18.8% vs. 5.5%). Of all racial/ethnic categories, Asian respondents were the most

worried about being killed (14.5%). The following did not differ by race/ethnicity: being unable to retire with a pension, what is happening to American values, concern for self-getting COVID-19, concern for parents getting COVID-19, concern for children getting COVID-19, family health problems, not being able to be tested for COVID-19, what the country will be like post-pandemic, vacation plans, and current travel restrictions.

Worry Items by Household Income

Supplementary Table 3 shows the prevalence of worries by household income. Nineteen of the 37 individual worries varied significantly with household income. While worry over one's health problems was greatest among the lowest-income respondents, COVID-19-specific worries (contracting COVID-19 by self, parents, grandparents, or children) were similar across income groups. However, there were differences in financial worries.. Over half of the respondents in the lowest income group were worried about paying bills, becoming unemployed, and meeting next month's rent/mortgage. Additionally, those in the lowest-income group were much more likely to be worried than those in the highest- and middle-income groups about becoming homeless (45.1% vs. 4.2–19.1%) and feeding their family (43.4% vs. 7.7–22.4%). Lastly, racial violence/discrimination and neighborhood violence were a significant concern for those in the lowest income group relative to the highest income group (60.6% vs. 22.3%, and 44.0% vs. 17.3%, respectively).

Multivariable Analysis

The associations of race/ethnicity and household income with the seven main factors in our analysis, adjusting for covariates, are shown in Table 2. Results for models with factors not central to our hypotheses (F5, F7, and F10) are presented for completeness in Supplementary Table 4.

Race/ethnicity in Multivariable Analysis

In fully adjusted models (Table 2), we did not find evidence for the association between race/ethnicity and worries about life after COVID-19, U.S./world politics, or economic factors. Race/ethnicity was most strongly associated with worry about violence/victimization. Specifically, compared to non-Hispanic White respondents, there was an increase in the mean standardized factor score ($\beta = 0.78$, 0.61, 0.47, and 0.39, respectively) for Asian, Hispanic, Multiracial or other, and non-Hispanic Black respondents (all p-values < 0.001). Moreover, compared to non-Hispanic White respondents, reporting Hispanic or Asian race/ethnicity was associated with increased health worries ($\beta = 0.22$ and 0.35, respectively). Hispanic ethnicity was also associated with travel worries ($\beta = 0.24$). Finally, compared to non-Hispanic White respondents, non-Hispanic Black and Hispanic respondents had greater financial worries ($\beta = 0.26$ and 0.12, respectively).

Household Income in Multivariable Analysis

We did not find evidence for an association between household income categories and the following factors: life after COVID-19, U.S./world politics, and health worries (Table 2). On the other hand, compared to those with a household income of $\leq$ \$54,999, those with household income in the \$55,000 to \$99,999 and $\geq$ \$100,000 categories were associated with a decrease in the mean standardized factor score ($\beta = -0.23$ and -0.30, respectively) on the violence/victimization factor. Similarly, we found a statistically significant inverse association between high and middle household income and economic worries ($\beta = -0.22$ and -0.42, respectively) and financial worries ($\beta = -0.41$ and -0.76, respectively) compared to the lowest income level. Compared to those in the lowest income category, being in the highest income category was associated with a higher level of travel plans worries ($\beta = 0.17$).

Discussion

This study found that economic and violence-related worries were more prevalent among lower-income and minoritized groups during the early COVID-19 pandemic. These findings highlight the need for targeted mental health support and economic assistance for these populations.

This study also found that health worries did not vary by income and weren't elevated among Black respondents despite the disproportionate impact of COVID-19 that they faced. This finding is surprising given that Black individuals had higher rates of COVID-19, greater disease severity, and higher mortality rates from the disease than White individuals [7, 31]. One explanation for these findings is racial disparities early in the COVID-19 pandemic in knowledge and beliefs about COVID-19 and its clinical course [4, 38]. For example, surveys of U.S. adults during the first several months of the COVID-19 pandemic found that Black [38] and non-White [4] participants had less knowledge than White respondents about COVID-19 and that Black participants had lower perceived likelihood of getting COVID-19 in the future [38]. Another explanation is that other worries, including becoming targets of racially motivated violence, were more prominent than health worries for Black respondents than White respondents possibly because Black respondents were facing a double pandemic of COVID-19 and racism [1].

Table 2 Results from the multivariable adjusted models for mean standardized factor scores for categories of worry[a, b]

	Economic Worries (F1)			US/World Politics (F2)			Health Worries (F3)			Violence / Victimization (F4)		
	β[c]	SE	p-value	β	SE	p-value	β	SE	p-value	β	SE	p-value
Race/ethnicity (referent: Non-Hispanic White)												
Non-Hispanic Black	0.07	0.13	0.59	-0.3	0.13	0.02	0.06	0.13	0.63	0.39	0.12	< 0.001
Hispanic	0.11	0.09	0.23	-0.08	0.09	0.34	0.22	0.09	0.01	0.61	0.08	< 0.001
Asian	0.09	0.12	0.49	-0.19	0.12	0.12	0.35	0.12	< 0.01	0.78	0.11	< 0.001
Multiracial or other group	0.30	0.15	**0.04**[d]	0.11	0.14	0.44	0.07	0.14	0.6	0.47	0.13	< 0.001
Household Income (referent: ≤ $54,999)												
$55,000 to $99,999	-0.22	0.09	0.01	-0.04	0.09	0.63	-0.10	0.09	0.23	-0.23	0.08	< 0.01
≥ $100,000	-0.42	0.09	< 0.001	0.01	0.09	0.90	-0.07	0.09	0.42	-0.30	0.08	< 0.001
	Financial Worries (F6)			Life After COVID-19 (F8)			Travel Plans (F9)					
Race/ethnicity (referent: Non-Hispanic White)												
Non-Hispanic Black	0.26	0.12	0.03	-0.14	0.13	0.29	0.09	0.13	0.48			
Hispanic	0.37	0.08	< 0.001	-0.06	0.09	0.48	0.24	0.09	< 0.01			
Asian	0.10	0.11	0.37	0.12	0.12	0.32	0.06	0.13	0.64			
Multiracial or other group	0.20	0.13	0.13	0.21	0.15	0.15	-0.06	0.15	0.71			
Household Income (referent: ≤ $54,999)												
$55,000 to $99,999	-0.41	0.08	< 0.001	-0.13	0.09	0.14	0.14	0.09	0.12			
≥ $100,000	-0.76	0.08	< 0.001	-0.07	0.09	0.40	0.17	0.09	0.05			

[a] All models were adjusted for source study, gender, interview month, age, and response type

[b] Factors 5, 7, and 10 are presented in the Supplementary Table 4

[c] A one unit change in β corresponds to a one standard deviation change in the factor score

[d] Bolded values are statistically significant at 0.05 level

Consistent with prior studies, those in the lowest income bracket worried the most about economic and financial issues during COVID-19. The economic consequences of COVID-19, including struggling to pay bills and rent, had the greatest impact on low-income adults [37]. In the study by Zheng et al., occupational difficulties and financial insecurity from March to April 2020 were associated with subsequent depression [53]. In addition, in a model adjusted for income, Black and Hispanic race/ethnicity was associated with higher financial worries compared to White race. In the U.S., on average, Black and Hispanic individuals have lower levels of wealth at the same income levels due to the unequal distribution and transfer of wealth within these racial/ethnic groups [10, 46]. Hence, Black and Hispanic individuals have fewer resources to draw on in times of job loss and financial insecurity.

Consistent with prior studies, race/ethnicity was strongly associated with worrying about violence/victimization for all minority groups, with the strongest association among Asian respondents. For example, Fisher et al. found that Asian respondents were more likely to report COVID-19 victimization distress than Black and Latinx respondents [17]. COVID-19 increased racism, discrimination, and hate crimes faced by Asian communities [29, 52]. According to the 2020 Federal Bureau of Investigation (FBI) crime statistics, there was a 77% increase in anti-Asian hate crimes between 2019 and 2020 [44]. Among Asian Americans, surveyed in 2021, 81% reported that the violence against them was increasing and 32% feared physical attack or threat [40]. Non-Hispanic Black race/ethnicity also showed a strong association with violence/victimization worry, which is consistent with the ongoing racism and violence faced by Black individuals in the U.S. and the fear it invokes among community members [28]. In the U.S., Black individuals experience more hate crimes than any other racial/ethnic group [44]. Between 2019 and 2020, anti-Black hate crimes increased by 49% [44]. We also found that after adjusting for race/ethnicity, higher income was protective against worry about violence/victimization compared to lower income. This is consistent with prior findings that higher income/SES is protective against exposure to violence [20, 22].

Strengths and Limitations

Strengths included use of established cohorts based in NYC, interview of subjects during extreme community stress at the beginning of COVID-19, a diverse sample with high participation, and a broader scope of worries than examined by other researchers [43].

There are several limitations to the data. First, we may have overlooked important worries. Second, we did not capture the severity or chronicity of worries and could not control for individual tendency to worry [12]. Third, our findings may have limited generalizability or be impacted by selection bias due to existing cohort participation. Finally, social desirability may have affected participant responses. However, in order to bias the observed associations, such misclassification of the outcome would have to have occurred systematically by race/ethnicity or socioeconomic status and we do not have specific evidence to indicate this occurred.

Implications for Public Mental Health

Prior studies suggest that worries are independently linked to downstream mental and physical health outcomes, independent of experiencing the adversity being worried about [50]. Worrying increases the duration of exposure to stress, leading to negative health outcomes [48]. In a nationally representative study of U.S. adults, COVID-19 economic and health worries in March 2020 were associated with increased depressive symptoms and anxiety [21]. Chronic worry is also associated with adverse physical health outcomes, including cardiovascular outcomes (coronary heart disease, hypertension, myocardial infarction) [8, 26] and upper respiratory infections. The higher prevalence of worries among racial/ethnic minorities and lowest socioeconomic groups may contribute to the greater health disparities among these groups. In addition, this study elucidates the specific worries experienced by racial and ethnic minority groups while experiencing mass trauma such as COVID-19 and may suggest the types of support that would benefit these groups.

Conclusion

This study underscores the critical need for policies that address the economic and mental health challenges faced by lower-income and minoritized populations during pandemics. For example such policies may limit evictions and foreclosures and provide rent and other income subsidies [11], address community mental health for marginalized racial/ethnic groups, or expand Medicaid eligibility [30]. Future research should focus on longitudinal impacts and the effectiveness of such targeted interventions.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s40615-024-02093-y.

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Data Availability After the acceptance for publication of the main findings from the final data set de-identified study data will be shared upon request with qualified researchers, subject to the terms of a data sharing agreement.

Declarations

Ethics Approval The Institutional Review Board of the New York State Psychiatric Institute approved all procedures involving human subjects.

Consent to Participate Informed consent was obtained for all participants included in this study.

Competing Interests The authors have no relevant financial or non-financial interests to disclose.

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