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Supplementary Material

Article Title: Association of Distress to Systemic Racism and Racial Disparities With Psychopathology and Suicidal Ideation Among US Veterans During the COVID-19 Pandemic

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Supplementary Methods

Sample

The National Health and Resilience in Veterans Study (NHRVS) is a nationally representative survey of U.S. military veterans. A total of 4,069 veterans completed the Wave 1 (median completion date: 11/21/2019) survey prior to the first documented COVID-19 cases in the US and 3,078 (75.6%) completed a Wave 2 1-year follow-up (median completion date: 11/14/2020) survey. Both surveys were online, 60-minute, self-report surveys.

The NHRVS sample was drawn from KnowledgePanel, a research panel of more than 50,000 households that is maintained by Ipsos, a survey research firm. KnowledgePanel® is a probability-based, online non-volunteer access survey panel of a nationally representative sample of U.S. adults that covers approximately 98% of U.S. households. Panel members are recruited through national random samples, originally by telephone and now almost entirely by postal mail. Households are provided with access to the Internet and computer hardware if needed. KnowledgePanel® recruitment uses dual sampling frames that include both listed and unlisted telephone numbers, telephone and non-telephone households, and cell-phone-only households, as well as households with and without Internet access.

Demographic data of survey panel members are assessed regularly by Ipsos using the same set of questions used by the U.S. Census Bureau. To permit generalizability of study results to the entire population of U.S. veterans, the Ipsos statistical team computed post-stratification weights using the following benchmark distributions of U.S. military veterans from the US Census Current Veteran Population Supplemental Survey of the U.S. Census Bureau's American Community Survey: age, gender, race/ethnicity, Census Region, metropolitan status, education, household income, branch of service, and years in service. An iterative proportional fitting (raking) procedure was used to produce the final post-stratification weights. All participants provided informed consent and the study was approved by the Human Subjects Committee of the VA Connecticut Healthcare System.

American Association for Public Opinion Research Survey Disclosure Checklist:

Survey sponsor	U.S. Department of Veterans Affairs National Center for Posttraumatic Stress Disorder
Survey/Data collection supplier	Ipsos, Inc.
Population represented	U.S. military veterans in the United States
Sample size	3,078

Mode of data collection	Web-based survey panel
Type of sample (probability/non-probability)	Probability
Start and end dates of data collection	November 9, 2020 to December 19, 2020
Margin of sampling error for total sample	±2.57 percentage points at the 95% confidence level
Are the data weighted?	Yes, using the following benchmark distributions of U.S. military veterans from the most recent (August 2019) Current Veteran Population Supplemental Survey of the U.S. Census Bureau's American Community Survey: gender, race/ethnicity, Census Region, metropolitan status, education, household income, branch of service, and years in service
Contact for more information	Robert H. Pietrzak, PhD, MPH Research Psychologist, U.S. Department of Veterans Affairs National Center for PTSD Professor, Department of Psychiatry, Yale School of Medicine (860) 638-7467, robert.pietrzak@yale.edu

Survey content may be obtained by contacting Dr. Pietrzak: robert.pietrzak@yale.edu

Assessments

Sociodemographic characteristics. Information on age, gender, race, education, marital status, employment, annual household income (\geq \$60,000 vs. $<$ \$60,000 defined on the basis of median split of income categories), combat veteran status, and years in military service was assessed at baseline.

Race/ethnicity. Race and ethnicity were assessed using standard questions from the U.S. Census Bureau, which asked participants to self-identify as White, Non-Hispanic, Black, Non-Hispanic, Other, Non-Hispanic, Hispanic, or 2+ Races, Non-Hispanic. The Other, Non-Hispanic category included Asian, American Indian and Alaska Native, Native Hawaiian and other Pacific Islander; and the 2+ Race, non-Hispanic category included multiracial, non-Hispanic veterans.

Adverse childhood experiences. Score on Adverse Childhood Experiences Questionnaire,¹ a 10-item questionnaire that assesses seven categories of childhood exposure to adverse experiences (e.g., psychological, physical, or sexual abuse; violence against mother; or living with household members who had a substance use problem, mental illness, or suicidal behavior, or were ever imprisoned).

Cumulative trauma burden. The Trauma History Screen² was used to assess exposure to the lifetime occurrence of 14 potentially traumatic events; the NHRVS additionally assessed exposure to life-threatening illness or injury. The sum of potentially traumatic events endorsed, ranging from 0–15, was used as an index of lifetime trauma burden.

Physical health difficulties. A factor score was derived using an exploratory factor analysis of measures of number of medical conditions, ADL/IADL disability, and current somatic symptoms.

Combat veteran. Combat veteran status was assessed with the following question: “Did you ever serve in a combat or war zone?” and the Combat Exposure Scale,³ 7-item self-report measure that assesses wartime stressors experienced by combatants.

Lifetime psychiatric diagnoses. Probable lifetime diagnoses of major depressive disorder (MDD), PTSD, AUD, and/or drug use disorder (DUD) were assessed using a modified self-report version of the Mini International Neuropsychiatric Interview (MINI).⁴

Past-year suicidal ideation. Positive endorsement of question 2 of the Suicide Behaviors Questionnaire-Revised⁵: “How often have you thought about killing yourself in the past year?”

COVID-related variables. COVID-related exposure was assessed using the Assessment of Exposure to COVID-19 Scale developed by the National Center for PTSD. This measure assesses COVID-19 testing status of an individual and household/non-household members, as well as severity of COVID-19-related illness in those who had been infected, which range from no/mild symptoms to hospitalization (COVID-19-related death of household and non-household members is also assessed). Questions from the Coronavirus Health Impact Survey⁶ were used to assess hours spent consuming COVID-related media, and COVID infection-related worries (e.g., “In the past month, how worried have you been about being infected with coronavirus?”), social restriction stress (e.g., “How stressful have these changes in social contacts been for you?”), financial stress (e.g., “In the past month, to what degree have changes related to the pandemic created financial problems for you or your family?”), and relationship difficulties (e.g., “Has the quality of the relationships between you and members of your family changed?”).

Peri-pandemic major depressive disorder, generalized anxiety disorder, or PTSD. Major depressive disorder symptoms were assessed using the two depressive symptoms items of the PHQ-4,⁷ which assessed symptoms occurring in the past two weeks; a score ≥ 3 was indicative of a positive screen for major depressive disorder.⁷ PTSD symptoms—assessed with the PTSD Checklist for DSM-5; a score ≥ 33 was indicative of a positive screen for PTSD.⁸ Generalized anxiety disorder symptoms – participant responses on the two generalized anxiety items of the PHQ-4 occurring in the past two weeks; a score ≥ 3 was indicative of a positive screen for generalized anxiety disorder.⁷

Peri-pandemic alcohol use and/or drug use disorder. Alcohol use disorder was assessed using the Alcohol Use Disorders Identification Test (AUDIT), a validated measure used to screen for alcohol use disorder.⁹ The AUDIT consists of 10 questions that assess the severity of alcohol consumption and consequences and yield a total score ranging from 0 to 40. Higher scores

indicate more severe problematic alcohol use. A score of 8 or higher was considered as indicative of probable alcohol use disorder.¹⁰ Drug use disorder was assessed using the Screen for Drug Use question: “How many days in the past year have you used non-prescription drugs?”; a response of ≥ 7 days on this question is indicative of a positive screen for drug use disorder; if the response to this question is 6 or fewer days, a response of ≥ 2 days to the question “How many days in the past 12 months have you used drugs more than you meant to?” is indicative of a positive screen for drug use disorder.

Peri-pandemic suicidal ideation. SI was assessed using two items adapted from the suicide item of the Patient Health Questionnaire-9,¹⁰ which asked participants to report the extent to which they experienced passive or active SI during the prior two weeks. A positive screen for current SI was indicated by a response of “Several days,” “More than half the days,” or “Nearly every day” to one or both of the following questions: “How often have you been bothered by thoughts that you might be better off dead?” and “How often have you been bothered by thoughts of hurting yourself in some way?”

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Supplementary Table 1. Sample characteristics, and results of bivariate and multivariable analyses examining associations between pre- and peri-pandemic factors associated with perceived racial disparities in COVID-19-related health outcomes and systemic racism in U.S. military veterans (n=3,078)

	Sample Characteristics	MDD, GAD, or PTSD (R ² =0.40)	AUD or DUD (R ² =0.23)	Suicidal Ideation (R ² =0.48)
	Weighted Mean (SD) or N (weighted %)	OR (95%CI)	OR (95%CI)	OR (95%CI)
<i>Background and Pre-Pandemic Variables</i>				
Age	63.3 (14.7)	0.95 (0.94-0.97)***	0.97 (0.96-0.98)***	0.99 (0.97-1.01)
Male gender	2,730 (91.6%)	1.65 (1.07-2.54)*	2.17 (1.36-3.48)**	1.03 (0.57-1.86)
White, non-Hispanic race/ethnicity	2,541 (78.2%)	1.20 (0.86-1.68)	1.36 (0.99-1.87)	1.18 (0.72-1.92)
College graduate or higher education	1,407 (34.2%)	1.03 (0.77-1.38)	0.75 (0.57-0.98)*	1.23 (0.82-1.83)
Married/partnered	2,220 (74.0%)	1.52 (1.11-2.07)**	0.84 (0.64-1.09)	1.64 (1.06-2.52)*
Retired	1,733 (46.8%)	0.90 (0.63-1.28)	1.16 (0.85-1.60)	0.75 (0.46-1.22)
Annual household income \$60K+	1,851 (60.8%)	0.74 (0.56-0.99)*	0.96 (0.74-1.26)	0.56 (0.37-0.85)**
Combat veteran	1,051 (35.4%)	1.22 (0.92-1.61)	1.29 (1.01-1.65)*	1.31 (0.89-1.92)
10+ years in military	1,132 (36.5%)	1.01 (0.76-1.33)	0.82 (0.64-1.06)	1.03 (0.70-1.52)
Adverse childhood experiences	1.4 (1.9)	1.03 (0.97-1.10)	1.02 (0.96-1.08)	0.96 (0.88-1.05)
Sum lifetime traumas	8.9 (8.3)	0.97 (0.96-1.01)	1.00 (0.99-1.01)	0.98 (0.96-1.00)
Physical health difficulties	0 (1.0)	1.42 (1.25-1.62)***	0.82 (0.71-0.94)**	1.00 (0.84-1.19)
Lifetime MDD and/or PTSD	591 (22.3%)	2.84 (2.11-3.82)***	1.14 (0.85-1.53)	2.23 (1.46-3.40)***
Lifetime alcohol and/or drug use disorder	1,265 (42.5%)	1.27 (0.97-1.66)	4.92 (3.77-6.41)***	1.95 (1.33-2.86)***
Past-year suicidal ideation	289 (10.8%)	2.25 (1.60-3.15)***	2.08 (1.51-2.87)***	30.19 (20.44-44.58)***
<i>Pandemic-associated Risk Factors</i>				
COVID-19 infection to self	233 (8.2%)	0.96 (0.58-1.60)	1.40 (0.89-2.19)	1.55 (0.79-3.05)
COVID-19 infection to household member	198 (7.5%)	1.07 (0.62-1.83)	0.87 (0.54-1.42)	0.72 (0.35-1.51)
COVID-19 infection to non-household member	1,286 (41.7%)	0.90 (0.68-1.19)	0.76 (0.59-0.98)*	1.20 (0.82-1.77)

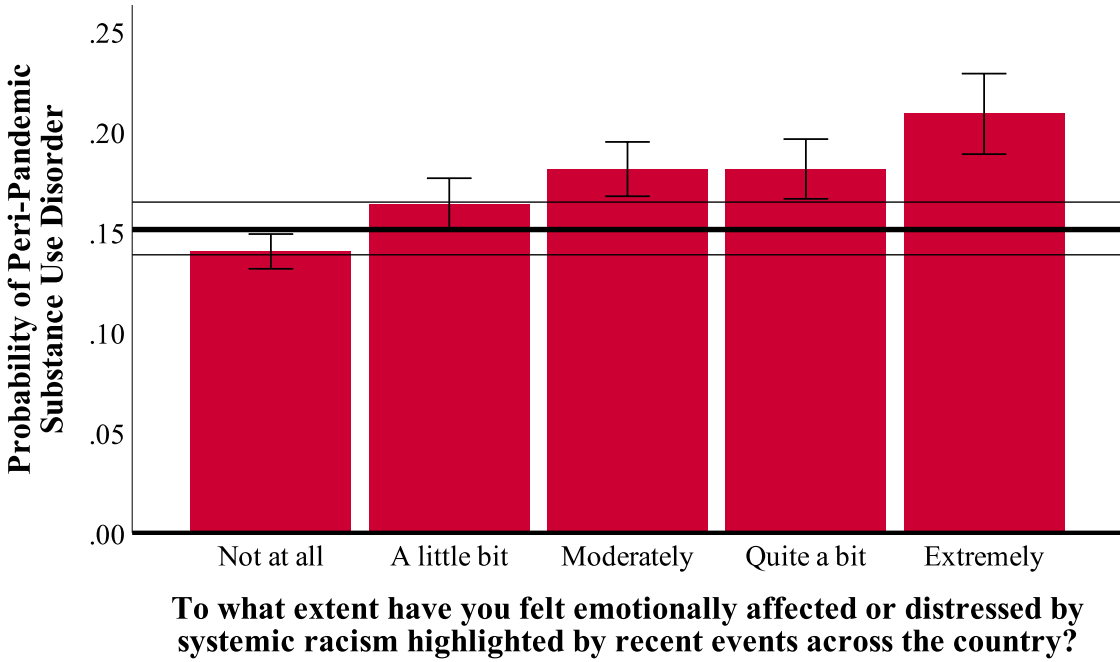
Know someone who died from COVID-19	177 (5.6%)	0.88 (0.51-1.53)	1.05 (0.63-1.74)	0.82 (0.37-1.82)
Daily COVID-19 media consumption	1.6 (2.1)	0.99 (0.93-1.06)	1.06 (1.01-1.11)*	0.93 (0.81-1.06)
COVID-19-associated worries	0 (1.0)	1.52 (1.31-1.76)***	1.21 (1.05-1.39)**	1.16 (0.94-1.45)
COVID-19-associated social restriction stress	0 (1.0)	1.68 (1.49-1.90)***	1.15 (1.02-1.29)*	1.14 (0.95-1.35)
COVID-19-associated financial difficulties	0 (1.0)	1.47 (1.31-1.65)***	1.03 (0.92-1.15)	1.22 (1.04-1.42)*
COVID-19-associated relationship difficulties	0 (1.0)	1.20 (1.07-1.35)**	1.03 (0.93-1.15)	1.29 (1.09-1.53)**
<i>Racism-related Distress</i>				
Distress related to systemic racism	2.3 (1.3)	0.92 (0.79-1.07)	1.17 (1.03-1.33)*	1.29 (1.07-1.55)**
Distress related to COVID-19 health disparities	1.9 (1.2)	1.29 (1.09-1.52)**	0.92 (0.79-1.07)	0.84 (0.67-1.05)

Abbreviations: MDD=major depressive disorder; GAD=generalized anxiety disorder; PTSD=posttraumatic stress disorder; AUD=alcohol use disorder; DUD=drug use disorder. OR=odds ratio; 95%CI=95% confidence interval.

Race/ethnic distribution of the sample: N=2,541 (weighted 78.2%) White, non-Hispanic, N=212 (weighted 11.5%) Black, non-Hispanic, N=216 (weighted 6.2%) Hispanic, N=40 (weighted 2.8%) Other, Non-Hispanic, and N=69 (weighted 1.3%) 2+ Races, Non-Hispanic.

Statistically significant association: *p<0.05; **p<0.01; ***p<0.001.

Supplementary Figure 1. Probability of peri-pandemic substance use disorder by severity of emotional distress in relation to systemic racism



Supplementary Figure 2. Probability of peri-pandemic suicidal ideation by severity of emotional distress in relation to systemic racism

