The Psychiatric Sequelae of the COVID-19 Pandemic in Adolescents, Adults, and Health Care Workers

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Abstract

BACKGROUND.—The COVID-19 pandemic is the most serious global public health crisis since the 1918 influenza pandemic. This study is the first to assess its mental health impact across the lifespan in the US in adults, adolescents, and health care workers (HCWs).

METHODS.—We recruited 4909 participants through an online survey advertising on Facebook and Instagram to assess exposure to COVID-19 and psychiatric symptoms from April 27 to July 13. We also recruited through the University of Pittsburgh, University of Pittsburgh Medical Center (UPMC), and other health care systems around Pittsburgh. The primary outcomes were clinically significant depression, anxiety, and posttraumatic stress disorder symptoms, suicidal ideation or behavior, and grief reactions since COVID-19.

RESULTS.—Adolescents were significantly more likely to report moderate to severe symptoms of depression (55% vs. 29%, χ^2=122, df=1, p<0.001), anxiety (48% vs. 29%, χ^2=73, df=1, p<0.001), PTSD (45% vs. 33%, χ^2=12, df=1, p<0.001), suicidal ideation or behavior (38% vs. 16%, χ^2=117, df=1, p<0.001), and sleep problems (69% vs. 57%, χ^2=26, df=1, p<0.001) compared to adults. The rates of intense grief reactions among those who lost someone to COVID-19 was 55%. Loneliness was the most common predictor across outcomes and higher number of hours spent on social media and exposure to media about COVID-19 predicted depression symptoms and suicidal ideation or behavior in adolescents.

CONCLUSIONS.—The COVID-19 pandemic is associated with increased rates of clinically significant psychiatric symptoms. Loneliness could put individuals at increased risk for the onset of psychiatric disorders.

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Keywords

Child/Adolescent; Epidemiology; Grief/Bereavemetn/Complicated Grief; PTSD/Posttraumatic Stress Disorder; Stress; Suicide/Self Harm

INTRODUCTION

We have limited information on the short- and long-term mental health consequences of the COVID-19 pandemic and of the mitigation strategies of social distancing required to slow the transmission of the SARS-CoV-2 virus. Prior natural and man-made disasters provide evidence for the increased incidence of depression, posttraumatic stress disorder (PTSD), and prolonged grief reactions (Makwana, 2019); however, this pandemic is the most serious global public health crisis since the 1918 influenza pandemic. Early studies from China on the psychological impact of COVID-19 reported 35–53.8% of adults experienced moderate or severe psychological symptoms (Qiu et al., 2020; Wang et al., 2020). In the US, studies in adults conducted for 2–10 days during this pandemic showed increased loneliness, worries and stress, clinically significant depression and PTSD symptoms, and suicidal ideation (Ammerman, Burke, Jacobucci, & McClure, 2020; Killgore, Cloonan, Taylor, & Dailey, 2020; Panchal et al., 2020; Park, Velez, Kannan, & Chorpita, 2020; Rosenberg, Luetke, Hensel, Kianersi, & Herbenick, 2020).

The impact of COVID-19 on children and adolescents' mental health has not been studied. Social isolation and loneliness, which are likely concomitants of social distancing, are associated with increased risk for depression, anxiety, suicidal ideation, and self-harm (Loades et al., 2020). In addition, health care workers (HCWs) may be particularly vulnerable to adverse psychological outcomes because they are at high risk of exposure; more vulnerable due to their chronic burnout even prior to COVID-19; are witnessing the human cost of this pandemic, and are often the only connection between family and very ill patients during the pandemic.

To our knowledge, this study is the first to assess the mental health impact of the COVID-19 pandemic across the lifespan in the US in adults, adolescents, and HCWs. We report on the prevalence of clinically significant psychiatric symptoms of depression, anxiety, PTSD, suicidal ideation or behavior, and grief reactions. We examine pre-COVID-19 risk factors, self-reported exposure to SARS-CoV-2, and post-COVID-19 risk factors including geographical mobility data as potential predictors of these outcomes.

METHODS

We conducted an online survey to assess exposure to COVID-19 and the mental health sequelae of exposure and quarantine. We recruited remotely using advertisements on Facebook and Instagram targeting individuals in the US 13+ years old, who lost someone to COVID-19, and HCWs. The vast majority of adolescents and adults in the US use social media (NW, Suite 800Washington, & Inquiries, n.d.; "Teens, Social Media & Technology 2018 | Pew Research Center," n.d.). Our recruitment strategy allowed us to quickly enroll a diverse, nationwide sample of participants during the height of this pandemic. We also

advertised the study at the University of Pittsburgh Clinical and Translational Science Institute (CTSI) Participant Registry, which includes more than 230,000 participants who registered at points of clinical care at the University of Pittsburgh Medical Center (UPMC), community outreach events, and MyChart, the UPMC patient health portal. We also recruited HCWs from the University of Pittsburgh Medical Center (UPMC) and other health care systems around Pittsburgh. The advertisements and survey were posted on April 27 after approval from the Institutional Review Board at the University of Pittsburgh. We included data collected up to July 13 in our analyses with 7353 participants. During the week of April 27, a number of states were planning lifting restrictions and the number of people infected was ~1 million and deaths approached 56,000. Individuals were consented and completed self-reported questionnaires online. We had participants from all 50 states and the District of Columbia. We asked questions about demographics, geographical location, family structure, SES, and used the MacArthur Scale of Subjective Social Status (SSS) ("MacArthur Research Network on SES and Health," n.d.).

Exposure.

We asked individuals about suspected exposure, testing, quarantine, the number of rooms in their home to assess the available resources for quarantine, and if participants knew someone who had flu-like symptoms, hospitalized or died due to COVID-19, and their relationships to them. Social distancing behaviors were assessed. For those who lost someone due to COVID-19, we asked whether they were able to talk to the deceased before their death, see the body, and hold and attend their funeral. For HCWs, we asked additional questions about treating COVID-19 patients, availability of personal protective equipment (PPE), confidence about their level of preparedness in treating COVID-19 patients, and having someone at home helping in childcare for those with dependent children. We downloaded aggregate geographical mobility trends data from Apple, which are publicly available, and mapped them to participants' location of residence at the county level if provided and state level otherwise. We used the average relative regional mobility between COVID-19 onset and survey completion date in our analysis.

Psychiatric Outcomes.

We assessed depression symptoms using the 9-item Patient Health Questionnaire (PHQ-9) (Kroenke, Spitzer, & Williams, 2001). A score of 10 or more on the PHQ-9 has been associated with major depressive disorder with 88% sensitivity and 88% specificity (Kroenke et al., 2001; Manea, Gilbody, & McMillan, 2012). We assessed anxiety symptoms using the 7-item Generalized Anxiety Disorder (GAD-7) and a score of 10 or more corresponds to moderate to severe generalized disorder with 89% sensitivity and 82% specificity (Spitzer, Kroenke, Williams, & Lowe, 2006). For posttraumatic Stress Disorder (PTSD) symptoms, we used the Primary Care PTSD Screen for *DSM-5* (PC-PTSD-5) and a score of 3 out of the 5 items correspond to DSM-5 diagnosis of PTSD with sensitivity of 95% and specificity of 85% (Prins et al., 2016). We used these cut-offs, which correspond to moderate to severe symptoms that likely correspond to diagnoses. We also assessed lifetime suicidal ideation and behavior and non-suicidal self-injurious (NSSI) behavior and since the COVID-19 pandemic using questions from the Self-Injurious Thoughts and Behavior Interview, self-report version (Nock, Holmberg, Photos, & Michel, 2007). Prolonged grief

reactions were assessed using the 6-item screen of the Inventory of Complicated Grief-Revised for Children (Melhem, Porta, Walker Payne, & Brent, 2013). These items are also included in the DSM-5 proposed criteria for Persistent Complex Bereavement-Related Disorder for adults (Aoun, Porta, Melhem, & Brent, 2020).

Risk Factors.

We asked about risk factors that increase risk for exposure or consequences of COVID-19, such as age, remote school/work, history of chronic disease, and history of psychiatric disorders. We assessed SES pre- and post-COVID-19 and asked about job loss or a parent losing their job for adolescents. Perceived stress was assessed using Perceived Stress Scale (PSS-4) (Cohen, Kamarck, & Mermelstein, 1983). We assessed sleep problems using 3 questions from the Insomnia Severity Index (Morin, Belleville, Bélanger, & Ivers, 2011). All participants were asked about exposure to media reporting about COVID-19, feelings of loneliness since COVID-19, their self-rating of health (1 poor, 5 excellent), worries about COVID-19 affecting them and family members, and whether they had a telemedicine visit for psychiatric and non-psychiatric complaints since COVID-19. For adolescents, we additionally asked about the average number of hours/day spent on games, internet, and social media.

Statistical Analyses.

We inspected outliers and identified and removed duplicates based on IP addresses with the same demographic information (n=1036), those with attempts to complete the survey but with incomplete data to analyze (n= 1408) for a remaining total of 4909 participants. We determined the prevalence of symptoms using clinically significant cut-offs and examined their relationships to demographics, exposure, and pre- and post-COVID-19 risk factors using Chi-square tests and t-tests. All tests were two-tailed. We applied a Bonferroni correction to adjust for multiple comparisons for five outcomes (PHQ-9, GAD-7, PC-PTSD-5, suicidal ideation or behavior, and ICG-R) and used $\alpha<0.01$. We compared adolescents and adults, and HCWs to non-HCWs and conducted logistic regression for each outcome including independent variables that were significantly associated into the models for adults, adolescents, and HCWs. We used $\alpha<0.05$ as the significance threshold in final models. We included additional exposure variables that were specific to adolescents and HCWs in their respective models. We also tested interactions for significant variables with sex, age, and race. Cohen's d is reported for final models. All analyses were conducted using R and STATA.

RESULTS

Sample Characteristics and Prevalence of Exposure and Psychiatric Symptoms.

The sample consisted of 4909 participants with mean age was 40.3 ±17.6 (standard deviation) years, 88.1% were 18 years or older (n=4326), 80% females, and 82% White (Tables 1 and 2).

In our sample, 35% reported suspected exposure to COVID-19, 11% tested positive, and had to wait for testing on average 7.2 ±18.0 days after the onset of symptoms (Table 1). In

addition, 47% reported remote school/work, and 7.5% needed testing but did not have access. The majority of the sample (91%) reported compliance with social distancing recommendations. The prevalence of current clinically significant symptoms in the overall sample were 32% for depression, 31% for anxiety, 34% for PTSD, 18% for suicidal ideation or behavior since COVID-19, 55% for grief reactions, and 58% for sleep problems.

Adolescents were significantly more likely to report clinically significant depression, anxiety, and PTSD symptoms, suicidal ideation or behavior, perceived stress, and sleep problems compared to adults (Table 1); however, they similar rates of intense grief reactions. Almost half of HCWs (46%) were exposed to patients with COVID-19, 94% had PPE available to them, and HCWs reported moderate confidence (6.2 ±2.5) in their preparedness to treat COVID-19 patients. HCWs were significantly less likely to have depression, anxiety, PTSD, suicidal ideation or behavior and lower perceived stress since COVID-19 but similar rates of sleep problems and intense grief reactions (Table 2).

Predictors of Depression Symptoms.

Including all variables that were significantly associated with clinically significant depression symptoms at p<0.01 (Tables S1–S3), the predictors in the adult sample were younger age, White, lifetime history of suicidal ideation or behavior, loneliness, poor self-rating of health, sleep problems, perceived stress, being married, lower SSS, and history of chronic diseases (Table 3). Participants who had a telemedicine visit for medical reasons were less likely to have moderate to severe depression symptoms. Racial minority with prior history of suicidal ideation or behavior were also more likely to have moderate to severe depression symptoms. When including HCWs exposure variables, worries about infecting family due to work exposure predicted depression symptoms (Table S4). In adolescents, higher levels of loneliness, perceived stress, poor self-rating of health, sleep problems, and higher number of hours spent on social media predicted depression symptoms (Table 3). Adolescents who were White and had a higher number of hours spent on social media were more likely to have moderate to severe depressive symptoms.

Predictors of Anxiety Symptoms.

The most important predictors in the adult sample were younger age, lower SSS, loneliness, worries about COVID-19, perceived stress, chronic medical diseases, and sleep problems (Tables S5–S7, Table 3). Females with lifetime suicidal ideation or behavior and White with increased household conflict since COVID-19 were more likely to report anxiety symptoms. When including HCWs exposure variables, worries about infecting family due to work exposure predicted anxiety symptoms (Table S4). In adolescents, females were less likely to report anxiety symptoms whereas lower SSS, loneliness, perceived stress, lifetime history of actual suicide attempt, suspected exposure to COVID-19, and lower ratings of overall health predicted higher levels of anxiety symptoms (Table 3). Adolescents who were White and had a higher number of hours spent on social media were more likely to have moderate to severe anxiety symptoms. Females with higher worries about COVID-19 were more likely to have moderate to severe anxiety symptoms.

Predictors of PTSD Symptoms.

The most common trauma reported was sickness or death of a loved one (48%); sexual, physical, or domestic abuse (7%); accidents, disasters, violent crimes, and mass shootings (21%), suicide of a loved one (6.8%); abandonment, emotional abuse, divorce or breakup (4.9%); COVID-19 (1.3%), and other (10.7%) such as legal and financial problems. We examined the most important predictors for PTSD symptoms among individuals who reported trauma that meet criterion A for PTSD in DSM-5 (n=2,014). In the adult sample, predictors included being male, racial minority, lower SSS, loneliness, and sleep problems (Tables S8–S10, Table 3). Adults with reported trauma and who reported household conflict to have increased since COVID-19 had lower PTSD symptoms. White with higher SSS, older age with chronic medical diseases, and females with higher perceived stress were more likely to report moderate to severe PTSD symptoms. However, older adults with higher household income were less likely to report moderate to severe PTSD symptoms. When including HCWs exposure variables, worries about getting infected due to work exposure predicted PTSD symptoms (Table S4). In adolescents, females, loneliness, lifetime history of suicidal ideation, and health worries about COVID-19 predicted PTSD symptoms (Table 3). Female adolescents with higher household income in the past 12 months showed lower PTSD symptoms.

Predictors of Suicidal Ideation or Behavior.

Lower average relative regional mobility was significantly associated with suicidal ideation or behavior in adults (Table S11). The most important predictors in the adult sample were lifetime history of suicidal ideation, loneliness, and perceived stress (Tables S11–S13, Table 3). However, geographical regional mobility was not a significant predictor. None of the HCW-related exposure variables predicted suicidal ideation or behavior (Table S4). In adolescents, loneliness and higher exposure to media reporting on COVID-19 were associated with higher risk for suicidal ideation or behavior since COVID-19 (Table 3).

Predictors of Grief Reactions.

Loneliness, losing a spouse, close relative, or friend, higher number of people someone knew who died due to COVID-19, and sleep problems were significant predictors (Tables S14–S16, Table 3). When including HCWs exposure variables, higher confidence in preparedness to treat patients with COVID-19 predicted lower grief symptoms (Table S4). In adolescents, older age, loneliness, and health worries about COVID-19 were significant predictors.

DISCUSSION

We found increased rates of clinically significant symptoms of depression, anxiety, and PTSD which correspond to likely diagnosis since the COVID-19 pandemic; and of suicidal ideation and behavior, and intense grief reactions. Adolescents showed higher rates on all of these outcomes compared to adults, except for intense grief reactions. HCWs showed lower rates of moderate to severe depression and anxiety symptoms compared to adult non-HCW. Loneliness was a common predictor across all psychiatric outcomes in adolescents and adults. Higher number of hours per day spent on social media and higher number of hours of

exposure to media about COVID-19 predicted depression symptoms and suicidal ideation or behavior in adolescents, respectively. Adults with suicidal ideation or behavior had lower average relative regional mobility between COVID-19 onset and survey completion date compared to those without suicidal ideation or behavior.

We discuss these findings within the context of the strengths and limitations of the study. To our knowledge, this is the first study to assess the mental health impact of the COVID-19 pandemic across the lifespan in a large sample of adolescents and HCWs in the US and the first to assess several psychiatric outcomes. We corrected for multiple comparisons, assessed objective and subjective perceptions of stress, exposure to *SARS-CoV-2,* compliance with social distancing and mitigation recommendations, and other risk factors. We also considered geographical mobility data at the county and state levels as a potential predictor. Our social media recruitment strategy allowed us to quickly reach a large sample of participants during the height of the pandemic. However, social media use itself could be associated with mental health outcomes, especially among adolescents (Keles, McCrae, & Grealish, 2020). Our results are consistent with these findings where adolescents who spent more time on social media reported more depression symptoms. Thus, our sample may not be representative of stress responses in the population. In addition, we assessed adolescents only on the use of social media and time spent on games, internet, and social media. Thus, it is not clear whether similar biases could have affected our recruitment of adults in this sample. Additional limitations include the cross-sectional assessment and assessment of clinically significant symptoms rather than diagnoses. Future studies with nationally representative samples and longitudinal follow-up are needed in order to assess whether our reported findings are acute and transient responses to the COVID-19 pandemic or whether they have long-term consequences on rates of psychiatric disorders in the population.

The prevalence of moderate to severe depression symptoms and suicidal ideation or behavior are the highest among adolescents with 55% of those participating endorsing depression symptoms, which correspond to likely major depressive disorder compared to 29% in adults; 37% of adolescents endorsed suicidal ideation and 1.7% attempted suicide since COVID-19 compared to 16% and 0.2% in adults, respectively. According to the 2017 National Survey on Drug Use and Health, 13.3% of adolescents 12–17 years old met criteria for a major depressive episode (MDE) in the past year (Bose, 2017). The rates in adults were 7.1% and 4.5%, respectively, for MDE; and 4.3% of adults had seriously thought about killing themselves and 0.6% attempted suicide. In a representative sample of US students in grades 9 through 12 participating in the 2017 Youth Risk Behavior Survey (YRBS), 17.2% of adolescents seriously thought about suicide and 7.4% attempted suicide in the past 12 months (Kann et al., 2011). The high rates found in our study are quite alarming but may represent an acute and transient stress response to COVID-19. It is also possible that individuals who are at higher risk for depression and suicidal ideation or behavior may be more likely to participate in an online survey. Higher levels of internet use and video games in adolescents were previously associated with depression and suicidal ideation and attempt ("Increases in Depressive Symptoms, Suicide-Related Outcomes, and Suicide Rates Among U.S. Adolescents After 2010 and Links to Increased New Media Screen Time - Jean M. Twenge, Thomas E. Joiner, Megan L. Rogers, Gabrielle N. Martin, 2018," n.d.; Messias, Castro, Saini, Usman, & Peeples, 2011). Our anonymous and confidential collection of data

on suicidal ideation and behavior may also have elicited higher response rates on these items compared to epidemiological estimates from school-based surveys, including YRBS (Anestis & Green, 2015). Future studies are needed to examine the course of psychiatric symptoms and disorders and the long-term consequences of this pandemic.

Loneliness was the most common predictor across all psychiatric outcomes in adolescents and adults. Loneliness is associated with increased morbidity and mortality (Bzdok & Dunbar, 2020; Holt-Lunstad, 2017); and with increased risk for depression, anxiety, and suicidal ideation and self-harm in children and adolescents. The duration of loneliness, as opposed to intensity, was positively correlated with anxiety symptoms in adolescents (Loades et al., 2020). Lower average relative regional mobility since COVID-19 was significantly associated with suicidal ideation and behavior, which could be explained by an increased number of hours spent at home and increased loneliness. Loneliness in adolescents is of particular importance given their developmental stage, which puts them at increased risk for the onset of psychiatric disorders. Prevention approaches are needed to reduce loneliness and increase connectedness safely during this pandemic in order to reduce the risk of onset of psychiatric disorders in this especially vulnerable population.

HCWs showed lower rates of most psychiatric outcomes except for intense grief reactions compared to non-HCWs. HCWs reported knowing more people who died to COVID-19 than adult non-HCWs (Table 2), which could explain their increased grief reactions. Lower psychological distress was previously reported in China in front-line nurses compared to the general population during COVID-19, which was attributed to the influx of misinformation to the general public (Li et al., 2020). Our rates of depression and anxiety symptoms in HCWs (24%) are consistent with rates in HCWs in China (22.8–23.2%); however, the rate of sleep problems in our sample was higher (55–58% *vs.* 38.9% in China) (Pappa et al., 2020). HCWs rated their confidence in their preparedness to treat COVID-19 patients as slightly higher than average. Worries about infecting family due to work exposure predicted depression and anxiety symptoms in HCWs. However, HCWs' confidence in their preparedness to treat COVID-19 patients predicted lower grief reactions, which could be due to less guilt and worries about infecting family members among those who are more confident about their preparedness.

Our results have important clinical and public health implications. Clinicians need to monitor psychiatric symptoms among especially vulnerable populations, namely, adolescents. Prevention approaches are needed to increase social connectedness safely during this pandemic in order to reduce loneliness and its psychiatric consequences. We also need to put in place a concerted public health strategy to address the mental health consequences of COVID-19 and prepare our health care system to deliver brief and effective interventions through telemedicine. It is also imperative to make these interventions available to HCWs in order to preserve this vulnerable and essential population in the fight against this pandemic and potential future threats to our public health.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

Data availability Statement:

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Table 1.

Distribution of demographic, exposure, social distancing behavior, and other risk factors in adolescents and adults

	N	Total	Adolescents N = 583	Adults N = 4326	Statistic	df	P-value
Demographics							
Sex, Females % (n)	4907	80% (3931)	80% (466)	80% (3446)	χ2<0.001	1	>0.9
Age, Mean ± SD	4909	40.3 ±17.6	15.8 ±1.4	43.6 ±16.1	t=−110	4731	**<0.001**
Race, White % (n)	4909	82% (4029)	71% (409)	84% (3604)	χ2=59.8	1	**<0.001**
Family Structure							
Marital Status, % (n)	4265					-	-
Married		46% (1977)	-	46% (1977)			
Single		39% (1672)	-	39% (1672)			
Other		14% (616)	-	14% (616)			
Have dependent children, % (n)	2243	0.9 ±2.2	-	0.9 ±2.2		-	-
Caregiving for an elderly relative, % (n)	4263	10% (429)	-	10% (429)		-	-
Number of household rooms, Mean ± SD	3960	6.1 ±3.4	-	6.1 ±3.4		-	-
Socioeconomic Status (SES)							
Number of years of education, Mean ± SD	4734	15.2 ±2.9	10.5 ±1.2	15.8 ±2.4	t=−81	1075	**<0.001**
Lost job or parent lost job due to COVID-19, % (n)	4510	12% (559)	22% (119)	11% (440)	χ2=51	1	**<0.001**
Total Household income in the past 12 months, Mean ± SD	3943	6.9 ±2.1	6.9 ±2.4	6.9 ±2.1	t=0.38	394	0.7
Subjective Social Status (Scale 1–10), Mean ± SD	4554	6.4 ±1.7	6.4 ±1.6	6.4 ±1.7	t=0.27	728	0.8
Medical History							
Chronic medical diseases, % (n)	4174	32% (1347)	35% (171)	32% (1170)	χ2=2.3	1	0.13
Psychiatric disorders, % (n)	4177	39% (1633)	17% (84)	42% (1535)	χ2=105	1	**<0.001**
Lifetime non-suicidal self-injurious behavior (NSSI), % (n)	4144	13% (534)	31% (147)	11% (384)	χ2=153	1	**<0.001**
Lifetime suicidal ideation, % (n)	3924	31% (1203)	52% (233)	28% (963)	χ2=109	1	**<0.001**
Lifetime actual suicide attempt, % (n)	4140	6.5% (271)	13% (61)	5.7% (208)	χ2=34	1	**<0.001**
Lifetime suicidal ideation or behavior, % (n)	3914	32% (1260)	55% (243)	29% (1010)	χ2=114	1	**<0.001**
Exposure to COVID-19							
Remote school or work, % (n)	4308	47% (2045)	93% (480)	41% (1547)	χ2=487	1	**<0.001**
Suspected exposure to COVID-19, % (n)	4254	35% (1493)	26% (131)	36% (1352)	χ2=21	1	**<0.001**

	N	Total	Adolescents N = 583	Adults N = 4326	Statistic	df	P-value
Tested for COVID-19, % (n)	4264	13% (556)	3.1% (16)	14% (536)	χ^2=49	1	**<0.001**
Tested positive for COVID-19, % (n)	4264	11% (61)	6.3% (1)	11% (60)	χ^2=5.3	1	0.021
Needed testing for COVID-19 but did not have access, % (n)	4264	7.5% (319)	5.3% (27)	7.8% (290)	χ^2=3.6	1	0.058
Wait time since showing symptoms for COVID-19 testing (Mean ± SD)	454	7.2 ±18.0	2.9 ±4.4	7.4 ±18.3	t=-2.9	27	**0.007**
Wait time for COVID-19 test results (Mean ± SD)	509	4.3 ±23.8	1.9 ±1.5	4.3 ±24.2	t=-2.1	370	0.032
Formally quarantined, % (n)	4267	8.0% (341)	5.9% (30)	8.3% (310)	χ^2=3.2	1	0.074
Number of days of formal quarantine, Mean ± SD	332	13.5 ±11.7	17.7 ±20.5	13.0 ±10.4	t=1.2	31	0.2
Knew someone who tested positive for COVID-19, % (n)	4263	43% (1844)	35% (179)	44% (1652)	χ^2=14	1	**<0.001**
Relationship to contact diagnosed with COVID-19, % (n)	1836				χ^2=18.4	2	**<0.001**
Friends or others		83% (1522)	75% (135)	84% (1378)			
Other close family member		12% (223)	22% (39)	11% (182)			
Spouse or first-degree relative		5.0% (91)	2.8% (5)	5.1% (84)			
Know someone hospitalized for COVID-19, % (n)	4246	20% (857)	16% (80)	21% (773)	χ^2=6.1	1	0.013
Number of people you know hospitalized for COVID-19 (Mean ± SD)	843	2.6 ±6.6	1.6 ±1.1	2.7 ±6.9	t=-3.7	736	**<0.001**
Relationship to contact hospitalized for COVID-19, % (n)	850				χ^2=24.1	2	**<0.001**
Friends or others		82% (700)	63% (50)	84% (646)			
Other close family member		14% (123)	33% (26)	13% (97)			
Spouse or first-degree relative		3.2% (27)	3.8% (3)	3.1% (24)			
Know someone who died due to COVID-19, % (n)	4244	14% (598)	11% (56)	14% (537)	χ^2=3.6	1	0.058
Number of people you know who died due to COVID-19 (Mean ± SD)	586	2.3 ±4.3	1.5 ±1.4	2.4 ±4.5	t=-3.4	196	**<0.001**
Relationship to contact died due to COVID-19, % (n)	520				χ^2=7.3	2	0.031
Friends or others		81% (423)	70% (39)	83% (380)			
Other close family member		16% (83)	29% (16)	15% (67)			
Spouse or first-degree relative		2.7% (14)	1.8% (1)	2.8% (13)			
Healthcare worker related COVID-19 exposure							
Healthcare Worker stats, % (n)	3679	45% (1672)	-	45% (1672)			
Exposed to COVID-19 patients, % (n)	1659	46% (770)	-	46% (770)			
Used personal protective equipment (PPE) when exposed, % (n)	768	88% (677)	-	88% (677)			
Treated COVID-19 patients, % (n)	1664	35% (584)	-	35% (584)			

	N	Total	Adolescents N = 583	Adults N = 4326	Statistic	df	P-value
If treated COVID-19 patients, PPE was made available, % (n)	579	94% (543)	-	94% (543)			
If PPE available, used PPE when treating COVID-19 patients, % (n)	579	94% (547)	-	94% (547)			
Worried about getting infected at work (1–10 scale), Mean ± SD	1589	6.6 ±2.6	-	6.6 ±2.6			
Worried about infecting family due to work exposure (1–10 scale), % (n)	1577	7.4 ±2.8	-	7.4 ±2.8			
Confidence in preparedness to treat patients with COVID-19 (1–10 scale), Mean ± SD	1518	6.2 ±2.5	-	6.2 ±2.5			
Help with childcare available at home, % (n)	486	61% (297)	-	61% (297)			
Social Distancing Behavior							
Currently in a city under stay-at-home order, % (n)	4309	50% (2150)	53% (273)	49% (1858)	χ^2=1.9	1	0.2
Number of days since stay-at-home order, Mean ± SD	2029	61.5 ±24.5	60.7 ±23.2	61.7 ±24.7	t=−0.64	344	0.5
Compliance with social distancing, % (n)	4308	91% (3904)	86% (445)	91% (3429)	χ^2=13	1	**<0.001**
Number of hours staying at home, Mean ± SD	4158	18.3 ±5.6	20.9 ±3.8	18.0 ±5.7	t=15	827	**<0.001**
Wore mask/face shield, % (n)	4295	95% (4093)	92% (471)	96% (3593)	χ^2=16	1	**<0.001**
Changed daily life, % (n)	4303	91% (3928)	94% (484)	91% (3418)	χ^2=4.1	1	0.044
Changed hand hygiene, % (n)	4309	79% (3424)	74% (381)	80% (3018)	χ^2=11	1	**<0.001**
Traveled for work, % (n)	4295	2.6% (112)	1.2% (6)	2.8% (106)	χ^2=4.2	1	0.04
Traveled for leisure, % (n)	4295	1.6% (68)	2.9% (15)	1.4% (52)	χ^2=5.9	1	0.015
Used public transportation, % (n)	4295	3.9% (167)	3.9% (20)	3.9% (146)	χ^2=0	1	>0.9
Attended parties with 10 or more people, % (n)	4295	9.4% (405)	14% (71)	8.7% (327)	χ^2=13	1	**<0.001**
Attended religious services, % (n)	4295	4.5% (192)	5.5% (28)	4.4% (164)	χ^2=0.99	1	0.3
Exercised/walked outside, % (n)	4295	84% (3616)	88% (450)	84% (3140)	χ^2=5	1	0.025
Social Characteristics							
Loneliness since the COVID-19 pandemic (scale 1–10), Mean ± SD	3887	5.7 ±2.6	6.9 ±2.3	5.6 ±2.6	t=11	672	**<0.001**
Household conflict increased since COVID-19 (1 high, 5 low), Mean ± SD	4201	39% (1618)	68% (333)	34% (1268)	χ^2=201	1	**<0.001**
Video games since COVID-19 (hours per day), Mean ± SD	464	2.4 ±2.5	2.4 ±2.5	-			
Internet use since COVID-19 (hours per day), Mean ± SD	475	6.2 ±4.9	6.2 ±4.9	-			
Social media use since COVID-19 (hours per day), Mean ± SD	479	4.6 ±3.6	4.6 ±3.6	-			
Schoolwork since COVID-19 (hours per day), Mean ± SD	473	3.1 ±2.5	3.1 ±2.5	-			
Exercise since COVID-19 (hours per day), Mean ± SD	467	1.2 ±1.5	1.2 ±1.5	-			
Being outside since COVID-19 (hours per day), Mean ± SD	462	1.6 ±1.7	1.6 ±1.7	-			

	N	Total	Adolescents N = 583	Adults N = 4326	Statistic	df	P-value
Spending time with family since COVID-19 (hours per day), Mean ± SD	471	4.7 ±5.5	4.7 ±5.5	-			
Spending time with friends virtually since COVID-19 (hours per day), Mean ± SD	464	2.5 ±3.0	2.5 ±3.0	-			
Exposure to media reporting on COVID-19 (hours per day), Mean ± SD	4162	3.6 ±3.9	3.1 ±4.2	3.6 ±3.9	t=−2.9	600	**0.004**
Worries related to COVID-19 and Health Characteristics							
Rating of overall health (1-poor, 5-excellent), Mean ± SD	4199	2.9 ±0.7	2.9 ±0.8	2.9 ±0.7	t=1.2	594	0.2
Health worries about COVID-19, Mean ± SD	4179	9.7 ±3.8	9.2 ±3.7	9.8 ±3.8	t=−3.4	630	**<0.001**
Sleep problems (moderate severity), % (n)	4079	58% (2367)	69% (324)	57% (2029)	χ2=26	1	**<0.001**
Perceived Stress (PSS-4 scale), Mean ± SD	4037	7.8 ±2.2	8.2 ±2.2	7.7 ±2.2	t=4.4	592	**<0.001**
Telemedicine for psychiatric complaints, % (n)	1425	22% (319)	39% (46)	21% (272)	χ2=19	1	**<0.001**
Telemedicine for non-psychiatric complaints, % (n)	1425	63% (897)	35% (41)	65% (849)	χ2=42	1	**<0.001**
Telemedicine for psychiatric and non-psychiatric complaints, % (n)	1425	15% (209)	26% (31)	14% (178)	χ2=13	1	**<0.001**
Geographic Regional Mobility							
Average relative regional mobility between COVID-19 onset and survey completion date, Mean ± SD	4915	79.4 ±19.3	77.9 ±19.0	79.6 ±19.3	t=−2	746	0.045
Psychiatric Outcomes							
Depression	3975	32% (1287)	55% (252)	29% (1028)	χ2=122	1	**<0.001**
Anxiety	4036	31% (1255)	48% (225)	29% (1021)	χ2=73	1	**<0.001**
PTSD	2474	34% (843)	45% (94)	33% (745)	χ2=12	1	**<0.001**
Prolonged grief	405	55% (221)	58% (26)	54% (195)	χ2=0.07	1	0.8
Suicidal ideation	3795	18% (689)	37% (156)	16% (530)	χ2=112	1	**<0.001**
Suicide attempt	4125	0.4% (15)	1.7% (8)	0.2% (7)	χ2=22	1	**<0.001**
Suicidal ideation or behavior	3778	18% (698)	38% (159)	16% (536)	χ2=117	1	**<0.001**

Table 2.

Distribution of demographic, exposure, social distancing behavior, and other risk factors in health care workers compared to the general adult sample

		Non-HCW N = 2007	HCW N = 1672	Statistic	df	P-value
Demographics						
Sex, Females % (n)		73% (1464)	88% (1459)	χ2=125	1	**<0.001**
Age, Mean ± SD		41.8 ±17.7	45.8 ±13.4	t=-7.8	3645	**<0.001**
Race, White % (n)		81% (1613)	89% (1476)	χ2=43.7	1	**<0.001**
Family Structure						
Marital Status, % (n)				χ2=157.8	2	**<0.001**
	Married	40% (798)	55% (923)			
	Single	48% (959)	28% (461)			
	Other	12% (246)	17% (286)			
Have dependent children, % (n)		0.8 ±1.9	1.0 ±2.6	t=-1.8	1932	0.077
Caregiving for an elderly relative, % (n)		7.1% (142)	14% (237)	χ2=49	1	**<0.001**
Number of household rooms, Mean ± SD		5.9 ±2.9	6.5 ±4.1	t=-5	2909	**<0.001**
Socioeconomic Status (SES)						
Number of years of education, Mean ± SD		15.9 ±2.4	15.8 ±2.4	t=1.7	3545	0.086
Lost job or parent lost job due to COVID-19, % (n)		17% (335)	4.1% (68)	χ2=148	1	**<0.001**
Total Household income in the past 12 months, Mean ± SD		6.7 ±2.3	7.1 ±1.8	t=-6.9	3285	**<0.001**
Subjective Social Status (Scale 1–10), Mean ± SD		6.4 ±1.7	6.3 ±1.6	t=0.91	3630	0.4
Medical History						
Chronic medical diseases, % (n)		36% (694)	26% (398)	χ2=35	1	**<0.001**
Psychiatric disorders, % (n)		40% (768)	45% (680)	χ2=8.7	1	**0.003**
Lifetime non-suicidal self-injurious behavior (NSSI), % (n)		14% (277)	5.6% (84)	χ2=69	1	**<0.001**
Lifetime suicidal ideation, % (n)		34% (639)	18% (263)	χ2=106	1	**<0.001**
Lifetime actual suicide attempt, % (n)		7.2% (137)	4.0% (60)	χ2=15	1	**<0.001**
Lifetime suicidal ideation or behavior, % (n)		35% (668)	19% (280)	χ2=109	1	**<0.001**
Exposure to COVID-19						
Remote school or work, % (n)		54% (1060)	24% (371)	χ2=337	1	**<0.001**
Suspected exposure to COVID-19, % (n)		25% (485)	52% (810)	χ2=275	1	**<0.001**

	Non-HCW N = 2007	HCW N = 1672	Statistic	df	P-value
Tested for COVID-19, % (n)	9.7% (188)	22% (336)	$\chi2$=97	1	**<0.001**
Tested positive for COVID-19, % (n)	10% (19)	11% (38)	$\chi2$=11	1	**0.001**
Needed testing for COVID-19 but did not have access, % (n)	8.2% (159)	7.6% (118)	$\chi2$=0.29	1	0.6
Wait time since showing symptoms for COVID-19 testing (Mean ± SD)	9.8 ±21.4	5.9 ±16.3	t=2	274	0.045
Wait time for COVID-19 test results (Mean ± SD)	6.5 ±40.1	3.0 ±2.5	t=1.2	177	0.2
Formally quarantined, % (n)	6.0% (116)	12% (180)	$\chi2$=35	1	**<0.001**
Number of days of formal quarantine, Mean ± SD	16.7 ±14.5	10.5 ±5.5	t=4.4	136	**<0.001**
Knew someone who tested positive for COVID-19, % (n)	40% (787)	51% (794)	$\chi2$=40	1	**<0.001**
Relationship to contact diagnosed with COVID-19, % (n)			$\chi2$=17	2	**<0.001**
Friends or others	80% (627)	87% (690)			
Other close family member	14% (109)	8.0% (63)			
Spouse or first-degree relative	6.1% (48)	4.6% (36)			
Know someone hospitalized for COVID-19, % (n)	18% (343)	26% (403)	$\chi2$=36	1	**<0.001**
Number of people you know hospitalized for COVID-19 (Mean ± SD)	2.0 ±4.7	3.3 ±8.5	t=-2.5	625	0.013
Relationship to contact hospitalized for COVID-19, % (n)			$\chi2$=14.1	2	**<0.001**
Friends or others	79% (270)	88% (350)			
Other close family member	18% (61)	8.8% (35)			
Spouse or first-degree relative	2.6% (9)	3.8% (15)			
Know someone who died due to COVID-19, % (n)	12% (239)	18% (275)	$\chi2$=20	1	**<0.001**
Number of people you know who died due to COVID-19 (Mean ± SD)	1.9 ±5.0	2.9 ±3.9	t=-2.4	441	0.015
Relationship to contact died due to COVID-19, % (n)			$\chi2$=9.8	2	**0.008**
Friends or others	77% (157)	88% (206)			
Other close family member	20% (41)	9.8% (23)			
Spouse or first-degree relative	3.4% (7)	2.6% (6)			
Social Distancing Behavior					
Currently in a city under stay-at-home order, % (n)	51% (990)	41% (646)	$\chi2$=31	1	**<0.001**
Number of days since stay-at-home order, Mean ± SD	64.0 ±25.7	65.3 ±22.9	t=-1.1	1373	0.3
Compliance with social distancing, % (n)	92% (1794)	90% (1411)	$\chi2$=3.7	1	0.053
Number of hours staying at home, Mean ± SD	20.4 ±4.5	14.5 ±5.3	t=34	2970	**<0.001**

	Non-HCW N = 2007	HCW N = 1672	Statistic	df	P-value
Wore mask/face shield, % (n)	95% (1849)	97% (1523)	χ2=7.2	1	**0.007**
Changed daily life, % (n)	94% (1832)	88% (1373)	χ2=41	1	**<0.001**
Changed hand hygiene, % (n)	83% (1616)	77% (1206)	χ2=19	1	**<0.001**
Traveled for work, % (n)	2.5% (48)	3.4% (53)	χ2=2.2	1	0.13
Traveled for leisure, % (n)	1.7% (34)	1.0% (15)	χ2=3.4	1	0.064
Used public transportation, % (n)	3.9% (75)	4.0% (63)	χ2=0.02	1	0.9
Attended parties with 10 or more people, % (n)	7.4% (144)	11% (179)	χ2=16	1	**<0.001**
Attended religious services, % (n)	3.8% (73)	5.3% (84)	χ2=4.8	1	0.028
Exercised/walked outside, % (n)	87% (1697)	80% (1255)	χ2=34	1	**<0.001**
Social Characteristics					
Loneliness since the COVID-19 pandemic (scale 1–10), Mean ± SD	5.9 ±2.6	5.2 ±2.5	t=7.1	2945	**<0.001**
Household conflict increased since COVID-19 (1 high, 5 low), Mean ± SD	37% (706)	33% (499)	χ2=5	1	0.026
Exposure to media reporting on COVID-19 (hours per day), Mean ± SD	3.6 ±3.7	3.6 ±4.1	t=0.47	3075	0.6
Worries related to COVID-19 and Health Characteristics					
Rating of overall health (1-poor, 5-excellent), Mean ± SD	2.8 ±0.7	2.9 ±0.6	t=-2.4	3407	0.018
Health worries about COVID-19, Mean ± SD	10.0 ±3.9	9.7 ±3.7	t=2.1	3300	0.032
Sleep problems (moderate severity), % (n)	58% (1105)	55% (800)	χ2=4.5	1	0.034
Perceived Stress (PSS-4 scale), Mean ± SD	8.0 ±2.1	7.4 ±2.4	t=7.4	2830	**<0.001**
Telemedicine for psychiatric complaints, % (n)	25% (177)	15% (76)	χ2=18	1	**<0.001**
Telemedicine for non-psychiatric complaints, % (n)	58% (416)	76% (389)	χ2=39	1	**<0.001**
Telemedicine for psychiatric and non-psychiatric complaints, % (n)	17% (123)	9.7% (50)	χ2=13	1	**<0.001**
Geographic Regional Mobility					
Average relative regional mobility between COVID-19 onset and survey completion date, Mean ± SD	76.7 ±19.6	85.0 ±17.5	t=-14	3648	**<0.001**
Psychiatric Outcomes					
Depression	34% (628)	24% (338)	χ2=40	1	**<0.001**
Anxiety	33% (621)	24% (353)	χ2=30	1	**<0.001**
PTSD	36% (428)	30% (282)	χ2=8.3	1	**0.004**
Prolonged grief	51% (87)	57% (99)	χ2=0.7	1	0.4
Suicidal ideation	19% (361)	10% (148)	χ2=54	1	**<0.001**

	Non-HCW N = 2007	HCW N = 1672	Statistic	df	P-value
Suicide attempt	0.3% (6)	<0.1% (1)	$\chi^2=1.5$	1	0.2
Suicidal ideation or behavior	20% (366)	10% (149)	$\chi^2=56$	1	**<0.001**

Table 3.

Predictors of psychiatric outcomes in adults and adolescents *excluding* health care workers exposure variables

Variables	Adults			Adolescents		
	β (98% CI)	P-value	Cohen's d	β (98% CI)	P-value	Cohen's d
Depression						
Sex, Females	0.137 (−0.35, 0.63)	0.581	0.017	−0.081 (−0.84, 0.67)	0.835	−0.011
Age	−0.026 (−0.04, −0.01)	<0.001	−0.113	−0.077 (−0.34, 0.18)	0.557	−0.03
Race, White	0.954 (0.28, 1.67)	0.007	0.083	−0.184 (−1.04, 0.68)	0.673	−0.021
Lifetime suicidal ideation or behavior	1.576 (0.72, 2.46)	<0.001	0.109	0.56 (−0.01, 1.13)	0.054	0.098
Loneliness since the COVID-19 pandemic (scale 1–10)	0.293 (0.22, 0.37)	<0.001	0.237	0.376 (0.24, 0.52)	<0.001	0.268
Rating of overall health (1-poor, 5-excellent), Mean ± SD	−0.531 (−0.78, −0.28)	<0.001	−0.128	−0.529 (−0.92, −0.15)	0.007	−0.137
Sleep problems (> moderate severity)	1.953 (1.55, 2.38)	<0.001	0.285	1.674 (1.04, 2.34)	<0.001	0.257
Perceived Stress (PSS-4 scale)	0.272 (0.17, 0.37)	<0.001	0.164	0.271 (0.13, 0.42)	<0.001	0.18
Marital Status, Married	0.46 (−0.89, −0.04)	0.032	0.066			
Subjective Social Status (Scale 1–10)	−0.209 (−0.31, −0.1)	<0.001	−0.12			
Telemedicine for non-psychiatric complaints	−0.797 (−1.16, −0.44)	<0.001	−0.133			
Race, Non-White: Lifetime suicidal ideation or behavior	1.093 (−2.05, −0.16)	0.023	0.07			
Video games since COVID-19 (hours per day)				0.014 (−0.16, 0.21)	0.883	0.007
Social media use since COVID-19 (hours per day)				0.115 (0.03, 0.21)	0.015	0.123
Race, White :Video games since COVID-19 (hours per day)				0.278 (0.01, 0.55)	0.043	0.103
Anxiety						
Sex, Females	−0.064 (−0.41, 0.29)	0.72	−0.007	−2.113 (−4.15, −0.05)	0.042	−0.098
Age	−0.021 (−0.03, −0.01)	<0.001	−0.107	0.051 (−0.22, 0.32)	0.709	0.018
Race, White	−0.268 (−0.63, 0.1)	0.147	−0.027	0.395 (−0.74, 1.56)	0.499	0.033
Subjective Social Status (Scale 1–10)	−0.132 (−0.19, −0.07)	<0.001	−0.079	−0.239 (−0.44, −0.04)	0.019	−0.113
Loneliness since the COVID-19 pandemic (scale 1–10)	0.112 (0.07, 0.16)	<0.001	0.093	0.57 (0.41, 0.74)	<0.001	0.325
Health worries about COVID-19	0.232 (0.2, 0.26)	<0.001	0.269	−0.031 (−0.23, 0.17)	0.76	−0.015
Perceived Stress (PSS-4 scale)	0.311 (0.25, 0.37)	<0.001	0.181	0.492 (0.32, 0.68)	<0.001	0.257
Chronic medical diseases	0.551 (0.33, 0.77)	<0.001	0.089			
Lifetime suicidal ideation or behavior	−0.273 (−0.77, 0.22)	0.277	−0.02			

Variables	Adults			Adolescents		
	β (98% CI)	P-value	Cohen's d	β (98% CI)	P-value	Cohen's d
Household conflict increased since COVID-19 (1 high, 5 low)	−0.115 (−0.6, 0.37)	0.64	−0.009			
Sleep problems (> moderate severity)	1.396 (1.16, 1.64)	<0.001	0.21			
Sex, Females : Lifetime suicidal ideation or behavior	0.642 (0.11, 1.18)	0.019	0.043			
Race, White : Household conflict increased since COVID-19 (1 high, 5 low)	0.705 (0.18, 1.23)	0.009	0.048			
Lifetime actual suicide attempt				2.279 (1.14, 3.65)	<0.001	0.176
Suspected exposure to COVID-19				0.835 (0.18, 1.51)	0.014	0.119
Internet use since COVID-19 (hours per day)				−0.004 (−0.11, 0.11)	0.947	−0.003
Rating of overall health (1-poor, 5-excellent)				−0.691 (−1.1, −0.3)	0.001	−0.164
Race, White : Internet use since COVID-19 (hours per day)				0.163 (0.03, 0.3)	0.017	0.115
Sex, Females : Health Worries about COVID-19				0.298 (0.07, 0.53)	0.01	0.124
PTSD						
Sex, Females	−1.749 (−3.4, 0)	0.043	−0.053	6.353 (0.95, 13.51)	0.041	0.214
Age	0.012 (−0.02, 0.04)	0.377	0.023	−0.469 (−1.27, 0.25)	0.219	−0.129
Race, White	−2.589 (−4.04, −1.24)	<0.001	−0.095	−0.714 (−2.21, 0.71)	0.331	−0.102
Total Household income in the past 12 months	0.027 (−0.14, 0.19)	0.751	0.008	0.718 (0.04, 1.6)	0.064	0.194
Loneliness since the COVID-19 pandemic (scale 1–10)	0.142 (0.09, 0.2)	<0.001	0.138	0.529 (0.22, 0.91)	0.002	0.322
Subjective Social Status (Scale 1–10)	−0.476 (−0.72, −0.26)	<0.001	−0.107			
Sleep problems (moderate severity)	0.839 (0.56, 1.13)	<0.001	0.152			
Household conflict increased since COVID-19 (1 high, 5 low)	0.338 (0.08, 0.6)	0.011	0.067			
Perceived Stress (PSS-4 scale)	−0.044 (−0.23, 0.15)	0.647	−0.012			
Chronic medical diseases	−0.475 (−1.26, 0.31)	0.233	−0.031			
Age : Total Household income in the past 12 months	−0.004 (−0.01, 0)	0.031	−0.057			
Race, White : Subjective Social Status (Scale 1–10)	0.437 (0.21, 0.69)	<0.001	0.093			
Age : Chronic medical diseases	0.02 (0, 0.04)	0.021	0.06			
Sex (Female) : Perceived Stress (PSS-4 scale)	0.244 (0.03, 0.45)	0.02	0.061			
Lifetime suicidal ideation				3.066 (1.7, 4.76)	<0.001	0.42
Health worries about COVID-19				0.24 (0.04, 0.47)	0.025	0.236
Sex, Female : Total Household income in the past 12 months				−0.931 (−1.88, −0.19)	0.027	−0.232

Variables	Adults			Adolescents		
	β (98% CI)	P-value	Cohen's d	β (98% CI)	P-value	Cohen's d
Suicidal ideation or behavior						
Sex, Females	0.024 (−0.35, 0.39)	0.9	0.002	0.643 (−0.2, 1.46)	0.125	0.076
Age	0 (−0.01, 0.01)	0.924	0.002	−0.217 (−0.55, 0.1)	0.191	−0.064
Race, White	−0.352 (−0.76, 0.04)	0.085	−0.032	0.227 (−0.5, 0.93)	0.532	0.031
Lifetime suicidal ideation	6.222 (5.49, 7.16)	**<0.001**	0.275	6.685 (5.09, 9.6)	**<0.001**	0.314
Loneliness since the COVID-19 pandemic (scale 1–10)	0.219 (0.16, 0.28)	**<0.001**	0.131			
Perceived Stress (PSS-4 scale)	0.14 (0.05, 0.23)	**0.002**	0.057			
Exposure to media reporting on COVID-19 (hours per day)				0.132 (0.03, 0.25)	**0.019**	0.115
Prolonged grief						
Sex, Females	0.388 (−0.25, 1.03)	0.232	0.071	−3.337 (−8.3, −0.02)	0.101	−0.25
Age	−0.012 (−0.03, 0.01)	0.219	−0.073	1.709 (0.61, 3.55)	**0.017**	0.365
Race, White	−0.61 (−1.25, 0.01)	0.057	−0.113	−2.848 (−6.97, −0.17)	0.084	−0.264
Loneliness since the COVID-19 pandemic (scale 1–10)	0.146 (0.04, 0.26)	**0.008**	0.156	1.013 (0.4, 1.99)	**0.009**	0.4
Number of people you know who died due to COVID-19 (Mean ± SD)	0.158 (0.04, 0.31)	**0.023**	0.134			
Relationship to contact died due to COVID-19, Friend or other	1.227 (0.49, 2.03)	**0.002**	0.186			
Relationship to contact died due to COVID-19, Spouse or first degree relative	2.968 (1.19, 5.93)	**0.007**	0.16			
Sleep problems (> moderate severity)	0.892 (0.33, 1.47)	**0.002**	0.182			
Health worries about COVID-19				0.815 (0.3, 1.69)	**0.016**	0.367