Inequities Laid Bare: The Mental Health of Young Adults in Rhode Island During the COVID-19 Pandemic

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ABSTRACT

This study documents disparities in the mental health burden of young adults in Rhode Island during the COVID-19 pandemic as it pertains to essential worker status, sexual orientation, gender identity, and childhood trauma. A cross-sectional web-based survey of young adults aged 18 to 25 years conducted between May and October of 2020 assessed anxiety symptoms, depressive symptoms, and thoughts of suicide. In fully adjusted regression models, (n =528 young adults) being an essential worker, a sexual minority, having lower relative SES, and having more adverse childhood experiences were significantly associated with negative mental health outcomes. In models adjusted for individual ACEs, exposure to mental illness in the household, physical violence between adults in the household, emotional abuse, and sexual abuse were independently associated with all three outcomes. Young adults most vulnerable and stigmatized in the community are also those who are most severely affected in terms of mental health.

KEYWORDS: COVID-19, mental health, Rhode Island, young adults

INTRODUCTION

The disruption to daily life, economic struggles, and generalized fear from the coronavirus disease (COVID-19) pandemic have taken a toll on the US population.[1] Dramatic increases in depression and anxiety diagnoses have been reported in the general U.S. adult population,[2,3] especially among young adults.[4] Young adults ages 18 to 25 years old bear the greatest burden of mental health outcomes.[5] The transition to adulthood is a vulnerable developmental period in which long-term risk behaviors and mental health trajectories are established.[6] In 2019, young adults suffered disproportionately from depression and anxiety, 21% and 19.5% respectively, compared to the general adult population (18.5% and 15% respectively).[7] The same holds for suicidal thoughts, with adult prevalence at 4.8%, but 11.8% among young adults.[8] Females generally have higher risk for depression and anxiety symptoms than males,[7] and sexual and gender minorities have higher risk for poor mental health symptoms and suicidal ideation.[9] Associations between adverse childhood experiences (ACEs) and several adult mental health outcomes are well documented in the literature.[10,11] Individual traumatic experiences, such as childhood physical, sexual, or verbal abuse,[11] or the death a family member,[12] have been linked to increased risk for posttraumatic stress, depression, and anxiety. Community trauma from disasters, accidents, violence, and war have also been linked to posttraumatic stress, depression, and anxiety.[10] The COVID-19 pandemic, with its shared experience of uncertainty, isolation, and hardship, is another type of community trauma.

In March 2020, policies were put in place across the U.S. to restrict all non-essential travel and person-to-person contact, while also limiting the size of social gatherings. This early period of the pandemic was marked by a shift to learning and working remotely, wearing masks in public, limiting business capacity and operations, and a shortage in common household products.[13] Essential workers were at particular risk to stressors during COVID-19 and are those who conduct operations and services that are essential for critical infrastructure operations.[14] Almost overnight, many essential workers in low-wage, high-risk occupations had to cope with coronavirus-related stress, due to uncertainty surrounding the disease. In addition, essential workers faced an increased risk of virus exposure, worry about infecting their family members, dealing with a low supply of personal protective equipment (PPE), concerns over unsafe work environments, and longer work hours.[15]

Young adults, racial/ethnic minorities, and essential workers have suffered a disproportionate burden of the mental health consequences of the pandemic.[2,16] Given that COVID-19-related stressors may not be evenly distributed across the U.S. population, this study examines inequities in the mental health burden in young adults living in Rhode Island during the COVID-19 pandemic. We expand on previous work that examined US college students' perceived stress and anxiety by gender, sexual orientation, race/ethnicity, and income during the COVID-19 pandemic.[17] The present study assessed anxiety symptoms, depressive symptoms, and thoughts of suicide in a diverse sample of young adults ages 18 to 25 during the COVID-19 pandemic and compared participants by essential worker status, gender identity, sexual orientation, and childhood trauma.

METHODS

Sample

The Rhode Island Young Adult Survey (RIYAS) is a non-probability sample of young adults aged 18-25 years residing for at least part of the year in Rhode Island. Web-based surveys were administered in both English and Spanish. Recruitment included paid Instagram ads targeted 18-25-year-old users georeferenced in Rhode Island. Supplemental recruitment included posts to Rhode Island community Facebook pages and email recruitment to three Rhode Island institutions of higher education. Data collection occurred between May and October 2020. Surveys took an average of 15 minutes to complete, and respondents received a $10 electronic Amazon gift card. A total of 546 eligible young adults completed the survey. Eighteen respondents (3.3%) were excluded from the present analyses due to invalid race/ethnicity information, leaving an analytic sample of N=528. This study was approved by the Johnson & Wales University Institutional Review Board.

Measures

Primary outcomes: Depressive symptoms were measured by the Center for Epidemiologic Studies Short Depression Scale (CES-D-10), a screening tool used to identify past week depressive symptoms.[18] Both the validity and reliability of the scale has been previously established.[19] The scale includes 10 items with responses on a 4-point Likert scale. Total continuous depressive symptom scores could range from 0 to 30 with higher scores suggesting greater severity of symptoms. A cut-off of 10 or higher was indicative of depressive disorder.[20] Anxiety symptoms were measured by the Generalized Anxiety Disorder-7 (GAD-7), a screening tool used to identify past two week anxiety symptoms.[21] Validity and reliability has been demonstrated in adolescents and the general adult population.[21,22] The scale includes 7 items with response options on a 4-point Likert scale that ranges from "not at all" to "nearly every day." Responses were scored from 0 to 3 for all items with total continuous anxiety symptoms scores ranging from 0 to 21. Higher scores suggest greater severity of symptoms. A cut-off of 10 or higher was used to identify those with likely anxiety disorder.[23] Suicidal ideation was measured as a binary variable based on a "yes" or "no" response to the question, "During the past 12 months, did you ever seriously consider attempting suicide?"

Primary Exposures: Essential worker status was determined by a yes or no response to the question, "At any point since the COVID-19 national emergency, have you been considered an "essential worker?" ACEs were measured by the Behavioral Risk Factor Surveillance System module, which was adapted from the original CDC-Kaiser ACE Study.[10] This module consists of 11 items related to experiences of abuse (emotional, physical, or sexual) and household challenges (e.g, divorce, mental illness, substance abuse) occurring before the age of 18 years. The 11 items were scored consistent with scoring instructions ranging from 0 to 8, and the 8 individual ACEs were examined.

Sociodemographic characteristics: Relative socioeconomic status (SES) was measured using the MacArthur Scale of Subjective Social Status (MacArthur SSS), which assesses a person's perceived rank relative to others in their community, where 1 indicates being the "worst off" and 10 indicates being the "best off."[24] Sexual orientation was dichotomized as heterosexual or a sexual minority. Race/ethnicity was dichotomized as being white, non-Hispanic or not. Gender was categorized as female, male, or gender minority. Other important sociodemographic covariates included age, student status and employment.

Statistical Analysis

Descriptive and bivariate statistics, namely chi-square, t-tests, and crude logistic models, assessed relationships between the independent variables and each of the three primary outcomes. All variables were retained in the adjusted logistic regression models. Associations between covariates and each outcome were examined in two sequential steps. First, an ACE score ranging between 0 and 8 was regressed on each outcome. Second, the *unique* association between each ACE and study outcomes was examined. Statistical significance was assumed at a threshold of p<0.05. All statistical analyses were conducted using Stata, version 15.[25]

RESULTS

Of the included 528 young adults, 70.8% (N=374) were female, the majority were white, non-Hispanic (68.4%) and heterosexual (73.9%). The mean age was 20.5 years old and mean ACE score was 2.19. Most respondents were employed (59.5%) and enrolled in school (70.5%). More than one-third of the young adults (36.2%) identified as being an essential worker during the COVID-19 pandemic. Essential workers were more likely to be employed (p<0.001), more likely to be enrolled in school (p=0.023), more likely to have anxiety symptoms (p=0.005), and report considering suicide in the past year (p=0.014). (See **Table 1.**)

Depressive Symptoms: Crude logistic regressions for depressive symptoms suggest that being a gender minority, a sexual minority, having lower relative SES, and a higher adverse childhood experiences score were all significantly associated with increased odds of depressive symptoms. In the fully adjusted model, these associations remained significant, except the association between being a gender minority and depressive symptoms (p=0.861). The crude association between being an essential worker and depressive symptoms was marginally significant in the unadjusted model (p=0.064) but was no longer significant in the fully adjusted model (p=0.130). (See **Table 2.)**

Anxiety Symptoms: Crude logistic regressions for anxiety

Table 1. Sociodemographic Characteristics of the 2020 Rhode Island Young Adult Survey and Essential Workers

Variable	RIYAS n = 528 (%)	Essential Workers n = 191 (%)	P-value
Essential Worker	191 (36.2)		
Age (mean, SD)	20.5 (2.24)	20.7 (2.15)	0.362
Gender			0.588
Female	374 (70.8)	133 (69.6)	
Male	132 (25.0)	51 (26.7)	
Gender Minority	22 (4.2)	7 (3.7)	
White, non-Hispanic	361 (68.4)	131 (68.6)	0.936
Sexual Orientation			0.653
Heterosexual	390 (73.9)	145 (75.9)	
Sexual Minority	138 (26.1)	46 (24.1)	
Employed	314 (59.5)	153 (80.1)	**<0.001**
Enrolled in School	372 (70.5)	146 (76.4)	**0.023**
Relative SES (mean, SD)	6.30 (1.69)	6.21 (1.68)	0.328
Depressive Symptoms	233 (44.1)	93 (48.7)	0.112
Anxiety Symptoms	165 (31.3)	74 (38.7)	**0.005**
Considered Suicide	64 (12.1)	32 (16.8)	**0.014**
ACEs Score (mean, SD)	2.19 (2.06)	2.39 (2.15)	0.085

P-values were determined by t-tests for continuous variables and chi-square tests for categorical variables

Table 2. Crude logistic regressions on depressive symptoms, anxiety symptoms, and having considered suicide in the 2020 Rhode Island Young Adult Survey

	Depressive Symptoms		Anxiety Symptoms		Considered Suicide	
Variables	OR	95% CI	OR	95% CI	OR	95% CI
Essential Worker	1.34	0.93, 1.91	**1.71**	**1.17, 2.49**	**1.92**	**1.13, 3.25**
Age	0.97	0.90, 1.05	0.97	0.90, 1.06	0.96	0.86, 1.08
Male	0.72	0.48, 1.09	0.64	0.41, 1.01	1.04	0.56, 1.95
Gender Minority	**3.27**	**1.25, 8.54**	**3.02**	**1.26, 7.26**	**4.64**	**1.84, 11.73**
Non-white or Hispanic	0.94	0.65, 1.36	0.54	0.36, 0.83	1.06	0.61, 1.86
Sexual Minority	**4.42**	**2.90, 6.73**	**3.34**	**2.22, 5.01**	**5.32**	**3.08, 9.18**
Employed	0.86	0.61, 1.23	1.20	0.82, 1.75	1.07	0.63, 1.83
Enrolled in School	1.07	0.73, 1.56	1.08	0.72, 1.62	1.30	0.71, 2.36
Relative SES	**0.68**	**0.60, 0.76**	**0.75**	**0.66, 0.84**	**0.64**	**0.54, 0.75**
ACEs score	**1.39**	**1.27, 1.54**	**1.32**	**1.21, 1.45**	**1.38**	**1.23, 1.56**

Reference group: Essential worker = no; Gender=female; Race/Ethnicity= Non-Hispanic White; Sexual orientation = Heterosexual; Employed = no; Enrolled in school = no.

Table 3. Adjusted logistic regressions on depressive symptoms, anxiety symptoms, and having considered suicide in the 2020 Rhode Island Young Adult Survey

	Depressive Symptoms		Anxiety Symptoms		Considered Suicide	
Variables	AOR	95% CI	AOR	95% CI	AOR	95% CI
Essential Worker	1.39	0.91, 2.13	**1.75**	**1.12, 2.72**	**2.11**	**1.12, 3.97**
Age	0.96	0.86, 1.06	0.95	0.86, 1.06	0.95	0.81, 1.11
Male	0.86	0.55, 1.36	0.70	0.43, 1.15	1.37	0.68, 2.75
Gender Minority	1.11	0.35, 3.51	1.18	0.42, 3.33	1.61	0.52, 4.95
Non-white or Hispanic	0.72	0.47, 1.11	**0.40**	**0.25, 0.65**	0.90	0.47, 1.71
Sexual Minority	**2.89**	**1.80, 4.64**	**2.19**	**1.36, 3.50**	**3.52**	**1.88, 6.58**
Employed	0.82	0.54, 1.26	1.07	0.68, 1.68	0.93	0.48, 1.77
Enrolled in School	1.03	0.62, 1.69	0.98	0.59, 1.66	1.43	0.68, 3.02
Relative SES	**0.74**	**0.65, 0.84**	**0.78**	**0.68, 0.89**	**0.72**	**0.60, 0.88**
ACEs score	**1.27**	**1.14, 1.40**	**1.21**	**1.09, 1.34**	**1.22**	**1.06, 1.40**

Reference group: Essential worker = no; Gender=female; Race/Ethnicity= Non-Hispanic White; Sexual orientation = Heterosexual; Employed = no; Enrolled in school = no.

Table 4. Adjusted logistic regressions on depressive symptoms, anxiety symptoms, and having considered suicide controlling for individual Adverse Childhood Experiences in the 2020 Rhode Island Young Adult Survey

Variables	Depressive Symptoms		Anxiety Symptoms		Considered suicide	
Significant ACEs	AOR	95% CI	AOR	95% CI	AOR	95% CI
Abuse of child						
Emotional abuse	**3.09**	**2.08, 4.58**	**3.03**	**1.99, 4.64**	**2.27**	**1.20, 4.28**
Sexual abuse	**1.98**	**1.11, 3.52**	**2.58**	**1.46, 4.56**	**2.25**	**1.11, 4.55**
Household Dysfunction						
Domestic violence	**2.34**	**1.39, 3.94**	**1.67**	**1.01, 2.80**	**2.12**	**1.11, 4.05**
Household member with mental illness	**2.67**	**1.79, 3.99**	**2.44**	**1.61, 3.70**	**1.90**	**1.03, 3.50**

Models controlled for essential worker (reference = no), age, gender (reference = female), race/ethnicity (reference = non-Hispanic white), sexual orientation (reference = heterosexual), employed (reference = no), enrolled in school (reference = no), relative SES, and individual ACEs: Abuse (physical, emotional, sexual); Household dysfunction (domestic violence, mental illness of household member, substance abuse of household member, divorce or separation by parent, incarceration of household member).

symptoms show being an essential worker, a gender minority, a sexual minority, having lower relative SES, and a higher ACE score were all significantly associated with increased odds of anxiety symptoms. In the fully adjusted model, these associations remained significant, except the association between being a gender minority and anxiety symptoms (p=0.758). Being non-white or Hispanic became significantly associated with decreased odds of anxiety symptoms in the multiple logistic regression analysis (p<0.001).

Considered Suicide: Crude logistic regressions for having considered suicide reveal being an essential worker, a gender minority, a sexual minority, having lower relative SES, and a higher ACE score were all associated with increased odds of having considered suicide. In the fully adjusted model, these associations remained significant, except the association between being a gender minority and having considered suicide (p=0.406). (See **Table 3**.)

Individual ACES and mental health outcomes: In adjusted models for individual ACEs, exposure to mental illness in the household, physical violence between adults in the household, emotional abuse of the child and sexual abuse of the child were independently associated with all three mental health outcomes, controlling for all other covariates. The most frequently reported ACEs were emotional abuse of the child (49.4%), mental illness of a household member (40.5%), divorce or separation by parent (31.4%), and substance abuse by a household member (31.3%), followed by physical abuse of the child (20.6%), domestic violence (18.6%), sexual abuse of the child (14.8%), and incarceration of a household member (12.1%). (See **Table 4**.)

DISCUSSION

Findings from the RIYAS study provide insights into the mental health of young adults in Rhode Island during the early months of the pandemic. Prior national[3,27] and area-specific studies[30-31] have suggested that the prevalence of depression, anxiety and suicide ideation among young adults has increased during COVID-19. Our study, which was conducted early on in the pandemic, found a slightly lower prevalence of depressive or anxiety symptoms, and thoughts of suicide among young adults than results from a contemporaneous national survey administered by the CDC.[28] For example, in the RIYAS there were lower reports of depressive or anxiety symptoms (48% versus 63% respectively), and suicidal ideation (12.1% versus 19.9%).[28] In contrast, a study of young adults found a lower prevalence of depression (25.2%) and anxiety symptoms (29.8%) in April/May 2020[30] than those reported here.

While others have examined mental health in U.S. young adults during COVID-19, this study's unique contribution is its focus on inequities among young adults related to sexual orientation and gender identity, essential worker status, and childhood trauma. Our findings build on two area-specific studies that examined the impact of the COVID-19 pandemic on the mental health of adolescents and young adults (aged 12–22) living in Long Island, New York,[31] and in a community sample of young adults (aged 22–29) living in Seattle, Washington.[30] Neither study, however, controlled for measures of disparities (sexual orientation, gender identity, and measures of childhood trauma). Furthermore, we expanded on previous work that examined inequalities in college students' perceived stress and generalized anxiety during the pandemic that found that sexual minority, transgender, and gender diverse participants reported worse mental health than their cisgender, heterosexual peers.[17] Similarly, our results show that being a sexual minority was associated with increases in all poor mental health outcomes during the pandemic. The same was true for gender minorities in the crude models, but the full models were unable to detect the association likely due to issues of limited power. Prior literature has clearly established that sexual and gender minorities are at an increased risk of poor mental health outcomes,[32] likely because sexual minorities face unique and hostile stressors (e.g., experiences of prejudice, discrimination, and perceived stigma) related to their identity resulting in internalized negative attitudes and, in turn, mental health symptoms.

Relative SES was associated with all mental health outcomes, showing that young adults of higher relative SES were more protected from experiencing depression, anxiety symptoms and suicidal ideation. This is consistent with numerous studies that find indicators of low SES are directly associated with increased mental health problems in children and adults,[33] which likely exists due to various mechanisms via differences in education, occupation, household income per capita and other financial resources, social hierarchy, and underlying race/ethnicity differences.[34] While those with lower SES generally have higher risk of poor mental health, this risk is likely compounded by the additional economic instability posed by the pandemic, disruption to education, and increased social isolation.

Being an essential worker was significantly associated with increased symptoms of generalized anxiety and considering suicide, but was only marginally significant for depression, likely due to small sample size. Essential workers were required to continue to physically go to work, increasing their risk of virus exposure, infecting their families, dealing with a low supply of PPE and concerns over unsafe working conditions, all while their non-essential counterparts were able to work or learn from home.[15] The population of young adults continuing to work as essential workers despite the increased risk were likely less financially secure and dependent upon keeping those jobs.

Our study provides novel data about the impact of ACEs on young adults' mental health during the pandemic. Young adults with more adverse childhood trauma had increased risk of poor mental health across all outcomes, even after

controlling for other measures of inequalities. ACEs are known to be strongly associated with poor mental health in young adulthood, and a dose-response relationship with poor mental health has been documented.[10] Toxic stress from traumatic childhood experiences can alter brain development and impact long-term maladaptive coping and stress response.[35] The effects of stress on mental health are also cumulative, whereby chronic activation of the stress response can lead to dysfunction across various physiological systems.[36] This suggests that, while adults with a history of ACEs are already at increased risk for poor mental health, this same population may have an even harder time coping with the stresses and disruption of the COVID-19 pandemic. Exposure to early life trauma may continue to affect the mental health of young adults, even after the global COVID-19 pandemic wanes, given that the pandemic has magnified social and economic inequities and led to a further increase in the burden of ACEs.[37]

While this study is a novel contribution to the literature, there are several limitations. This was a cross-sectional study and causality cannot be determined. Recruitment was done via a convenience sample, and therefore the sample may not be representative of RI young adults. All data collection was via self-reports and recall and social desirability biases may be a concern. There were no diagnostic evaluations for anxiety or depressive disorders; however, clinically validated screening instruments were used to assess symptoms and robust sensitivity analyses confirmed the present findings. Finally, there is likely limited power to detect other significant associations due to the small sample size.

CONCLUSIONS

Among young adults, those who are already most vulnerable and stigmatized in the community are also those who are most severely affected in terms of mental health. Well-understood mental health disparities have only been further exacerbated by the pandemic, and these disadvantaged populations need more support than ever.

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