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Changes in Young Latino Adults' Depressive and Anxious Symptoms During the COVID-19 Pandemic and Related Stressors

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A B S T R A C T

Purpose: Youth are vulnerable to poor mental health outcomes during emerging adulthood. This study examined COVID-19 pandemic effects among young Latino adults and changes in anxiety and depressive symptoms.
Methods: Using data from 309 individuals, predominantly of Mexican origin, we examined anxiety and depressive symptoms (before and during COVID) to determine whether mental health worsened during this period. We also examined associations between specific pandemic-related stressors and mental health. Analyses used paired T-tests and linear regressions. Participant sex was included as a moderator. We corrected for multiple comparisons using the Benjamini–Hochberg method.
Results: During the 2-year time period, depressive symptoms increased while anxiety symptoms decreased. There were no significant stressor by sex interactions; however, exploratory analyses signaled that pandemic-related stressors had stronger mental health effects for young women.
Discussion: Young adults' depressive and anxiety symptoms changed during the pandemic, and pandemic-related stressors were associated with increases in mental health symptoms.

IMPLICATIONS AND CONTRIBUTIONS

Results from the current study demonstrate the impact of the COVID-19 pandemic on mental health among Latino young adults, a population that has received scarce attention in the literature to date. Interventions focused on specific pandemic-era stressors could help mitigate deleterious mental health outcomes.

Emerging adulthood is a period of heightened vulnerability for mental health problems [1]. The COVID-19 pandemic disrupted educational and employment plans [2] and negatively affected mental health [3,4]. Research with U.S. adults shows that Latinos, low-income populations, and women experienced disproportionate pandemic-related impacts [5–7]. However, while depression and anxiety surged early in the pandemic [8,9], symptoms abated for many over time [10]. Individual stressors experienced during the pandemic likely shaped impacts on mental health [9,11,12].

We leveraged a longitudinal study of rural Latino youth to assess changes in mental health during the first ~1.5 years of the pandemic. We examined associations between pandemic-related stressors and mental health changes and explored sex differences.

Methods

Participants were U.S.-born Latino young adults (60% female) in the Center for the Health Assessment of Mothers and Children of Salinas (CHAMACOS) study, an ongoing longitudinal study in the agricultural Salinas Valley in California [13]. Of these youth, 89% had a mother born in Mexico, 10% in the US, and 1% elsewhere. Between June 2018 and March 2020, we collected in-person

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Table 1
Depression and anxiety scores for young adults completing the pre-COVID and COVID-era questionnaires (n = 309)

	All participants (n = 309)			Males (n = 124)			Females (n = 185)		
	Pre-COVID (June 2018-March 2020) N (%) or Mean ± SD	COVID-Era (June-Nov 2021) N (%) or Mean ± SD	p_{diff}	Pre-COVID (June 2018-March 2020) N (%) or Mean ± SD	COVID-Era (June-Nov 2021) N (%) or Mean ± SD	p_{diff}	Pre-COVID (June 2018-March 2020) N (%) or Mean ± SD	COVID-Era (June-Nov 2021) N (%) or Mean ± SD	p_{diff}
Age (years)	18.1 ± 0.3	20.4 ± 0.5	<0.01	18.1 ± 0.2	20.4 ± 0.5	<0.01	18.1 ± 0.3	20.4 ± 0.6	<0.01
BASC Depression (raw score)	5.1 ± 5.9	6.2 ± 6.7	<0.01	4.2 ± 5.8	5.1 ± 6.5	<0.01	5.7 ± 6.0	7.0 ± 6.7	0.09
BASC Anxiety (raw score)	12.8 ± 7.3	11.0 ± 8.0	<0.01	10.4 ± 7.0	7.9 ± 7.0	<0.01	14.3 ± 7.1	13.1 ± 8.0	<0.01

"pre-COVID" data from 478 participants. For 309 participants, we collected "COVID-era" data remotely between June and November 2021. Analysis is limited to those with data at both timepoints. At both timepoints, we administered the depression (12 items) and anxiety (13 items) subscales of the Behavioral Assessment System for Children-2 Self-Report of Personality Scale-Adolescent (BASC-2 SRP-A) [14], and used raw scores to compare symptomatology. Scores ranged from 0–28 for depression and 0–35 for anxiety. In the COVID-era questionnaire, participants answered questions about economic, educational, social, and family stressors during the pandemic. These included items developed by the authors and those adapted from unpublished COVID scales.

We used paired t-tests to examine changes in mental health between the two timepoints. Using the difference in scores as the dependent variable, we conducted unadjusted linear regression to assess whether changes were associated with pandemic-related stressors, examining each stressor separately. We ran separate models for sex × stressor interactions. We corrected for multiple comparisons using the Benjamini–Hochberg method with an overall false discovery rate of 0.05. Analyses were conducted using Stata Version 17 [15]. Research was approved by UC Berkeley's Committee for Protection of Human Subjects.

Results

At pre-COVID, participants were 18–19.7 years old; 90.6% lived with parents, 95.4% of families lived at or below 200% of the poverty line [16], and 26.7% lived with 2 + people per bedroom, indicating household crowding. At COVID-era assessment, participants were 19.3–21.5 years old; 85.8% lived with parents, 89.5% of families were below 200% of poverty, and 22.3% reported crowding. Average time between assessments was 2.3 years (SD ± 0.5).

Depressive symptoms increased from pre-COVID to COVID-era, while anxiety symptoms decreased (Table 1). Depressive symptoms increased in men (marginal increase in women), and anxiety scores decreased for both men and women.

Pandemic-related stressors were associated with changes in symptoms (Table 2). Although sex by stressor interactions were not significant at the $p < .05$ level, we present results from exploratory analyses conducted separately by sex. More household arguing was associated with increased depressive symptoms in the full sample and for women separately. Less physical activity and over-/unhealthy eating were associated with increased depressive symptoms for women only. Higher satisfaction with social relationships was associated with decreased depressive symptoms, in the full sample and for women.

Although anxiety symptoms decreased overall, relative increases in anxiety were associated with pandemic-related stressors. More household arguing, less physical activity, and over-/unhealthy eating were related to increased anxiety, in the full sample and in women. Several factors, including satisfaction with social relationships, being in a romantic relationship, experiencing a loved one's illness/death, and worry about the pandemic's impact on educational or professional goals, showed unadjusted associations with anxiety; however, these were not significant after correcting for multiple comparisons.

Discussion

While past studies examined immediate pandemic effects on young people's mental health [2,3,17], this is the first known

Table 2
Unadjusted associations of pandemic-related stressors with changes in depression and anxiety scores from pre-COVID to Summer/Fall 2021

Covariate	N (%) or M ± SD	Depression			Anxiety		
		All participants β (95% CI)	Males β (95% CI)	Females β (95% CI)	All participants β (95% CI)	Males β (95% CI)	Females β (95% CI)
Sex							
Male	124 (40.1)	Ref	N/A	N/A	Ref	N/A	N/A
Female	185 (59.9)	0.51 (−0.86, 1.89)			1.20 (−0.32, 2.72)		
Vaccination status[a]							
Unvaccinated	113 (36.6)	Ref	Ref	Ref	Ref	Ref	Ref
Vaccinated	196 (63.4)	−0.24 (−1.63, 1.16)	0.20 (−1.83, 2.23)	−0.66 (−2.60, 1.28)	0.26 (−1.29, 1.81)	1.50 (−0.99, 4.00)	−0.89 (−2.89, 1.11)
Food security, late COVID[b]							
Secure	248 (80.3)	Ref	Ref	Ref	Ref	Ref	Ref
Insecure	61 (19.7)	1.02 (−0.66, 2.71)	0.93 (−1.80, 3.66)	1.01 (−1.17, 3.19)	−0.19 (−2.07, 1.69)	−0.46 (−3.84, 2.92)	−0.22 (−2.48, 2.04)
Satisfaction with social relationships[c]	3.1 ± 1.0	−0.91 (−1.58, −0.24)*	−0.39 (−1.40, 0.61)	−1.24 (−2.15, −0.34)*	−0.92 (−1.67, −0.18)	−0.81 (−2.05, 0.42)	−0.92 (−1.87, 0.03)
Currently in a relationship[d]							
No	193 (62.5)	Ref	Ref	Ref	Ref	Ref	Ref
Yes	116 (37.5)	−0.44 (−1.83, 0.95)	−0.97 (−3.16, 1.22)	−0.25 (−2.09, 1.58)	1.13 (−0.41, 2.67)	−0.73 (−3.44, 1.99)	1.97 (0.10, 3.84)
Loved one became seriously ill or died from COVID[e]							
No	190 (61.9)	Ref	Ref	Ref	Ref	Ref	Ref
Yes	117 (38.1)	0.48 (−0.92, 1.87)	0.24 (−1.94, 2.42)	0.53 (−1.32, 2.38)	1.76 (0.22, 3.30)	2.56 (−0.09, 5.21)	1.10 (−0.80, 3.01)
Loved one became seriously ill or died from something other than COVID[e]							
No	217 (72.3)	Ref	Ref	Ref	Ref	Ref	Ref
Yes	83 (27.7)	1.07 (−0.47, 2.60)	0.40 (−2.21, 3.01)	1.32 (−0.63, 3.27)	1.96 (0.27, 3.65)	2.57 (−0.60, 5.75)	1.46 (−0.54, 3.47)
Trouble paying rent, mortgage, or bills during COVID[e]							
No	209 (70.4)	Ref	Ref	Ref	Ref	Ref	Ref
Yes	88 (29.6)	0.88 (−0.64, 2.41)	0.49 (−2.05, 3.04)	1.01 (−0.93, 2.95)	1.72 (0.03, 3.41)	3.32 (0.25, 6.38	0.72 (−1.30, 2.74)
More arguing in household than before COVID[e]							
No	212 (73.4)	Ref	Ref	Ref	Ref	Ref	Ref
Yes	77 (26.6)	2.88 (1.35, 4.41)*	2.98 (0.10, 5.87)	2.82 (0.94, 4.71)*	3.35 (1.61, 5.09)*	2.48 (−1.12, 6.07)	3.50 (1.50, 5.51)*
Worry the pandemic will affect ability to achieve educational/professional goals[f]	3.8 ± 1.7	0.31 (−0.11, 0.72)	0.39 (−0.21, 0.98)	0.23 (−0.34, 0.80)	0.37 (−0.09, 0.83)	0.02 (−0.72, 0.77)	0.62 (0.03, 1.21)
Received less medical care than usual due to the pandemic[g]							
No	249 (80.6)	Ref	Ref	Ref	Ref	Ref	Ref
Yes	60 (19.4)	0.17 (−1.53, 1.87)	0.50 (−1.96, 2.97)	−0.04 (−2.39, 2.31)	0.39 (−1.50, 2.28)	1.48 (−1.56, 4.52)	−0.33 (−2.75, 2.09)
Less physical activity or exercise during pandemic[h]							
No	155 (53.6)	Ref	Ref	Ref	Ref	Ref	Ref
Yes	134 (46.4)	1.72 (0.34, 3.10)	0.17 (−1.92, 2.25)	2.60 (0.76, 4.45)*	2.75 (1.19, 4.31)*	1.63 (−1.12, 4.38)	3.27 (1.38, 5.16)*
Overate or ate more unhealthy foods[h]							
No	130 (44.8)	Ref	Ref	Ref	Ref	Ref	Ref
Yes	160 (55.2)	1.65 (0.26, 3.04)	0.11 (−1.99, 2.21)	2.60 (0.75, 4.44)*	2.25 (0.70, 3.80)*	0.92 (−1.76, 3.60)	3.03 (1.14, 4.92)*

[a] Question source: our own set of questions on number, type, and date(s) of COVID vaccine shots. Available from the authors upon request. Participants were classified as vaccinated if they had received any COVID vaccine shots.
[b] Scale source: Six-item short form of the USDA food security survey module (Nord, 2014).
[c] Question source: PROMIS Scale v1.2 − Global Health, item 5 (PROMIS Health Organization and PROMIS Cooperative Group, 2010−2016). Ordinal scale from 1 to 5; higher scores indicate higher satisfaction with social relationships.
[d] Question source: questions on relationship status provided via personal communication with Alexandra Minnis, *A Crecer* study, RTI International.
[e] Question source: our own set of questions on stressors and hardships experienced during COVID. Available from the authors upon request.
[f] Question source: "Mental Health of Undocumented College Students During the COVID-19 Pandemic" (Unpublished Manuscript) Jarid Goodman, Sharron Xuanren Wang, Rubi A. Guardarrama Ornelas, Maria Hernadez Santana, Delaware State University Department of Psychology, Dover, DE (Accessed 2021). Ordinal scale from 1 to 7; higher scores indicate a greater degree of worry.
[g] Question source: our own question on receipt of medical care during the pandemic. Available from the authors upon request.
[h] Question source: questions on pandemic impact as used in the "University of California, Berkeley SARS-CoV-2 Testing for Surveillance in the Bay Area Community Study: Study Questionnaire" (PIs Lisa Barcellos and Eva Harris), provided via personal communication with L Barcellos.
* Benjamini-Hochberg-corrected $p < .05$.

longitudinal study conducted among Latino young adults in an agricultural context that examined changes in symptoms over one year into the pandemic. Depressive symptoms increased, which is consistent with a recent review indicating that pandemic effects on depression persist [18]. Our finding that anxiety decreased is novel and requires replication. However, research with Latinos, including our own qualitative work, demonstrates that some young adults benefitted from closer family relationships during COVID [19], which may partially explain the decrease in anxiety. Increased vaccine availability may have also alleviated anxiety, which would be consistent with adaptation and recovery in mental health [10]. Several specific factors were associated with increases in depressive and anxiety symptoms, underscoring the importance of individual pandemic-related stressors in relation to mental health.

Exploratory analyses suggested that women were more vulnerable than men to pandemic stressors. Young women may have shouldered more responsibilities during COVID, including care for younger siblings, which impeded their own self-care (physical activity, healthy eating), exacerbating mental health consequences. However, higher satisfaction with social relationships was protective against depression for women.

A limitation is that we do not have data at the onset of the pandemic. Although we surveyed youth in spring-summer of 2020, our response rate was low, likely due to increased stress. We therefore focused on our 2021 assessment. Because pandemic-related stressors were reported retrospectively, reverse causality cannot be ruled out. In addition, we used raw BASC scores (vs. T-scores) because nonclinical norms are not available for the SRP-A beyond age 18. Thus, we could not use established cut points to determine the clinical significance of our findings in comparison to other studies. Moreover, it is well-known that youth are generally at increased risk for mental health problems during young adulthood, regardless of COVID [1], so increases in depression may be normative. However, significant associations with pandemic-related stressors illustrate the importance of understanding how the pandemic exposed certain individuals to greater mental health risk.

Despite limitations, this study provides insight into an understudied group. With few exceptions [2–4,20], Latino young adults, particularly in rural areas, have been largely overlooked in terms of pandemic effects. Future research should extend this work to characterize the burden of the pandemic, especially for young Latino women.

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