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Depression and Anxiety in Mexican Mothers Living in California Before and During COVID-19

Since the outbreak of the coronavirus disease of 2019 (COVID-19), Mexican and Mexican American mothers living in California may be at an increased risk for psychological and social consequences. Recent work regarding COVID-19 has shown that depression and anxiety are rising rapidly since the virus was first recognized in December 2019 (Wang et al., 2020). The Kaiser Family Foundation found that 53.8% of women have reported experiencing a negative impact on their mental health (Panchal et al., 2020). While women have reported higher symptoms of depression and anxiety in outbreaks in the past (Wang et al., 2020), children of pregnant women and mothers experiencing high stress due to the pandemic may be at an increased risk for psychological, physiological, and social-emotional consequences. For instance, prenatal depression and anxiety have been associated with brain structure changes and function in both infants and children (Lebel et al., 2016). COVID-19 may impact maternal stress levels, as COVID-19 has had an immense impact on mothers' well-being (Wastnedge et al., 2021), potentially affecting neonatal and childhood outcomes. It has been well-established that maternal stress impacts children's physiological development. For instance, mothers with high anxiety symptoms are at an increased risk of engaging in parental neglect and child abuse (Brown et al., 2020). Nevertheless, it is documented that the number of risk factors presented in children's environments best predicts their developmental outcomes (Evans et al., 2013). Unfortunately, COVID-19 will likely contribute to an increase in children experiencing traumatic events that have been shown to increase depression, anxiety, and sleep problems (Park et al., 2021).

In addition, COVID-19 has intensely impacted vulnerable groups with a substantial impact on racial and ethnic minorities (Gray et al., 2020; Hooper et al., 2020) but to create effective interventions to the secondary consequences of COVID-19, it is essential to recognize

cultural differences to achieve the most successful outcomes (Schraufnagel et al., 2006). California has confirmed 2.97 million cases of COVID-19. The virus has disproportionately impacted Mexican and Mexican Americans as 55% of cases, and 46% of deaths have been formed by the Latinx community (Yearby & Mohapatra, 2020). In addition, research has shown that ethnic differences and cultural orientation contribute to differences in stress (Brown et al., 2020; Hooper et al., 2020; Schraufnagel et al., 2006). For instance, mothers with high orientation to Mexican culture were shown to be protected against maternal depressive symptoms in pregnancy (D'Anna-Hernandez et al., 2015). Correspondingly, Sanchez, Urbina, and D'Anna-Hernandez (2020) found that less Mexican orientated mothers demonstrated an increase in symptoms of depression during the postpartum period, while high Mexican orientated mothers showed a decrease in stress from pregnancy to postpartum. These results highlight differences in adverse mental health by cultural orientation in Mexican and Mexican American mothers. Therefore, identifying multiple risk factors under a global pandemic in this ethnic group is particularly crucial for developing interventions and understanding the relationship between depression and anxiety. As the impact of COVID-19 on the relationship between depression and anxiety has been less extensively studied in Mexican and Mexican American mothers, we investigated this population before and during the global pandemic after California implemented stay-at-home orders on March 19, 2020. We hypothesize that symptoms of depression and anxiety before the pandemic would predict symptoms of depression and anxiety during COVID-19. Furthermore, we expect that symptoms of depression during COVID-19 would be more prominent among mothers with high orientation to Anglo culture known as "Anglo orientated." Lastly, we hypothesize that women of Mexican descent experiencing higher anxiety symptoms during the pandemic will experience significantly higher symptoms of depression during COVID-19, and this relationship would be more prominent among mother's Anglo orientated.

Methods

This sample is part of a more extensive longitudinal study that examines Mexican and Mexican American mothers living in California. Descriptive statistics can be found in Table 1. One hundred sixty-eight mothers participated in a follow-up survey examining motherhood during COVID-19 between April 29 to July 15, 2020. Participants completed a shortened version of the Center for Epidemiologic Studies Depression Scale (CES-D), one of the most common screening tests for identifying depressive symptoms (Andresen et al., 1994), and the State-Trait Anxiety Inventory (STAI) that measures symptoms of general anxiety by ranges of low (20-37), moderate (38-44), and high (45-80) (Marteau & Bekker, 1992). Finally, we used the Acculturation Rating Scale for Mexican Americans (ARSMA) to evaluate the participants' orientation towards Anglo culture on a 5-point Likert scale (Cuellar et al., 1995). All measures have shown high validity and reliability within this population. Statistical analysis was performed using the *Statistical Package for Social Sciences.* Pearson's correlation was used to establish the continuous variables' associations, including all socio-demographic variables included in Table 1. One-way analyses of variance (ANOVAs) were used to determine the effects of the categorical variables on symptoms of depression and anxiety during the COVID-19 pandemic. Anglo orientation was converted into a categorical predictor; scores greater than or equal to 3 were measured as high orientation.

Results

Results showed that before COVID-19, 13.5% of mothers reported depressive symptoms over the clinical cutoff of 10 for the CESD. This percentage increased to 21.5% during COVID-19. In addition, the majority (57.7%) of mothers experienced moderate to high anxiety during COVID-19, whereas before the pandemic, only 17.7% of mothers reported experiencing moderate to high anxiety. A linear regression analysis revealed that symptoms

of anxiety before the pandemic was associated with an increase in symptoms of depression during COVID-19 (R^2=0.028, β= 0.073, t (165) = 2.200, p=0.029), while symptoms of depression before the pandemic was significantly related to high levels of anxiety during COVID-19 (R^2=0.143, β= 1.129, t (161) = 5.173, p<0.000) (i.e., Figure 1). Anxiety during COVID-19 positively correlated to high symptoms of depression during COVID-19 (R^2=0.433, β= 0.261 t (167) = 11.287, p<.000) (i.e., Figure 2). An independent samples t-test showed that symptoms of depression during COVID-19 differed by Anglo orientation in that high Anglo orientation was related to more symptoms of depression (M = 8.11, SD = 5.43, SE = 0.72, t (167) = 2.976, p=0.003, 95% CI = [0.71970, 3.55696]). Furthermore, we were interested in the effect of high Anglo orientation on the relationship between anxiety and depressive symptoms during COVID-19, which showed a large and significant F (2,166) = 77.40, p < .000, $\eta p2$ = 0.48. An inspection of the parameter estimates marginal means revealed that those more orientated to the Anglo culture demonstrated significantly more symptoms of depression (M = 8.11, SE = 5.43, b = 2.127, SE = .368, p <.000, 95% CI = [7.381, 8.835]) than those less Anglo orientated (M = 5.98, SD = 3.65, b =. -2.127, SE = .532, p <.000, 95% CI = [5.223, 6.739]). More specifically, mothers with high Anglo orientation experiencing high symptoms of anxiety demonstrated more symptoms of depression during COVID-19 (M=10.76, SD=5.53) than mothers with high symptoms of anxiety but low Anglo orientation (M=7.11, SD= 3.52) (i.e., Figure 2).

Discussion

The coronavirus disease of 2019 (COVID-19) has distorted the lives and well-being of families worldwide. Research suggests that Mexican and Mexican Americans may be at a higher risk for the pandemic's adverse consequences as this population is predisposed to numerous risk factors (Gray et al., 2020). In summary, our findings suggest that Mexican

American mothers experienced a significant increase in depression and anxiety under the pandemic. As expected, high anxiety before COVID-19 predicted higher symptoms of depression COVID-19. Elevated depressive symptoms before COVID-19 significantly predicted high levels of anxiety during COVID-19.

Nonetheless, most (57.7%) of mothers in the sample experienced high anxiety levels during the pandemic, which predicted high symptoms of depression. In addition, high Anglo orientated mothers' depressive symptoms increased when experiencing anxiety relative to low Anglo orientated mothers. These results suggest that high Anglo orientated mothers are at an increased risk for clinical depression during COVID-19. Our findings are consistent with the notion that depression is influenced by sociocultural factors (Cuellar & Roberts, 1997; Moscicki et al., 1989) and depression and anxiety are significantly increasing amongst caregivers during COVID-19 (Lee et al., 2021), particularly in racial and ethnic minorities. We were unable to compare the main effects of Anglo and Mexican orientation due to limited variability among Mexican orientation ranges. These results only reflect data early into the pandemic; therefore, results should be interpreted with these limitations in mind.

Nevertheless, the current study provided repeated measurements and, therefore, a baseline for symptoms of depression and anxiety before the pandemic. Consequently, we are confident that these results and patterns are due, in part, to COVID-19. Future studies should continue to examine the degree to which COVID-19 has impacted Mexican American mothers and children. It remains critically essential toward developing protective interventions and reducing the existing racial disparities surrounding COVID-19.

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Table 1

Demographic information of the study sample (N=168)

|	M	SD	%
Age	31.61	6.23	
Generation Status	1.24	.35	
Income at recruitment	24,035.79	12,914	
Income during COVID-19	21,287.49	15,221	
Education	11.21	2.90	
Household number	5.40	1.80	
Cultural orientation			
Low Anglo orientation <3.00			50.0%
High Anglo orientation >=3.00			50.0%
Born in MX			70.2%
Primary Language			
Spanish			80.9%
Bilingual Ability			51.9%
Married/Cohabiting			78.0%
Employed			33.5%
First-time mothers			26.8%
Clinical Depression			
Pre-COVID			13.5%
COVID-19			21.3%
Moderate to high anxiety			
Pre-COVID			23.1%
COVID-19			57.7%

Figure 1
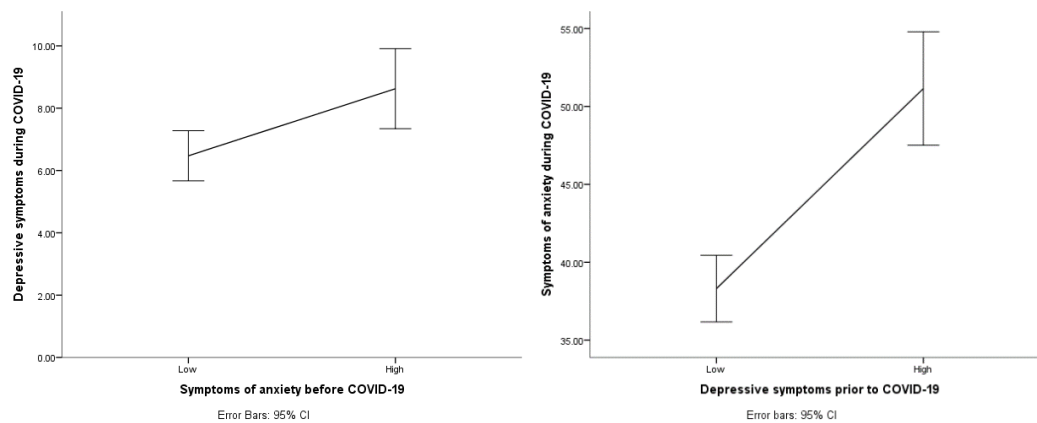
The left figure illustrates that high levels of anxiety before COVID-19 were related to more symptoms of depression during COVID-19 (*M*=8.63, *SD*=4.02). At the same time, the right figure illustrates that those with high symptoms of depression before COVID-19 experienced high levels of anxiety during COVID-19 (*M*=51.15, *SD*=9.56).

Note. The clinical cutoff for depression is a score of >=10 and moderate to high anxiety range symptoms between a score of 38-80.

Figure 2
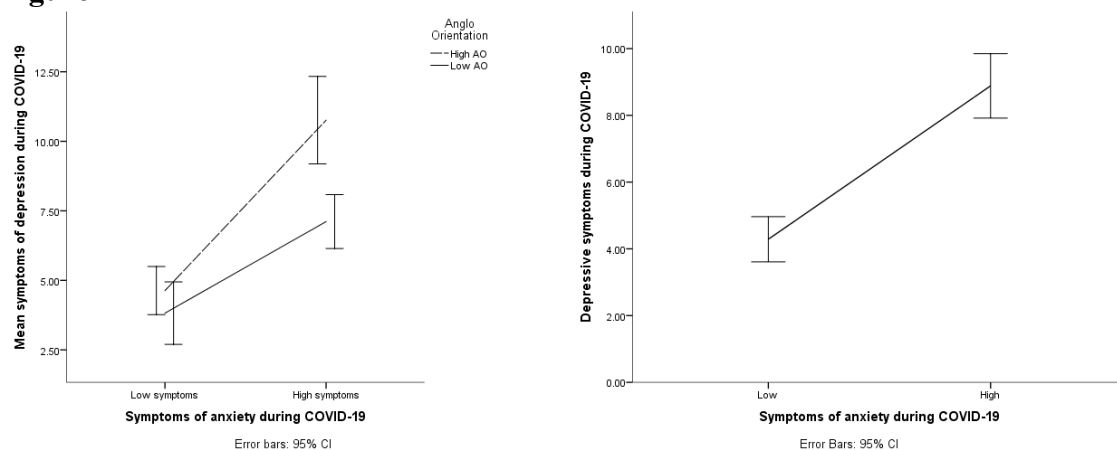
This figure (left figure) illustrates the relationship between high and low anxiety and maternal depressive symptoms during COVID-19 by Anglo orientation. Mothers with high Anglo orientation experiencing high anxiety symptoms experienced significantly more symptoms of depression (*M*=10.76, *SD*=5.53) than mothers with elevated symptoms of anxiety but low Anglo orientation (*M*=7.11, *SD*= 3.52). While the figure on the right demonstrates the

independent relationship between levels of anxiety and depressive symptoms during COVID-19. Mothers with low symptoms of anxiety showed lower symptoms of depression (*M*= 4.29, *SD*=2.76) relative to the majority that had high anxiety showed higher depressive symptoms during COVID-19 (*M*=8.88, *SD*=4.94).