

Event-related stress, depression and anxiety  
in a mexican sample during the second  
stage of the COVID-19 pandemic

Estrés relacionado a evento, depresión y ansiedad  
en una muestra mexicana durante la segunda  
etapa de la pandemia COVID-19

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**ABSTRACT**

Efforts are being made around the world to survey the psychological effects of the COVID-19 pandemic. The objective of this study was to describe severity of event-related stress, depression, and anxiety during the second stage of COVID-19 pandemic in Mexico, and to explore associations between these variables, sociodemographic characteristics, and specific concerns about COVID-19. A cross-sectional online survey was conducted in the State of Mexico from April 8th-18th, 2020, in a sample of men and women between 18-60 years-old. Variables were measured with the Impact of Event Scale-6, Patient Health Questionnaire-9, General Anxiety Disorder-7, and a questionnaire of concerns about COVID-19. A total of 5703 participants were analyzed. Around 24% of participants met significant event-related stress, mild levels of depression and anxiety, as well as high values in all concerns about COVID-19, especially regarding financial disruption, worsening of local security and concern of a family member becoming infected. These concerns associated

mild-to-moderately with the indicators of psychological distress. Higher values of event-related stress were found in women, individuals with higher educational attainment and those with any current high-risk medical diagnosis, though the effect sizes were mild. Event-related stress, depression, anxiety, and concerns about COVID-19 reached significant levels during the second stage of the pandemic in Mexico though, overall, not a dysfunctional severity. It is important to report tracking of the progression of these variables during the following phases.

Keywords: *COVID-19, event-related stress, depression, anxiety, Mexico.*

## Introduction

The 2019 coronavirus disease (COVID-19) supposes a significant risk for mental health. As seen for other disease outbreaks with far lesser worldwide impact, psychological distress is expected to increase as the pandemic evolves because of several interrelated stressors, which include: fear of contagion (of oneself or significant others) and consequent health impairments or mortality; actual health effects of infection; stigma; inadequate delivery or understanding of the information about the pandemic; fearmongering in social media; scarcity of supplies; social distancing and potential lack of purpose and routine, boredom, frustration and anger; socioeconomical disruptions like financial losses, or increased criminality and political instability (Brooks *et al.*, 2020; Venkatesh & Edirappuli, 2020; Xiang *et al.*, 2020).

The mental health outcomes of the COVID-19 pandemic could be as severe as the medical ones themselves, although less acute and homogeneous as to constitute an important focus of overall social attention. Based on worldwide disruptive events of the past that share some of the stressors enlisted above, mental health consequences of the current pandemic may include significant increases in the incidence of depression, anxiety, posttraumatic stress, and substance use disorders, as well as related clinical manifestations like domestic violence, child abuse and suicidal behaviors (Beaglehole *et al.*, 2018; Bromet *et al.*, 2017; Tracy, Norris, & Galea, 2011).

It is of crucial importance to keep monitoring of the mental health of populations in order to allocate health care resources (Pfefferbaum & North, 2020; Xiang *et al.*, 2020). Efforts are being made around the world to survey the psychological effects of the pandemic, with most of the currently published literature reporting moderate-to-severe symptoms of acute stress, anxiety and depression associated to the initial stages of the outbreak (Ahorsu *et al.*, 2020; Li, Wang, Xue, Zhao, & Zhu, 2020; Qiu *et al.*, 2020; Roy *et al.*, 2020; Wang *et al.*, 2020).

As of April 29th, 2020 (when we finished curation of our database), there were no known published mental health data related to COVID-19 in Mexico.

To that date, Mexican government was reporting 1569 deceases and 16 752 accumulated confirmed cases (Secretaría de Salud, 2000), and the country was already in the second stage of the pandemic since March 23th, characterized by local transmission of the virus (World Health Organization [WHO], 2020). As with any other country, the precision of the epidemiological estimations depends on many factors; in any case, as time has passed by, the quantity, intensity and chronicity of COVID-19-related stressors have likely increased, and formal scientific analysis of the phenomena is required.

The objectives of the current report were to explore the severity of event-related stress, depression, and anxiety during the second stage of COVID-19 pandemic in Mexico, and to explore associations between these variables, socio-demographic characteristics, and specific concerns about COVID-19.

## Method

### *Participants and design*

This is a cross-sectional study. The sample was comprised of men and women between the ages of 18 and 60 years-old, living in the State of Mexico (a large territory in the Center of the country, comprised of 125 municipalities, some of them being the most densely populated in the country). Participants that did not comply with the eligibility criteria but still responded to the survey were not considered for analysis. Potential participants were contacted by the staff of the State Council for Women and Social Welfare (Consejo Estatal de la Mujer y Bienestar Social [CEMyBS]), via email or telephone registered in the database of their program's beneficiaries. Individuals were selected randomly by the staff, and contact information other than email was kept blinded to the researchers. No exclusion criteria were considered at the moment of recruitment to facilitate the data collection by the staff of the CEMyBS.

## Measures

### *Sociodemographic questionnaire*

It included self-reported items about gender, years of age, educational attainment, relationship status, occupation, number of children and current high-risk medical diagnosis (any of the following: hypertension, diabetes, cancer, respiratory diseases, autoimmune disease or immunosuppression, obesity and dyslipidemia).

### *Impact of Event Scale-6 (IES-6)*

It is a brief form of the widely used Impact of Event Scale-Revised (Weiss, 2007), which assesses self-report of posttraumatic stress reactions to specific

events. The IES-6 includes two items for each of the dimensions of posttraumatic stress: intrusion, avoidance, and hyperarousal, and five response options ranging from 0 (“Not at all”) to 4 (“Extremely”). A total score is computed, with higher values indicating more severe event-related stress, and values between 10 to 13 points as possible cutoffs for detection of posttraumatic stress disorder, from which we used the 13-points because of its specificity of .99 (sensitivity = .55; overall efficiency = .87) (Thoresen *et al.*, 2010).

For this study, we used corresponding Spanish-translated items (Caamaño *et al.*, 2011), and we instructed the respondents to answer them considering the COVID-19 pandemic as the potentially stressful event, as follows: “Some people often experience difficulties during stressful events. In the following statements, think about the last 7 days and how stressful the situation we are living due to the coronavirus pandemic has been for you”.

#### *Patient Health Questionnaire (PHQ-9)*

This self-administered 9-items scale inquires the respondent about specific depressive symptoms corresponding to DSM-IV criteria in the last two weeks, according to a Likert scale with 0-to-3 values. A total score is computed, with upper values indicating a higher severity of depression, which can be ranked as follows: 0-4 = none, 5-9 = mild, 10-14 = moderate, 15-19 = moderately severe, 20-27 = severe (Kroenke, Spitzer, & Williams, 2001). The PHQ-9 is a very common scale in clinical research worldwide; evidence of its validity has been reported for Latin American and Mexican populations (Donlan & Lee, 2010; Familiar *et al.*, 2014) and it has been used in online surveys (Wang, Cho, & Kim, 2018; Sierra-Aparicio, Magaña-Quijano, Vargas-Quíñones, Martínez-García, & Toledo-Fernández, 2019).

#### *Generalized Anxiety Disorder-7 (GAD-7)*

It is a seven-item self-administered scale that was developed to assess general anxiety disorder following the DSM-IV symptom criteria (Spitzer, Kroenke, Williams, & Löwe, 2006) and can be used to evaluate other forms of anxiety (Plummer, Manea, Trepel, & McMillan, 2016). Like the PHQ-9, the GAD-7 has 0-to-3 response options, with a total score between 0-21. Higher scores indicate more severe anxiety, with the following ordinal values: 0-4 = minimal, 5-9 = mild, 10-14 = moderate, 15-21 = severe. Evidence of good internal consistency and validity has been reported for Mexican samples (Castro Silva *et al.*, 2017; García-Campayo *et al.*, 2009), and the scale has been used in online survey (Parkerson, Thibodeau, Brandt, Zvolensky, & Asmundson, 2015).

### *Questionnaire of concerns about COVID-19*

This 12-item questionnaire was elaborated *ex profeso* (since no standardized instrument was available when collection of data began) to explore different concerns regarding the COVID-19 pandemic, specifically: perception of utility and adherence to measures of hygiene and social distancing, news information seeking and trust of it, respondent's or a family member's concern of becoming infected, concern about the financial and security status of their social context, perception of impairment in daily-living due to the pandemic, and family awareness of the respondent during the pandemic (Table 2).

Participants were instructed to respond to each of these questions in a 0-to-10 scale. The granulation of the scale was established in this fashion to allow for a more continuous variability of the responses, for each item was considered independently in the main analyses.

### **Procedure**

Individuals were contacted by the staff of the CEMyBS through email and telephone, inviting them to participate in the online survey that was sent to them via email. The survey was designed and conducted using Google Forms, and took around 15 minutes to complete.

Recruitment lasted 10 days, beginning at April 8th 2020, coinciding with the end of week two of the second phase of the COVID-19 pandemic in Mexico, which was announced by the government in March 24th 2020, and which included reinforcement of social distancing measures, such as closure of more public spaces (e.g. malls, parks, restaurants, etc.) and constant reminding by the health authorities via daily press conferences and media advertising. By that time, social distancing measures had already been in place for almost three weeks.

### **Statistical analysis**

Descriptive statistics were computed for sociodemographic characteristics, total scores of the PHQ-9, GAD-7 and IES-6, and each of the items exploring concerns about COVID-19, using the total sample and subgroups from the categories of the sociodemographics (e.g. relationship status: single, married, etc.). Between-group differences relative to event-related stress, depression, anxiety, and each of the items of concerns about COVID-19 were estimated using Student's or ANOVA, reporting effect sizes with Cohen's *d* and  $\eta^2$ , respectively. Pearson's product-moment correlations between these items and IES-6, PHQ-9, GAD-7, and age were also computed.

Missing values were handled for each inferential analysis via pairwise. All the inferential results were judged significant at a two-tailed  $p < .05$ , and effect sizes of between-groups differences were considered meaningful at a minimum of  $d \geq .2$  or  $\eta^2 \geq .01$ . Statistical analyses were performed using JASP 0.11.1.0 (JASP Team, 2019).

### **Ethical considerations**

All principles from the Declaration of Helsinki were followed. The survey included a brief informed consent describing the general objective of the study, the subject-matter addressed by the questions, voluntariness and confidentiality of participation, and the institutions involved in the implementation of the study. Before starting the survey, individuals were asked to check box for consent.

The research protocol was approved by the Bioethics Committee of the Faculty of Health Sciences – Universidad Anáhuac México (202003, CON-BIOETICA-15-CEI-004-20160729).

### **Results**

A total of 6023 individuals were reached to respond the survey; from this number, 49 did not consent to participate and 271 duplicated cases (due to a systemic error from the survey's online platform) were later eliminated from the database, thus leaving a total of 5703 cases to be analyzed. As displayed in Table 1, participants were mostly women (60.9%), with ages ranging from 18 to 59 years old. From all the cases, 44.8% reported having an elementary-to-high school degree, and 54.3% a technical, college or post-graduate degree; most of them were married or in free union (60%), employees (59.7%), and have children aged 18 or more years-old (48.6%). Almost 28% of the participants declared having been diagnosed with at least one of the high-risk medical diagnoses.

**Table 1**  
Sociodemographic characteristics of the participants  
(N = 5703)

	Mean ( <i>SD</i> ) [min-max] or <i>n</i> (%)
Sociodemographics	
Age	36.7 (10.9) [18-59]
Gender	
Men	2226 (39.0)
Women	3477 (60.9)
Educational attainment	
No degree	33 (.5)
Elementary	331 (5.8)
Middle school	968 (16.9)
High school	1261 (22.1)
Technical degree	686 (12.0)
College	2005 (35.1)
Masters/Specialty	382 (6.6)
Doctorate	37 (.6)
Relationship status	
Single	1751 (30.7)
Married	2408 (42.2)
Free union	1003 (17.5)
Divorced/Separated	454 (7.9)
Widowed	87 (1.5)
Occupation	
Unemployed	704 (12.3)
Retired	57 (.99)
Student	433 (7.6)
Employed	3405 (59.7)
Home	1104 (19.3)
Children	
Has children > 18 years-old	1273 (22.3)
Has children < 18 years-old	2779 (48.7)
No children	1651 (28.9)
Previous medical diagnosis	
None	4129 (72.4)
One ore more	1574 (27.6)

**Table 2**  
Descriptive statistics for concerns about COVID-19, event-related stress, depression, and anxiety (N = 5703)

	Mean (SD) [min-max]
<b>Items of the questionnaire of concerns about COVID-19</b>	
1. How often have you followed the recommended hygiene measures (e.g. constantly washing your hands, using alcohol for hands, disinfecting objects, using face masks, etc.) for the prevention of the coronavirus?	8.1 (1.7) [1-10]
2. How useful do you consider these hygiene measures to be to avoid getting coronavirus?	8.7 (1.7) [1-10]
3. How much have you complied with the measures of social distancing?	7.8 (2.0) [1-10]
4. How useful do you consider social distancing to be against the pandemic?	8.6 (1.7) [1-10]
5. How often do you seek information about the course of the pandemic?	7.8 (2.2) [1-10]
6. How confident are you in the information you receive about the course of the pandemic?	7.1 (2.3) [1-10]
7. How worried are you about getting the coronavirus?	8.4 (2.1) [1-10]
8. How concerned are you that a family member will get coronavirus?	8.9 (1.8) [1-10]
9. How concerned are you about your financial situation as a result of the pandemic?	9.1 (1.5) [1-10]
10. How concerned are you about the security situation in your locality following the pandemic?	8.8 (1.7) [1-10]
11. How much has your daily life been affected by the pandemic?	8.5 (1.8) [1-10]
12. How much has your family been aware of you since the contingency (phone calls, providing food, medicine, etc.)?	7.8 (2.3) [1-10]
IES-6 total score	8.9 (4.9) [0-24]
PHQ-9 total score	4.9 (5.3) [0-.27]
GAD-7 total score	4.0 (4.6) [0-21]

*Abbreviations:* COVID-19 = coronavirus disease; GAD-7 = General Anxiety Disorder-7; IES-6 = Impact of Event Scale-6; PHQ-9 = Patient Health Questionnaire-9.

About the total sample, mean values for severities of depression and anxiety reached the respective cutoff scores for mild degrees, and the mean score of the IES-6 was borderline with the minimum cutoff score for detection of significant event-related stress (Table 2). Employing a 13-points cutoff score for the



IES-6, 23.6% of the sample qualified as having significant event-related stress; besides, 6.6% and 12.3% of the sample met scores for moderate-to-severe depression and anxiety. Concerns about COVID-19 biased high for all the explored dimensions, particularly for respondent's or a family member's concern of becoming infected, and financial and security situation. Hygiene and social distancing were reported as being met frequently and to be considered useful, whereas seeking information and trust of it were assessed with the lowest values (Table 2). All concerns about COVID-19 correlated significantly with the score of the IES-6 ( $r$  ranging from .14 to .32), and most of them correlated mildly with severities of depression ( $r$  ranging from .03 to .15) and anxiety ( $r$  ranging from .02 to .14). Participants' age associated weakly and positively ( $r$  ranging from .03 to .11) with all the concerns except financial situation (Table 3), meaning that higher concerns tended to be reported in older individuals.

**Table 3**  
 Between-group differences in responses to the items of the questionnaire  
 of concerns about COVID-19 and sociodemographic characteristics  
 (N = 5703)

Variables	COVID-19 items							
	1. Adherence to hygiene measures		2. Usefulness of hygiene measures		3. Compliance with social distancing		4. Usefulness of social distancing	
	Mean (SD)	Difference	Mean (SD)	Difference	Mean (SD)	Difference	Mean (SD)	Difference
Gender								
Men	8.0 (1.8)		8.5 (1.8)		7.6 (2.1)		8.4 (1.9)	
Women	8.2 (1.7)	$t(5700)=-4.2^{***}; d=-.11$	8.8 (1.6)	$t(5971)=-6.2^{***}; d=-.16$	8.0 (1.9)	$t(5699)=-7.6^{***}; d=-.20$	8.8 (1.6)	$t(5699)=-7.1^{***}; d=-.19$
Education								
No degree	7.5 (2.7)		7.7 (2.5)		6.7 (3.1)		7.1 (3.0)	
Elementary	7.7 (2.0)		8.1 (2.0)		7.5 (2.2)		8.0 (2.0)	
Middle school	7.8 (1.9)		8.4 (1.8)		7.5 (2.1)		8.2 (1.9)	
High school	8.0 (1.8)		8.7 (1.7)		7.8 (2.0)		8.6 (1.7)	
Technical degree	8.3 (1.6)	$F(7, 5694)=19.9^{***}; \eta^2=.02$	8.8 (1.7)	$F(7, 5694)=18.2^{***}; \eta^2=.02$	8.0 (1.9)	$F(7, 5963)=12.4^{***}; \eta^2=.01$	8.7 (1.7)	$F(7, 5693)=30.9^{***}; \eta^2=.03$
College	8.3 (1.5)		8.9 (1.6)		8.0 (1.9)		8.9 (1.6)	
Masters/ Specialty	8.7 (1.4)		9.1 (1.4)		8.2 (1.7)		9.2 (1.5)	
Doctorate	9.1 (1.0)		9.4 (.9)		8.6 (1.6)		9.5 (.9)	

<b>Relationship status</b>								
Single	8.1 (1.7)		8.7 (1.7)	7.8 (2.0)	8.7 (1.7)			
Married	8.2 (1.6)		8.7 (1.6)	8.0 (1.8)	8.7 (1.7)			
Free union	8.0 (1.8)	$F(4, 5697)=3.2^*$ ;	8.6 (1.8)	$F(4, 5697)=2.7^*$ ;	7.6 (2.1)	$F(4, 5696)=7.1^{***}$ ;	8.5 (1.9)	$F(4, 5696)=2.7^*$ ;
Divorced/ Separated	8.2 (1.7)	$\eta^2=.002$	8.8 (1.7)	$\eta^2=.002$	7.9 (1.9)	$\eta^2=.005$	8.7 (1.8)	$\eta^2=.002$
Widowed	8.1 (2.2)		8.5 (1.9)		7.8 (2.4)		8.4 (2.2)	
<b>Occupation</b>								
Unemployed	7.9 (1.9)		8.5 (1.9)	7.9 (1.9)			8.5 (1.8)	
Retired	8.9 (1.1)		9.3 (1.0)	8.9 (1.1)			9.2 (1.3)	
Student	7.9 (1.9)	$F(4, 5697)=10.6^{***}$ ;	8.7 (1.7)	$F(4, 5697)=5.1^{***}$ ;	7.7(2.1)	$F(4, 5696)=7.0^{***}$ ;	8.6 (1.8)	$F(4, 5696)=4.9^{***}$ ;
Employed	8.2 (1.6)	$\eta^2=.007$	8.7 (1.7)	$\eta^2=.004$	7.8 (2.0)	$\eta^2=.005$	8.7 (1.7)	$\eta^2=.003$
Home	8.0 (1.7)		8.7 (1.6)		8.0 (1.8)		8.5 (1.7)	
<b>Children</b>								
≥ 18 years-old	8.3 (1.7)		8.9 (1.5)	8.1 (1.8)			8.7 (1.7)	
< 18 years-old	8.1 (1.7)	$F(2, 5699)=11.4^{***}$ ;	8.6 (1.7)	$F(2, 5699)=7.7^{***}$ ;	7.8 (2.0)	$F(2, 5698)=115.5^{***}$ ;	8.6 (1.7)	$F(2, 5698)=1.4$ ; $\eta^2=.001$
No children	8.1 (1.7)	$\eta^2=.004$	8.6 (1.7)	$\eta^2=.003$	7.7 (2.0)		8.6 (1.7)	
<b>Medical diagnosis</b>								
None	8.1 (1.7)		8.7 (1.7)	7.8 (2.0)			8.6 (1.7)	
One or more	8.3 (1.6)	$t(5700)=-3.7^{***}$ ; $d=-.11$	8.8 (1.6)	$t(5700)=-1.4$ ; $d=-.08$	8.0 (1.9)	$t(5699)=-2.7^{**}$ ; $d=-.08$	8.7 (1.6)	$t(5699)=-1.7^*$ ; $d=-.05$

Notes: Bolds indicate meaningful effect size ( $d \geq .2$  or  $\eta^2 \geq .01$ ).

Abbreviation: COVID-19 = coronavirus disease.

**Table 3**  
 Between-group differences in responses to the items of the questionnaire  
 of concerns about COVID-19 and sociodemographic characteristics  
 (N = 5703)

Variables	COVID-19 items							
	5. Information seeking		6. Trust in information		7. Respondent becoming infected		8. Family member becoming infected	
	Mean (SD)	Difference	Mean (SD)	Difference	Mean (SD)	Difference	Mean (SD)	Difference
Gender								
Men	7.7 (2.3)	$t(5699)=-2.4^*$ ; $d=-.06$	7.1 (2.3)	$t(5699)=-1.1$ ; $d=-.03$	8.2 (2.3)	$t(5699)=-.4.7^{***}$ ; $d=-.13$	8.8 (1.9)	$t(5699)=-6.0^{***}$ ; $d=-.16$
Women	7.8 (2.2)		7.2 (2.2)		8.5 (2.1)		9.1 (1.6)	
Education								
No degree	<b>6.5 (3.0)</b>		6.3 (3.1)		7.3 (3.0)		<b>7.5 (2.9)</b>	
Elementary	<b>7.4 (2.3)</b>		7.0 (2.3)		8.1 (2.2)		<b>8.4 (2.1)</b>	
Middle school	<b>7.4 (2.4)</b>		7.0 (2.4)		8.2 (2.2)		<b>8.7 (2.0)</b>	
High school	<b>7.6 (2.2)</b>	$F(7, 5693)=20.0^{***}$ ; $\eta^2=.02$	7.1 (2.2)	$F(7, 5693)=2.5^{**}$ ; $\eta^2=.003$	8.4 (2.2)	$F(7, 5693)=4.0^{***}$ ; $\eta^2=.005$	<b>8.9 (1.7)</b>	$F(7, 5680)=16.4^{***}$ ; $\eta^2=.02$
Technical degree	<b>7.9 (2.2)</b>		7.1 (2.3)		8.5 (2.2)		<b>9.0 (1.8)</b>	
College	<b>8.1 (2.1)</b>		7.3 (2.2)		8.5 (2.1)		<b>9.1 (1.6)</b>	
Masters/ Specialty	<b>8.4 (2.0)</b>		7.2 (2.3)		8.5 (2.1)		<b>9.3 (1.5)</b>	
Doctorate	<b>8.9 (1.6)</b>		7.6 (2.3)		9.1 (1.3)		<b>9.7 (.6)</b>	

Relationship status						
Single	7.7 (2.3)		7.0 (2.3)		8.2 (2.3)	9.0 (1.8)
Married	7.9 (2.1)		7.2 (2.2)		8.5 (2.0)	8.9 (1.7)
Free union	7.6 (2.3)	$F(4, 5696)=5.2^{***}; \eta^2=.004$	7.0 (2.3)	$F(4, 5696)=2.7^{**}; \eta^2=.002$	8.4 (2.2)	$F(4, 5696)=6.1^{***}; \eta^2=.004$
Divorced/ Separated	7.8 (2.2)		7.3 (2.2)		8.5 (2.1)	8.9 (1.7)
Widowed	7.8 (2.4)		7.2 (2.3)		8.3 (2.5)	8.6 (2.3)
Occupation						
Unemployed	7.6 (2.3)		6.9 (2.5)		8.4 (2.1)	8.9 (1.9)
Retired	8.4 (1.7)		7.5 (2.1)		8.7 (1.6)	9.2 (1.1)
Student	7.4 (2.3)	$F(4, 5696)=7.5^{***}; \eta^2=.005$	7.0 (2.3)	$F(4, 5696)=4.3^{**}; \eta^2=.003$	8.1 (2.4)	$F(4, 5696)=2.9^*; \eta^2=.002$
Employed	7.9 (2.2)		7.2 (2.2)		8.4 (2.1)	9.0 (1.7)
Home	7.7 (2.1)		7.1 (2.2)		8.5 (2.1)	8.9 (1.8)
Children						
≥ 18 years-old	8.1 (2.0)		7.4 (2.2)		8.5 (2.1)	9.0 (1.7)
< 18 years-old	7.7 (2.3)	$F(2, 5698)=19.6^{***}; \eta^2=.007$	7.1 (2.2)	$F(2, 5698)=8.5^{***}; \eta^2=.003$	8.5 (2.0)	$F(2, 5698)=17.6^{***}; \eta^2=.006$
No children	7.7 (2.2)		7.0 (2.3)		8.2 (2.3)	8.9 (1.8)
Medical diagnosis						
None	7.7 (2.2)		7.1 (2.2)		<b>8.3 (2.2)</b>	8.9 (1.8)
One or more	8.0 (2.1)	$t(5699)=-4.0^{***}; d=-.12$	8.0 (2.1)	$t(5699)=-1.9^*; d=-.05$	<b>8.7 (1.9)</b>	<b>9.2 (1.6)</b>

Notes: Bolds indicate meaningful effect size ( $d \geq .2$  or  $\eta^2 \geq .01$ ).

Abbreviation: COVID-19 = coronavirus disease.

**Table 3**  
 Between-group differences in responses to the items of the questionnaire  
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 (N = 5703)

COVID-19 items								
Variables	9. Financial situation		10. Security situation		11. Daily-life impairment		12. Awareness of a family member	
	Mean (SD)	Difference	Mean (SD)	Difference	Mean (SD)	Difference	Mean (SD)	Difference
Gender								
Men	8.9 (1.7)	$t(5699)=-6.3^{***}; d=-.17$	8.6 (1.9)	$t(5699)=-8.8; d=-.23$	8.4 (1.9)	$t(5699)=-.2.8^{**}; d=-.07$	7.8 (2.3)	$t(5699)=-.67; d=-.01$
Women	9.2 (1.4)		9.0 (1.5)		8.5 (1.8)		7.9 (2.4)	
Education								
No degree	8.4 (2.4)		8.1 (2.5)		8.0 (2.4)		7.7 (2.4)	
Elementary	8.6 (1.8)		8.2 (1.9)		7.9 (2.1)		7.2 (2.5)	
Middle school	9.2 (1.5)		8.8 (1.7)		8.6 (1.8)		7.3 (2.5)	
High school	9.2 (1.5)	$F(7, 5693)=8.2^{***}; \eta^2=.01$	8.8 (1.6)	$F(7, 5693)=8.6^{***}; \eta^2=.01$	8.5 (1.8)	$F(7, 5693)=6.0^{***}; \eta^2=.007$	7.9 (2.2)	$F(7, 5692)=14.7^{***}; \eta^2=.01$
Technical degree	9.2 (1.4)		9.0 (1.6)		8.6 (1.7)		7.9 (2.3)	
College	9.1 (1.5)		8.9 (1.7)		8.4 (1.9)		8.0 (2.3)	
Masters/ Specialty	9.1 (1.6)		8.9 (1.7)		8.5 (1.8)		8.2 (2.1)	
Doctorate	8.5 (1.9)		9.2 (1.3)		8.2 (1.9)		8.9 (1.7)	

<b>Relationship status</b>							
Single	9.0 (1.6)		8.8 (1.8)		8.3 (2.0)	7.9 (2.3)	
Married	9.1 (1.5)		8.9 (1.6)		8.5 (1.8)	7.9 (2.2)	
Free union	9.2 (1.4)	$F(4, 5696)=2.0; \eta^2=.001$	8.9 (1.7)	$F(4, 5696)=1.0; \eta^2=.001$	8.6 (1.8)	$F(4, 5696)=4.6^{***}; \eta^2=.003$	7.6 (2.5)
Divorced/ Separated	9.2 (1.5)		9.0 (1.6)		8.6 (1.8)	$F(4, 5694)=2.5^*; \eta^2=.002$	7.8 (2.3)
Widowed	9.1 (1.9)		8.8 (1.9)		8.7 (1.9)		7.8 (2.7)
<b>Occupation</b>							
Unemployed	9.4 (1.3)		8.9 (1.7)		8.9 (1.7)		7.5 (2.5)
Retired	8.9 (1.3)		8.8 (1.6)		8.4 (2.0)		8.4 (2.1)
Student	9.0 (1.7)	$F(4, 5696)=5.6^{***}; \eta^2=.004$	8.7 (1.9)	$F(4, 5696)=1.8; \eta^2=.001$	8.4 (1.9)	$F(4, 5696)=10.0^{***}; \eta^2=.007$	8.0 (2.3)
Employed	9.1 (1.6)		8.9 (1.7)		8.4 (1.9)		7.9 (2.3)
Home	9.1 (1.5)		8.8 (1.6)		8.4 (1.8)		7.7 (2.4)
<b>Children</b>							
≥ 18 years-old	9.1 (1.5)		8.9 (1.6)		8.6 (1.7)		8.1 (2.2)
< 18 years-old	9.2 (1.4)	$F(2, 5698)=17.9^{***}; \eta^2=.006$	8.9 (1.6)	$F(2, 5698)=17.6^{***}; \eta^2=.006$	8.6 (1.8)	$F(2, 5698)=24.4^{***}; \eta^2=.009$	7.7 (2.4)
No children	8.9 (1.7)		8.6 (1.9)		8.2 (2.0)		7.9 (2.3)
<b>Medical diagnosis</b>							
None	9.1 (1.6)		8.8 (1.7)		8.4 (1.9)		7.8 (2.3)
One or more	9.2 (1.5)	$t(5699)=-2.0^*; d=-.06$	9.0 (1.6)	$t(5699)=-3.6^{***}; d=-.10$	8.6 (1.7)	$t(5970)=-3.8^{***}; d=-.11$	$t(5969)=-1.1; d=-.03$

Notes: Bolds indicate meaningful effect size ( $d \geq .2$  or  $\eta^2 \geq .01$ ).

Abbreviation: COVID-19 = coronavirus disease.

Lastly, between-group differences (Table 4) were found in relation to several sociodemographic categories, showing more concerns about COVID-19 the following individuals: women, those with higher educational attainment, those with children, and those with high-risk medical diagnosis. Effect sizes were below small for the most cases ( $d < .20$ , and  $\eta^2 < .01$ ), except for women's concern about local security ( $d = -.23$ ) and compliance with social distancing ( $d = -.20$ ), concern about getting the virus in medically diagnosed individuals ( $d = -.21$ ), and in-between educational attainments regarding follow-up of hygiene measures, information seeking, and concern of a family member becoming infected. Relationship status and occupation showed no clear-cut correlations and negligible effect sizes. Additionally, we found higher levels of event-related stress, depression, and anxiety in women ( $d \sim -.30$ ) and individuals with previous medical diagnosis ( $d \sim -.33$ ), and higher levels of event-related stress alone in higher educational attainments ( $\eta^2 = .03$ ).



**Table 4**  
 Between-group differences between event-related stress,  
 depression, anxiety, and sociodemographic characteristics  
 (N = 5703)

Variables	Scales					
	IES-6		PHQ-9		GAD-7	
	Mean (SD)	Difference	Mean (SD)	Difference	Mean (SD)	Difference
Gender						
Men	<b>8.0 (4.9)</b>	$t(5701)=-11.6^{***}; d=-.31$	<b>3.9 (4.8)</b>	$t(5701)=-10.5^{***}; d=-.28$	<b>3.1 (4.0)</b>	$t(5701)=-11.9^{***}; d=-.32$
Women	<b>9.5 (4.9)</b>		<b>5.5 (5.5)</b>		<b>4.6 (4.8)</b>	
Education						
No degree	<b>5.9 (5.0)</b>	$F(7, 5695)=24.5^{***}; \eta^2=.02$	3.5 (4.8)	$F(7, 5695)=4.8^{***}; \eta^2=.006$	2.9 (3.4)	$F(7, 5695)=5.1^{***}; \eta^2=.006$
Elementary	<b>6.6 (4.7)</b>		3.6 (4.4)		2.8 (3.5)	
Middle school	<b>8.3 (5.2)</b>		4.6 (5.4)		3.9 (4.5)	
High school	<b>8.6 (5.0)</b>		4.9 (5.5)		4.1 (4.8)	
Technical degree	<b>9.2 (4.8)</b>		4.9 (5.0)		4.2 (4.6)	
College	<b>9.4 (4.6)</b>		5.0 (5.2)		4.1 (4.5)	
Masters/ Specialty	<b>10.6 (4.8)</b>		5.6 (5.4)		4.7 (4.6)	
Doctorate	<b>10.7 (5.2)</b>	5.5 (5.3)	4.8 (5.0)			

Relationship status						
Single	8.6 (5.0)		5.5 (5.6)		4.3 (4.8)	
Married	9.1 (4.9)		4.4 (5.0)		3.8 (4.4)	
Free union	8.6 (4.8)	$F(4, 5968)=6.2^{***}; \eta^2=.004$	4.7 (5.2)	$F(4, 5698)=12.0^{***}; \eta^2=.008$	4.0 (4.5)	$F(4, 5698)=3.0^{**}; \eta^2=.002$
Divorced/ Separated	9.7 (4.8)		5.2 (5.3)		4.0 (4.2)	
Widowed	9.5 (5.6)		4.6 (5.4)		4.2 (4.8)	
Occupation						
Unemployed	9.4 (5.3)		6.0 (6.1)		4.9 (5.2)	
Retired	8.1 (5.5)		5.0 (6.0)		3.5 (4.8)	
Student	8.2 (4.8)	$F(, 5698)=4.3^{**}; \eta^2=.003$	6.7 (5.9)	$F(4, 5698)=26.6^{***}; \eta^2=.01$	5.0 (5.1)	$F(4, 5698)=16.0^{***}; \eta^2=.01$
Employed	8.9 (4.9)		4.5 (5.0)		3.7 (4.3)	
Home	8.8 (4.9)		4.6 (5.2)		4.1 (4.5)	
Children						
≥ 18 years-old	9.3 (4.9)		4.6 (5.3)		3.9 (4.5)	
< 18 years-old	9.1 (4.9)	$F(2, 5700)=17.5^{***}; \eta^2=.006$	4.7 (5.1)	$F(2, 5700)=9.7^{***}; \eta^2=.003$	4.0 (4.5)	$F(2, 5700)=1.7; \eta^2=.001$
No children	8.3 (5.1)		5.3 (5.5)		4.2 (4.7)	
Medical diagnosis						
None	<b>8.4 (4.9)</b>	$t(5701)=-13.1^{***}; d=-.38$	<b>4.4 (5.1)</b>	$t(5701)=-11.1^{***}; d=-.33$	<b>3.6 (4.4)</b>	$t(5701)=-11.2^{**}; d=-.33$
One or more	<b>10.3 (4.9)</b>		<b>6.1 (5.7)</b>		<b>5.1 (4.9)</b>	

*Notes:* Bolds indicate meaningful effect size ( $d \geq .2$  or  $\eta^2 \geq .01$ ).

*Abbreviation:* COVID-19 = coronavirus disease; GAD-7 = General Anxiety Disorder-7; IES-6 = Impact of Event Scale-6; PHQ-9 = Patient Health Questionnaire-9.

## Discussion

### *Findings*

This study had the goal to explore the severity of event-related stress, depression, and anxiety during the second stage of the COVID-19 pandemic in Mexico, and to explore associations between these indicators, sociodemographic characteristics and specific concerns about COVID-19. Overall, we found moderate levels of event-related stress (with almost a fourth of the sample meeting significant event-related stress) and mild levels of depression and anxiety. Also, we found high values in all concerns about COVID-19, but especially regarding financial disruption, worsening of local security and concern of a family member becoming infected. These values associated mild-to-moderately with event-related stress, depression, and anxiety, suggesting that, though concerns about COVID-19 have reached significant levels during the pandemic in Mexico, they have not yet reached levels that could be considered dysfunctional.

When exploring differences between subgroups of sociodemographic variables, we found higher event-related stress and specific concerns about COVID-19 in women, individuals with higher educational attainment and those with any current high-risk medical diagnosis, though the effect sizes were rather mild. These differences were expected. Women, overall, tend to score higher in measures of anxiety trait (Costa, Terracciano, & McCrae, 2001), which could predispose them to be more concerned about the proximal and distal consequences of the pandemic and thus more prompt to comply with preventive measures like social distancing. This was especially noticeable within our findings with regards to concern about local security, possibly in relation to the increased violence towards women and the perception of it in Mexico (Ávila, Martínez-Ferrer, Vera, Bahena, & Musitu, 2016). About education, individuals with higher attainment could be more concerned about COVID-19 since they also reported more information seeking behavior and could be a group with better cognitive grasp of the consequences of the pandemic, which could also explain their tendency to better adhere to preventive measures, as has been indirectly observed for another epidemic (Bults *et al.*, 2011). Lastly, increased risk perception could explain the tendency to higher event-related stress, depression, and anxiety in individuals with a high-risk medical diagnosis, though this did not translate into better adherence to preventive measures in our sample, arguably because chronic medical conditions tend to be more prevalent in populations with low educational attainment (Fleischer, Diez Roux, Alazraqui, & Spinelli, 2008), and thus less cognitively prompt to think about future consequences.

## **Limitations**

The first limitation of our study is that the sample is not representative of the Mexican population, since it was restricted to one delimited region in the center of the country, and deep socioeconomic differences between the North, Center and South regions could play a crucial role in how the pandemic is being experienced. Also, the sample was composed by individuals registered in welfare programs, which could have biased the socioeconomic status and the tendency of the responses. On the other hand, we had a well-balanced matching of genders (considering that online surveys are mostly responded by women) and of low versus high educational attainment.

Another limitation is the fact that the two main variables of the study, event-related stress, and concerns about COVID-19, were assessed with instruments that have not been validated in the Mexican population. The IES-6 was selected both because of its widespread use and its brevity (an important consideration in online surveys), and we tried to minimize oversensitivity in the identification of cases with significant event-related stress using the highest cutoff score recommended by the authors of the scale (Thoresen *et al.*, 2010). With regards to the items of concerns about COVID-19, there was no standard measure when we began the study (a scale for measurement of fear of COVID-19 has just recently been proposed [Ahorsu *et al.*, 2020]), and we were interested in specific behaviors that could indicate concern with the pandemic, rather than a unitary score.

## **Conclusion**

Our study is a first approach to the psychological consequences of the COVID-19 pandemic in a portion of the Mexican population; as such, it joins to the global research efforts to assess the psychological impact of the pandemic, providing useful regional data. It is of crucial importance to keep track of variables of psychological distress following the third stage of the pandemic and after ending of social distancing measures.

## **Disclosure statement**

No potential conflict of interest was reported by the authors.

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None.

## **Contributions**

All authors participated in the conceptualization and conduction of the study. AG-G established cooperation with the recruitment site. DB-O designed

the online survey and prepared the database. AT-F drafted the manuscript and conducted statistical analyses. AG-G, HR-P and ER-Z provided critical review of the manuscript. The final version of this manuscript was approved by all authors.

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