

# How much Fear of COVID-19 is There in Latin America? A Prospective Exploratory Study in Six Countries

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## ABSTRACT

**Introduction:** During the unprecedented lockdown, COVID-19 is causing people to suffer from mental disorders in response to strict containment measures. Latin America is the third most severely affected continent, and restrictive measures can have many negative effects on mental health (such as anxiety, depression, and stress) that may arise with fear. We aimed to measure the spread of fear of COVID-19 in the Latin American population.

**Materials and Methods:** We conducted a prospective study in 535 participants of six countries of Latin America (Argentina, Bolivia, Colombia, Guatemala, Mexico, and Peru), and a country of Europe (Spain) as a control, during 2020. We used the Fear of COVID-19 Scale.

**Results:** The mean age was 31.2±13.2 years (70.8% under 30 years) and the majority were women (57.9%) and 76.6% had a technical, university, or postgraduate studies. Seven percent of participants had high rates of fear of COVID-19, these high estimates of fear were observed in Argentines (14.3%, score range: 28-31%), of Peruvians (10.2%, score range: 27-35%), and Mexicans (5.7%, score range: 27-29%). Both Peru (p=0.003) and Mexico (p=0.0001) showed significant differences from the control country. We showed low levels of fear in 57.1%, 45.5%, 42.9%, and 41.2% of Argentines, Colombians, Bolivians, and Peruvians, respectively. No differences in low levels of fear we found among age groups (p> 0.05), however, we find differences between genders (p=0.001).

**Conclusions:** These results suggested low levels of fear in six Latin American countries, highlighting the need to contextualize fear behavior as a key element in people's psychological well-being and mental health during the COVID-19 pandemic.

**Keywords:** COVID-19, fear, Latin America, mental health, SARS-CoV-2

## INTRODUCTION

Currently, the outbreak of new coronavirus disease (COVID-19) has successfully spread worldwide, so its spread strongly affects mental and global health. SARS-CoV-2 has been shaking the world for almost two years, and its distribution has begun to spread from Asia to other continents, stagnating with high mortality rates in certain regions such as the Americas. On February 25th of 2020, Brazil was the first country from Latin America that reported a case of SARS-CoV-2, followed by similar cases in most countries [1,2] where countermeasures were implemented against the spread of the disease as soon as the "zero" patient was detected.

A notorious fear has been raised due to some countries where measures were delayed either due to a misconception of the severity of the disease or to the concern of the effects on the country's economy [3,4]. As COVID-19 has spread in the region we can observe that some countries have suffered a higher impact than others due to series of factors are affecting communities' mental health, as the inequality in the provision of healthcare services and lack of personal protective equipment, the quarantine, social distancing and the restrictions that have produced an increase in domestic

violence [5], the massive loss of jobs or the urgency for providing families with food from householders who survive on their daily income [6-9].

Like a pandemic, COVID-19 alone is a reason to generate concern and fear among people, yet, this is aggravated when some sectors have to worry about how it is affecting also their economy, education, or personal relationships, which raise the probability of negative outcomes including domestic violence and suicidal thoughts [10,11]. This has been already seen and studied in regions where the pandemic has spread earlier, with the notable effort of Ahorsu et al. [12] who developed a scale to measure the fear generated in that region. Then, research on fear of COVID-19 has been extended to various regions, including Brazil, Argentina, and Peru in Latin America [13,14]. These studies have verified their own "Fear of COVID-19 Scale" (FCV-19S) among the affected population, but they have not focused on analyzing the extent of region-wide fear, since fear may vary considerably in each population.

FCV-19S result useful to understand the mental health of a population and provide with measures to prevent the development of mental illness (as anxiety, depression, etc.), which can give rise increment the cases of violent outcomes in a region as Latin America that has been declared to have the higher levels of violence worldwide [15].

**Table 1.** Demographic characteristics according to the country of residence of the population studied

Characteristics	Countries							p-value
	Argentina (n=56)	Bolivia (n=28)	Colombia (n=66)	Spain (n=50)	Guatemala (n=20)	Mexico (n=70)	Peru (n=245)	
<b>Age group</b>								
<20 (n=46)	0 (0)	4 (14.3)	2 (3)	0 (0)	4 (20)	2 (2.9)	34 (13.9)	0.089
21-30 (n=333)	22 (39.3)	16 (57.1)	34 (51.5)	40 (80)	10 (50)	60 (85.7)	151 (61.6)	
31-40 (n=50)	2 (3.6)	0 (0)	16 (24.2)	0 (0)	0 (0)	8 (11.4)	24 (9.8)	
41-50 (n=43)	14 (25)	2 (7.1)	6 (9.1)	0 (0)	6 (30)	0 (0)	15 (6.1)	
>50 (n=63)	18 (32.1)	6 (21.4)	8 (12.1)	10 (20)	0 (0)	0 (0)	21 (8.6)	
<b>Sex</b>								
Male	12 (21.4)	12 (42.9)	46 (69.7)	38 (76.0)	8 (40.0)	32 (45.7)	103 (42.0)	0.071
Female	44 (78.6)	16 (57.1)	20 (30.3)	12 (24.0)	12 (60.0)	38 (54.3)	142 (58.0)	
<b>Degree of instruction</b>								
High school	16 (28.6)	4 (14.3)	4 (6.1)	4 (8.0)	0 (0)	4 (5.7)	33 (13.4)	0.004
Technical	16 (28.6)	2 (7.1)	2 (2.0)	2 (4.0)	0 (0)	6 (8.6)	36 (14.7)	
Undergraduate	12 (21.4)	16 (57.1)	40 (60.6)	16 (32.0)	20 (100)	52 (74.3)	146 (59.6)	
Postgraduate	12 (21.4)	6 (21.4)	20 (30.3)	28 (56)	0 (0)	8 (11.4)	30 (12.2)	

The main objective of this study was to measure the spread of fear of COVID-19 in the Latin American population. The study hypotheses included (a) that fear of COVID-19 would be variably distributed among Latin American countries and (b) that fear of Latin American countries could vary when compared to European countries that have already experienced COVID-19. Since no study, to the best of our knowledge, has examined such a relationship between these concepts, it is certainly interesting to estimate the FCV-19S fear.

## MATERIALS AND METHODS

### Participants and Countries

We designed an exploratory prospective cohort study based on a questionnaire during 2020. Between March 25 and April 31, 535 individuals of seven countries were surveyed with FCV-19S. We include six countries of Latin America (Argentina, Bolivia, Colombia, Guatemala, Mexico and Peru), and a country of Europe (Spain) as a control.

### Fear of COVID-19 Scale (FCV-19S)

The FCV-19S scale is a seven-item self-report measure that has a Likert scale score (1 = strongly disagree and 5 = strongly agree), which has been created by Ahorsu et al. [12] during the first wave in 2020. To quantify the fear, the scores for each question are added, so the higher the score, the higher the level of fear of COVID-19. (Additional file 1) This measure has been validated in more than 12 countries worldwide [14,16-20]. This adequate performance of the FCV-19S has also been seen in Argentina [21,22], Colombia [23], Mexico [24], and Peru [25,26].

### Data Collection

Participants were recruited voluntarily via email lists and were invited to partake in the study. All surveys were virtual through Google Form (Google, CA, US), and informed consent has been provided before the survey (first page of the online survey). Participants were informed of the purpose of the study, its limitations, and the benefits they would receive from agreeing to participate. In addition, they were informed that the survey is anonymous and that the data will be handled with great reliability for the study and that it will be eliminated after its analysis.

### Data Analysis

The initial data analysis includes verification of the online data collected by two authors, then the Kolmogorov-Smirnov normality test was performed. The demographic variables included were age, gender, and level of education, which were analyzed using descriptive statistics. To interpret the levels of fear, the instructions of the FCV-19S [12] were followed. The differences in fear levels between countries were performed with one-way ANOVA considering a p-value <0.05 as significant. Data analysis was performed in IBM SPSS v25.0 (Armonk, US) for Windows.

### Ethical Aspects

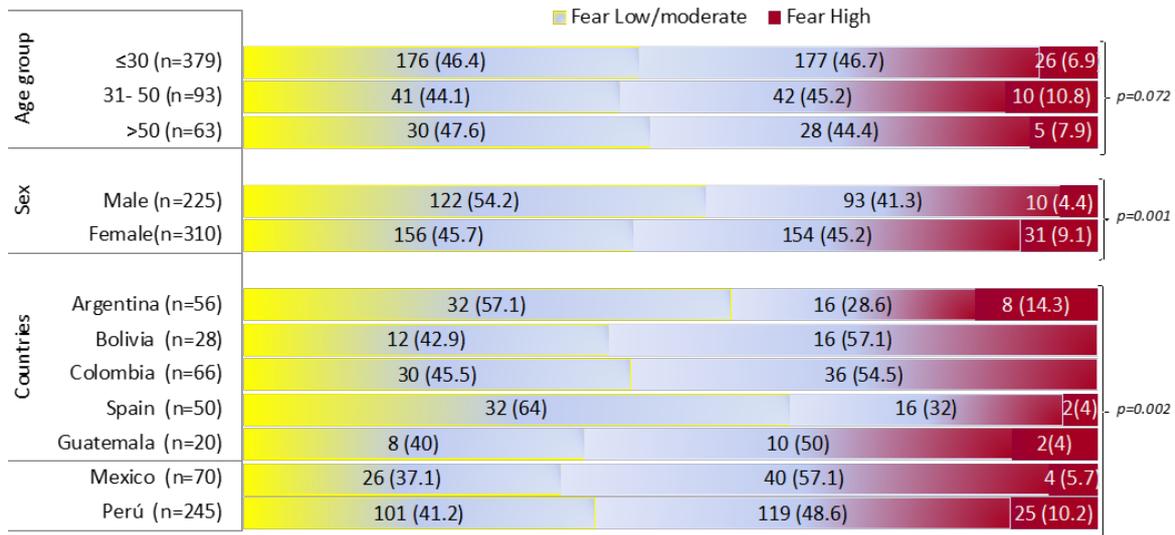
This study was undertaken in accordance with the Declaration of Helsinki. This study was approved by the Ethics Committee of the Norbert Wiener University (FCE-RRR-COVID-2020.03-01).

## RESULTS

The mean age was 31.2±13.2 years (CI 95% 30.1 to 32.2), with 70.8% (379 individuals) under 30 years of age. Furthermore, the majority were women (57.9%), and 470 (76.6%) had a technical, university, or postgraduate studies. We found no differences in demographic features between populations (**Table 1**).

In general, 41 (7.7%) had high rates of fear of COVID-19. These high estimates of fear were observed in 14.3% of Argentines (score range: 28-31%), 10.2% of Peruvians (score range: 27-35%), and 5.7% of Mexicans (score range: 27-29%) (**Figure 1**). Both Peru (p=0.003) and Mexico (p=0.0001) showed significant differences from the control country Spain. Nine percent (31 individuals) of women and 4.4% (10 individuals) of men had a high fear of COVID-19. In addition, 6.9% (26 individuals) and 7.9% (5 individuals) of participants ≤30 and >50 years had high rates of fear of COVID-19, respectively.

FCV-19S inter-items showed differences between the countries evaluated (p<0.001). In all the items the comparison group (Spain) had significant differences, mainly with Peru (p<0.001). On average, 30% of participants agreed with "being very afraid of the coronavirus" and 26% agreed with "being afraid of losing their life due to coronavirus" (**Table 2**). Low estimates were shown on the characteristics of anxiety and



**Figure 1.** Distribution of fear by age, sex and country of residence of the population studied

**Table 2.** Baseline distribution of fear in the seven countries included in the study

Fear of COVID-19 Items	Countries	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	p-value
<b>I am most afraid of Corona</b>	Argentina	8 (14.3)	16 (28.6)	8 (14.3)	20 (35.7)	4 (7.1)	0.0001
	Bolivia	2 (7.1)	12 (42.9)	4 (14.3)	8 (28.6)	2 (7.1)	
	Colombia	6 (9.1)	10 (15.2)	16 (24.2)	30 (45.5)	4 (6.1)	
	Spain	18 (36)	10 (20)	10 (20)	10 (20)	2 (4)	
	Guatemala	2 (10)	2 (10)	4 (20)	10 (50)	2 (10)	
	Mexico	4 (5.7)	12 (17.1)	28 (40)	20 (28.6)	6 (8.6)	
	Perú	17 (6.9)	36 (14.7)	66 (26.9)	97 (39.6)	29 (11.8)	
<b>It makes me uncomfortable to think about Corona</b>	Argentina	10 (17.9)	14 (25.0)	10 (17.9)	14 (25.0)	8 (14.3)	0.002
	Bolivia	8 (28.6)	4 (14.3)	8 (28.6)	6 (21.4)	2 (7.1)	
	Colombia	4 (6.1)	14 (21.2)	12 (18.2)	26 (39.4)	10 (15.2)	
	Spain	16 (32)	14 (28)	8 (16)	8 (16)	4 (8)	
	Guatemala	2 (10)	4 (20)	6 (30)	6 (30)	2 (10)	
	Mexico	8 (11.4)	14 (20.0)	22 (31.4)	18 (25.7)	8 (11.4)	
	Peru	21 (8.6)	71 (29.0)	51 (20.8)	71 (29.0)	31 (12.7)	
<b>My hands become clammy when I think about Corona</b>	Argentina	34 (60.7)	18 (32.1)	2 (3.6)	2 (3.6)	0 (0)	0.0001
	Bolivia	10 (35.7)	16 (57.1)	2 (7.1)	0 (0)	0 (0)	
	Colombia	40 (60.6)	22 (33.3)	4 (6.1)	0 (0)	0 (0)	
	Spain	36 (72)	10 (20)	2 (4)	0 (0)	2 (4)	
	Guatemala	8 (40)	10 (50)	0 (0)	2 (10)	0 (0)	
	Mexico	30 (42.9)	24 (34.3)	14 (20)	2 (2.9)	0 (0)	
	Peru	100 (40.8)	97 (39.6)	27 (11)	16 (6.5)	5 (2)	
<b>I am afraid of losing my life because of Corona</b>	Argentina	10 (17.9)	20 (35.7)	8 (14.3)	6 (10.7)	12 (21.4)	0.001
	Bolivia	2 (7.1)	10 (35.7)	6 (21.4)	4 (14.3)	6 (21.4)	
	Colombia	10 (15.2)	12 (18.2)	14 (21.2)	24 (36.4)	6 (9.1)	
	Spain	22 (44)	14 (28)	12 (24)	0 (0)	2 (4)	
	Guatemala	0 (0)	2 (10)	10 (50)	8 (40)	0 (0)	
	Mexico	16 (22.9)	14 (20.0)	18 (25.7)	22 (31.4)	0 (0)	
	Peru	35 (14.3)	57 (23.3)	47 (19.2)	68 (27.8)	38 (15.5)	
<b>When I watch news and stories about Corona on social media, I become nervous or anxious</b>	Argentina	12 (21.4)	14 (25.0)	10 (17.9)	8 (14.3)	12 (21.4)	0.004
	Bolivia	4 (14.3)	8 (28.6)	10 (35.7)	4 (14.3)	2 (7.1)	
	Colombia	10 (15.2)	12 (18.2)	20 (30.3)	22 (33.3)	2 (3.0)	
	Spain	24 (48)	6 (12)	12 (24)	6 (12)	2 (4)	
	Guatemala	2 (10)	4 (20)	0 (0)	14 (70)	0 (0)	
	Mexico	14 (20.0)	18 (25.7)	16 (22.9)	18 (25.7)	4 (5.7)	
	Peru	45 (18.4)	67 (27.3)	52 (21.2)	64 (26.1)	17 (6.9)	
<b>I cannot sleep because I'm worrying about getting Corona</b>	Argentina	26 (46.4)	16 (28.6)	4 (7.1)	8 (14.3)	2 (3.6)	0.003
	Bolivia	16 (57.1)	6 (21.4)	4 (14.3)	2 (7.1)	0 (0)	
	Colombia	34 (51.5)	18 (27.3)	12 (18.2)	2 (3.0)	0 (0)	
	Spain	34 (68)	14 (28)	0 (0)	0 (0)	2 (4)	
	Guatemala	8 (40)	4 (20)	0 (0)	8 (40)	0 (0)	
	Mexico	32 (45.7)	24 (34.3)	12 (17.1)	2 (2.9)	0 (0)	
	Peru	95 (38.8)	92 (37.6)	30 (12.2)	20 (8.2)	8 (3.3)	

**Table 2 (continued).** Baseline distribution of fear in the seven countries included in the study

Fear of COVID-19 Items	Countries	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	p-value
My heart races or palpitates when I think about getting Corona	Argentina	22 (39.3)	18 (32.1)	2 (3.6)	12 (21.4)	2 (3.6)	0.0001
	Bolivia	12 (42.9)	8 (28.6)	2 (7.1)	6 (21.4)	0 (0)	
	Colombia	22 (33.3)	14 (21.2)	24 (36.4)	6 (9.1)	0 (0)	
	Spain	38 (76)	8 (16)	2 (4)	0 (0)	2 (4)	
	Guatemala	8 (40)	10 (50)	0 (0)	0 (0)	2 (10)	
	Mexico	30 (42.9)	14 (20.0)	18 (25.7)	8 (11.4)	0 (0)	
	Peru	72 (29.4)	83 (33.9)	48 (19.6)	30 (12.2)	12 (4.9)	

depression, where on average 43% of the participants strongly disagreed about “my heart races or palpitates when I think about getting Corona”, while 50% of the participants strongly disagreed with each “my hands become clammy when I think about Corona” and “cannot sleep because I’m worrying about getting Corona”.

Finally, our findings showed low levels of fear in 57.1%, 45.5%, 42.9%, and 41.2% of Argentines, Colombians, Bolivians, and Peruvians, respectively. We found no differences in low levels of fear between age groups ( $p>0.05$ ), however, we find differences between genders ( $p=0.001$ ).

## DISCUSSION

This study reports a low rate of fear of COVID-19 in Latin American populations in lockdown during 2020. Likewise, related to the comparison group (Spain) we evidenced a significant inter-item difference with countries with a report of high fear of coronavirus (as Mexico and Peru), suggesting that fear could be an independent factor not-related to mortality and morbidity rates due to COVID-19.

The strengths of this exploratory study were that it’s one of the first to report a quantified level of fear assessment in several countries in Latin America during the peak of the pandemic using validated measures. The results emphasize the low fear of COVID-19 perceived by Latin American individuals disagreeing with previous studies [6,15,18,23,27]. These results are possible since the people that were analyzed didn’t have COVID-19 or any flu-related symptoms, this is consistent with previous observations that showed that healthy individuals increased their fear scores when they suspected COVID-19 or when they already developed the disease.

Low fear rates may be due to the inclusion of a literate population and also because they were young adults as has recently been reported in the Indian population [28]. Although the relationship between age and fear has not previously been established [29], in this study we also found no differences between the age groups of the Latin American population. A recent national-wide report on the Argentine population showed an increased fear, anxiety, and depression at the beginning of the quarantine that affected people under 29 years old [30]. On the other hand, our findings have shown differences in the level of fear between genders in all countries coinciding with previous studies in the Cuban population affecting mostly women [31] and may lead to the development of symptoms of anxiety and/or depressive disorder [32,33].

In addition, we observed heterogeneity in the fear scores between countries. In particular, Peru, Argentina, and Mexico showed high levels of fear, while more than half of the participants in Bolivia, Mexico, and Colombia showed

moderate levels of fear. These results scrutinize our first hypothesis and could be subject to numerous country factors as personal (living conditions, health conditions, habits, etc.), as well as social (quarantine number, work condition, morbidity, and mortality of the country or region, presence of a relative or neighbor with COVID-19, the consumption of massive information [Infodemic] and, others, which were not addressed in this study) [34-36].

As has recently been demonstrated in some Latin American countries [37], the evaluation of fear has been restricted to the validation of the FCV-19S and no national-wide research has been carried out to understand population fear and differentiated by gender and age. In fact, in Brazil, Peru, Mexico and Argentina no differences between genders have been previously reported [37-39]. There is the possibility that the mental affectations are more settled in women during the pandemic, and a higher workload, pay gaps, and family and work burden are factors that have led to a greater crisis for women during COVID-19 [40,41]. In this study, we estimated the level of fear by gender, and Latin American women have a higher level of fear. This fear may be the result of certain factors and may have a negative impact on mental health.

As part of the second hypothesis, we can confirm that the degree of fear between Peru and Mexico were different compared to Spain (comparison group with 14-16 FCV-S19 score) [37]. For Spain, only 4% of the participants had a high level of fear of COVID-19, showing direct differences with Mexico and Peru (Figure 1). However, in Spain it has also been seen that almost half of the participants have very high levels of fear and concern related to the fact that a family member may die from COVID-19, there was even a fear of the spread of the virus in around 40% [42]. Just as there are differences in the management of the response to COVID-19 between regions and countries, the impact on the mental health of populations may be subject to the successful outcome of these measures [43].

Although high levels of fear have been reported among Peruvians [44], this estimate has not been made with the FCV-S19, making its multi-population comparison difficult [37]. Since the beginning of the pandemic, the Peruvian population has been subject to protection against SARS-CoV-2 [45] but only at the end of the first wave have interventions in mental health been developed. Our results are the first evaluation of fear in the general Peruvian population where a significant number of people have been described as afraid or very afraid of the COVID-19.

This study had limitations. The first limitation is the entire sample size because we conducted a study during the first wave of COVID-19 in Latin America. Therefore, due to lockdown reasons, there were limitations to enrolling participants. Second, although these low fear scores could explain also why COVID-19 prevention and control strategies have not had the

expected results, we acknowledge that the findings of our study may not be generalized since massive studies are required to clarify the nature of fear of COVID-19 among Latin American populations, which should be considered in future research.

In conclusion, our findings show that fear of COVID-19 vary among Latin American, and also, there was a large number of populations with low levels of fear in all countries showing differences (Peru and Mexico) compared to a European country (Spain) during the spread of COVID-19 in 2020. The present study provides important information on the fear scores in the Latin American population; also, it helps to fill this gap in knowledge by providing evidence from government institutions to improve public health strategies for prevention and treatment of mental disorders among Latin American communities.

**Author contributions:** JMS provided the study concept and design, statistical analysis, data management, and wrote the manuscript. BC provided the design, data acquisition, formal analysis, and performed data management. HCP provided the study concept, statistical analysis, data analysis and interpretation, and wrote the article. All authors approved the final version to be published.

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**Availability of data and material:** The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

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