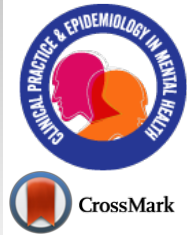


# Clinical Practice & Epidemiology in Mental Health

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## RESEARCH ARTICLE

### Fear of COVID-19 among Peruvian People Living in Disadvantaged Communities: A Cross-Sectional Study

Carlos Sotomayor-Beltran<sup>1,\*</sup> , Hernan Matta-Solis<sup>1,2</sup> , Rosa Perez-Siguas<sup>2</sup> , Eduardo Matta-Solis<sup>2</sup>  and Lourdes Matta-Zamudio<sup>3</sup> 

<sup>1</sup>Facultad de Ciencias de la Salud, Universidad de Ciencias y Humanidades, Lima, Peru

<sup>2</sup>Facultad de Ciencias de la Salud, Universidad Maria Auxiliadora, Lima, Peru

<sup>3</sup>Instituto Peruano de Salud Familiar, Lima, Peru

#### Abstract:

##### Background:

The COVID-19 crisis is fuelling a state of fear among the human population at global level. Especially, those living in informal settlements and slums worldwide have been profoundly impacted by this pandemic. Individuals living in these places are already leading underprivileged lives. Thus, the economic and mental health problems caused by the COVID-19 crisis have further exacerbated their living standards, which has resulted, for instance, in tragedies such as suicides.

##### Objective:

In this study, we have sought to identify those individuals most at risk of displaying high levels of fear of COVID-19 in an informal settlement located in the capital city of Peru.

##### Methods:

A questionnaire was administered to 449 inhabitants living in the Carmen Alto informal settlement. The questionnaire was made up of two parts: the first one inquired about demographic data and the second part consisted of the Fear of COVID-19 Scale.

##### Results:

The demographic variables of age, gender, marital status, educational level, occupation, whether a relative from the household was infected with COVID-19, and whether one of them died of this showed significant differences. It could be observed as well that the groups of females, stable workers, unemployed and those having completed a workforce education are at higher odds of displaying high levels of fear of COVID-19. As expected, the groups that had either a relative infected with COVID-19 or a relative death by this had the highest levels of fear towards the virus.

##### Conclusion:

The female participants are more likely to display higher levels of fear of COVID-19 due to the terrible effect that unfavorable events have on them. In the cases of the unemployed and stable workers, their proneness to show high levels of fear towards the virus is because they have lost their incomes, due to the loss of their jobs, and because of fear of infection, respectively. Hence, we hope that this work serves Peruvian (and other) health authorities to develop strategies that help individuals living in informal settlements and are in urgent need of mitigating mental health problems.

**Keywords:** COVID-19, Fear, Informal settlements, Underprivileged, Peru, Mental problems.

#### Article History

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## 1. INTRODUCTION

On March 11, 2020, the World Health Organization (WHO) declared the coronavirus disease 2019 (COVID-19) a pandemic [1]. Since then, we have observed how numerous

governments worldwide have enforced lockdowns, quarantines, curfews, and social distancing, in order to prevent the spread of the virus. Hygiene practices such as regular handwashing have also been strongly recommended, and in several countries, wearing facemasks has been made mandatory. These responses to the COVID-19 crisis added to sensationalist media and misinformation, unfortunately, have

\* Address correspondence to this author at the Facultad de Ciencias de la Salud, Universidad de Ciencias y Humanidades, Lima, Peru; Tel: +51 17151533; E-mail: [csotomayor@uch.edu.pe](mailto:csotomayor@uch.edu.pe)

fueled a state of fear among the global population [2, 3].

As indicated by the WHO, fear is an emotion that arises as a response to a threatening event [4], and if this becomes chronic and unattended, it could lead to several psychiatric disorders [5]. Since the start of the COVID-19 crisis, there have been several reports from people suffering from preexisting mental illnesses who have committed suicide [6]. In India, for instance, a 50-year-old man who was under the impression of having COVID-19 took his own life [7], this being the first suicidal case in this country. In Bangladesh, there was a similar case of a younger man (36 years old) who committed suicide by hanging himself from a tree for fear of having COVID-19, even though the autopsy showed that he did not [8]. Also, in Bangladesh, a 40-year-old woman who, evidently, was suffering from mental problems committed suicide because the healthcare professionals in the hospital she went to failed to treat her due to the fear that she might be infected with the coronavirus [9]. Such cases when reported by the media, only exacerbate the fear and panic that surround the COVID-19 pandemic.

Fears over this current pandemic are also putting some individuals into a frenzy. In Indonesia, for example, people have acted in an uncontrolled way (e.g., screaming, destroying hospital property and injuring medical staff) during the test procedures for diagnosing COVID-19 [10]. Events such as the aforementioned exhibit some of the consequences of the fear related to COVID-19; hence, it is necessary to identify those individuals most at risk and to develop mental health strategies that could help them overcome this fear. In India, a study out of 1499 participants revealed that women, married people, people with only high school education and people who were health care workers had higher odds of showing high levels of fear towards the virus [11]. Another investigation that could identify groups at risk was carried out in Bangladesh [12]. Out of 1166 Bangladeshis, the female participants and the elderly showed a greater fear of COVID-19.

In Latin America, the first case of COVID-19 was reported in Brazil on February 21, 2020 [13]. A study has shown that among 1743 Brazilians, the women and the younger participants were the two groups that showed higher fear of the coronavirus [14]. In Peru, which is one of the emerging economies of the Latin American region, the government announced its first case, patient 1, on March 6, 2020 [15]. This was the case of a man in his 20s who was traveling in Europe (Czech Republic, France and Spain) before arriving in Peru. Since then, Peru has become, as of the moment of this writing, the 18<sup>th</sup> country worldwide with the highest number of positive COVID-19 cases [16]. A very recent study in the capital city of Peru, Lima, has indicated that among the 832 people who partook in this, there was a difference between the levels of fear that the male and female participants exhibited [17].

Lima, like some of the other megacities in the Latin American region, has numerous informal settlements where the underprivileged live. Here, the housing and living conditions are of very low quality. For instance, it has been warned that in Brazilian slums, or favelas, keeping proper hygiene practices is very difficult; this is due to scarce access to water and poor sanitation [18]. Moreover, studies in Bangladesh and South

Africa have pointed out how cramped living conditions abound in their disadvantaged communities (i.e., informal settlements and slums) [19, 20]. Hence, in informal settlements of the Latin American region, the possibility of a rapid spread of the coronavirus is very high and as a consequence, fear of COVID-19 infection is greater.

Other fears among the poor and vulnerable population living in informal settlements, such as people losing their jobs or not having enough food to eat, because of unemployment due to the pandemic, are taking their toll as well [21, 22]. Hence in light of the above, we aim to study the levels of fear associated with COVID-19 among underprivileged Peruvians in the informal settlement of Carmen Alto, which is located in the northern part of the Peruvian capital (Lima).

## 2. MATERIALS AND METHODS

### 2.1. Participants

This cross-sectional study was conducted from August 19, 2020 until September 23, 2020. A total of 449 citizens from the Carmen Alto informal settlement gave their consent to participate. The questionnaire was filled out by means of door-to-door visits. In order to keep the at least 1-m distance indicated by the Peruvian government and thus to avoid any physical contact with the participants, we prepared the questionnaire in Google forms and gave the link to the participants via Whatsapp at their doorsteps. The illiterate respondents were provided with assistance to answer the questionnaire. On average, it took about 10 minutes for each participant to fill out the survey; all of them provided online informed consent. Ethical approval was obtained from the Ethics Committee of the Universidad Maria Auxiliadora.

### 2.2. Instrument

The questionnaire was made up of two parts. In the first part, we collected demographic data on age, gender, marital status, education level, occupation, whether a relative from the household was infected, prior to our visit, with COVID-19, and whether one of the relatives from the household died of COVID-19. The second part of the questionnaire consisted of the Fear of COVID-19 Scale (FCV-19S) [23], which measures the level of fear towards the virus. The FCV-19S has been translated to many languages and validated in several countries [24 - 30]. In Peru, a Spanish (official language of this nation) version of the FCV-19S has been very recently produced and validated [17]. The Spanish version of the FCV-19S was used for our study. The FCV-19S consists of 7 questions, to which the respondents had to indicate their level of agreement using a five-item Likert-type scale (“strongly disagree” 1 point, “disagree” 2 point, “neither agree nor disagree” 3 point, “agree” 4 point, “strongly agree” 5 point). The FCV-19S provides a minimum and maximum total score of 7 and 35, respectively, where the higher the score is, the greater the level of fear towards COVID-19.

### 2.3. Statistical Analysis

The statistical analyses were all carried out using the IBM SPSS version 24.0 software. Descriptive statistics (frequencies

and percentages) were estimated. For this study, the levels of fear of COVID-19 were divided into two, as high and low levels (scores above and below the overall score mean, respectively). A Chi-square test was used to compare two categorical variables. Due to the non-parametric data, Mann-Whitney and Kruskal-Wallis tests were used to evaluate differences between two and more than two groups, respectively. Multiple logistic regression analysis was carried out to assess the association between the levels of fear of COVID-19 and the significantly different variables. A significance level ( $\alpha$ ) of 0.05 was used.

**3. RESULTS**

The sample of 449 respondents had a mean age of 40.75 ±7.49 years, with a bit more females (51.2%) than males (48.8%). Nearly half of the participants (49.9%) belonged to the age group of 30-40 years. The percentage of the participants that were married was small (9.3%), whereas most of the participants (63.5%) were living together with their partners and other relatives. Revealing the educational disadvantages that exist in Peru among the underprivileged, it can be seen that 75.1% of the respondents were either illiterate or had only completed primary education, while only 7.1% had the opportunity to complete an education at a higher

educational institution (workforce education). Among the 449 participants, 208 (46.3%) indicated that they had, prior to our visit, a relative in the household infected with COVID-19 and a total of 88 (19.6%) revealed to have a death relative from the household due to the coronavirus. All the demographic characteristics of the participants are summarized in Table 1.

The overall mean score of the level of fear of COVID-19 was 24.04 ± 4.94. More than half of the participants (59.24%) showed a high level of fear towards the coronavirus. From Table 2, it can be noticed that age, gender, marital status, educational level, occupation, whether a relative from the household was infected with COVID-19, and whether one of them died of this showed significant differences ( $p < 0.001$ ). The participants that belonged to the younger age group (30-40 years) presented a higher mean score than the other two age groups. In a similar fashion, the group of females, singles, those with complete secondary education and the unemployed had as well higher mean scores, which indicates that these groups have a greater fear of COVID-19. As expected, the two groups of participants that had either a relative that was infected by COVID-19 or a relative death by this presented the highest levels of fear towards the coronavirus (a mean score of 27.9 ±2.6 and 29.2 ±2.9, respectively).

**Table 1. Demographic data of the participants (N = 449).**

	Frequency	Percentages (%)
-	-	-
<b>Age (Years)</b>	-	-
30-40	224	49.9
41-50	189	42.1
51-60	36	8
-	-	-
<b>Gender</b>	-	-
Male	219	48.8
Female	230	51.2
-	-	-
<b>Marital status</b>	-	-
Married	42	9.3
Living together	285	63.5
Single	122	27.2
-	-	-
<b>Educational level</b>	-	-
Illiterate	40	9
Primary	297	66.1
Secondary	80	17.8
Workforce education	32	7.1
-	-	-
<b>Occupation</b>	-	-
Stable worker	187	41.6
Occasional	183	40.8
Unemployed	79	17.6
-	-	-
<b>Relative at home infected with COVID-19?</b>	-	-
Yes	208	46.3
No	241	53.7
-	-	-

(Table 1) contd.....

-	Frequency	Percentages (%)
<b>Death relative at home by COVID-19?</b>	-	-
Yes	88	19.6
No	361	80.4

**Table 2. Comparison of The Level of Fear Of COVID-19 according to various demographic variables.**

-	Low	High	p-value	Mean ±SD	p-value
<b>Age (Years)</b>	-	-	-	-	-
30-40	71	153	< 0.001	25.2 ±4.8	< 0.001 <sup>a</sup>
41-50	99	90		22.6 ±4.7	
51-60	13	23		24.6 ±5.2	
-	-	-	-	-	-
<b>Gender</b>	-	-	-	-	-
Male	132	87	< 0.001	22.1 ±4.8	< 0.001 <sup>b</sup>
Female	51	179		25.9 ±4.3	
-	-	-	-	-	-
<b>Marital status</b>	-	-	-	-	-
Married	19	23	< 0.001	23.6 ±5.2	< 0.001 <sup>a</sup>
Living together	135	150		23.1 ± 4.7	
Single	29	93		26.3 ±4.7	
-	-	-	-	-	-
<b>Educational level</b>	-	-	-	-	-
Illiterate	31	9	< 0.001	20.2 ±4.1	< 0.001 <sup>a</sup>
Primary	121	176		23.7 ±4.4	
Secondary	20	60		27 ±5.3	
Workforce education	11	21		24.9 ±5.3	
-	-	-	-	-	-
<b>Occupation</b>	-	-	-	-	-
Stable worker	43	144	< 0.001	25.9 ±4.2	< 0.001 <sup>a</sup>
Occasional	126	57		21.1 ±4.6	
Unemployed	14	65		26.4 ±3.9	
-	-	-	-	-	-
<b>Relative at home infected with COVID-19?</b>	-	-	-	-	-
Yes	7	201	<0.001	27.9 ±2.6	< 0.001 <sup>b</sup>
No	176	65		20.6 ± 3.9	
-	-	-	-	-	-
<b>Death relative at home by COVID-19?</b>	-	-	-	-	-
Yes	2	86	< 0.001	29.2 ±2.9	< 0.001 <sup>b</sup>
No	181	180		22.8 ±4.5	

<sup>a</sup>Kruskal-Wallis test; <sup>b</sup>Mann-Whitney test.

As observed in Table 3, multiple logistic regression showed that females, stable workers, unemployed and having completed a workforce education are more likely to show high levels of fear of COVID-19; OR of 5.16 (95% CI: 1.97-13.50), OR of 13.22 (95% CI: 4.00-43.62), OR of 9.32 (95% CI:

2.52-34.62) and OR of 27.07 (95% CI: 1.61-454.24), respectively. Additionally and not unexpectedly, having had a relative infected with COVID-19 or a relative death by this increases the odds of displaying high levels of fear towards the coronavirus.

**Table 3. Multiple logistic regression analysis of factors affecting the level of fear of COVID-19.**

-	N	High	OR	95% CI		p-value
<b>Age (Years)</b>	-	-	-	-	-	-
30-40	224	153	1	-	-	-
41-50	189	90	1.06	0.45	2.50	0.898
51-60	36	23	1.51	0.34	6.75	0.587

(Table 3) contd.....

	N	High	OR	95% CI		p-value
-	-	-	-	-	-	-
-	-	-	-	-	-	-
<b>Gender</b>	-	-	-	-	-	-
Male	219	87	1	-	-	-
Female	230	179	5.16	1.97	13.50	0.001*
-	-	-	-	-	-	-
<b>Marital status</b>	-	-	-	-	-	-
Married	42	23	1	-	-	-
Living together	285	150	0.67	0.15	3.04	0.599
Single	122	93	0.41	0.07	2.21	0.296
-	-	-	-	-	-	-
<b>Educational level</b>	-	-	-	-	-	-
Illiterate	40	9	1	-	-	-
Primary	297	176	7.32	0.67	79.82	0.102
Secondary	80	60	2.31	0.15	34.91	0.545
Workforce education	32	21	27.07	1.61	454.24	0.022*
-	-	-	-	-	-	-
<b>Occupation</b>	-	-	-	-	-	-
Stable worker	187	144	13.22	4.00	43.62	0.000*
Occasional	183	57	1	-	-	-
Unemployed	79	65	9.32	2.52	34.42	0.001*
-	-	-	-	-	-	-
<b>Relative at home infected with COVID-19?</b>	-	-	-	-	-	-
Yes	208	201	302.69	88.37	1036.80	0.000*
No	241	65	1	-	-	-
-	-	-	-	-	-	-
<b>Death relative at home by COVID-19?</b>	-	-	-	-	-	-
Yes	88	86	9.29	1.51	57.03	0.016*
No	361	180	1	-	-	-

OR: Odds Ratio; CI: Confidence Interval; \*Statistically significant.

**4. DISCUSSION**

The present study has identified groups more at risk of displaying high levels of fear of COVID-19 among the citizens of an informal Peruvian settlement. We have observed that women are more likely to show greater fear towards the coronavirus than men, which goes well in agreement with studies from other countries [11, 14, 31]. In this regard, it has been indicated that unfavorable events have a greater effect on women and also that they tend to exaggerate the possibility of the occurrence of threatening situations [32]. A study, which assessed the impact of the COVID-19 crisis among the inhabitants of a South African informal settlement, showed that some female participants are afraid of not having enough money to buy food for their families due to the loss of income, while others fear for their children’s education because schools are closed and they can not do this remotely [33]. Hence, it is quite likely that women in informal settlements across Peru are confronted with similar stressful situations, which results as well in the high levels of fear we have observed within this group (mean score of 25.9 ±4.3).

Citizens of the Carmen Alto informal settlement and others in Peru work mainly as domestic labor, as transport workers, in restaurants, in beauty parlors, and doing janitorial work, just to name a few examples. Since the beginning of the pandemic, however, many of them have lost their jobs and others have seen sizeable reductions in their salaries. A study has indicated

that the unemployed and those with wage reductions during the economic crisis are more prone to show mood disorders, anxiety, depression and suicidal tendencies [34]. For instance, in Indonesia and India, several suicide cases have been reported due to unemployment caused by the COVID-19 crisis [10, 35]. Our findings have revealed that the unemployed are more likely to show greater levels of fear towards the COVID-19; thus, psychological interventions must be especially targeted to these individuals in order to avoid future tragedies. On the other hand, we have seen as well that those who have managed to keep their jobs, the stable workers, show as well high levels of fear towards the virus (mean score of 25.9 ±4.2). COVID-19 infections at different work settings, such as restaurants, retail stores and residences, have been reported [36]. Hence, in this case, the fear of infection at their workplaces or even during their transit to work using public transport is very likely the reason behind the high levels of fear within this group.

Carmen Alto, as many other informal settlements in Lima, is located in one of the capital’s districts with the highest numbers of positive cases of COVID-19 [37]. This is further confirmed by our study where nearly half (46.3%) of the participants had a relative prior to our visit, who was infected with COVID-19. Because in these areas, the underprivileged do not have the economic means to provide a relative, infected with COVID-19, with proper treatment, some of them can only

afford the simplest one, oxygen, while others can not afford any. Not only the extremely long queues and long waiting hours to buy or refill oxygen tanks [38], for those who can afford these, but also to witness the suffering that their infected relatives are subjected to, once the onset of the symptoms happens, takes a toll on the mental health of the inhabitants in informal settlements. Thus as our study confirms, the group of participants who had a relative infected relative with COVID-19 are at higher odds of displaying greater levels of fear of the virus.

Approximately half of the informal settlements (49.8%) in Peru are concentrated in Lima city [39] and it is in these areas, where the poor and vulnerable live, that the economic and mental impact of the pandemic hits the hardest [40]. Thus, we hope our findings serve government health institutions, especially the recently created National Council of Mental Health (CONASAME), to develop strategies that help those most in need of mitigating mental health problems. One of these can be the implementation of multidisciplinary mental health teams to provide proper counseling [41, 42]. Another strategy is the proper communication of regular updates of the COVID-19 pandemic [41, 42], in order to avoid the spread of misinformation [8]. A third strategy that can help in reaching more patients, especially those with limited access to mental health providers, is the use of telemedicine [35, 43 - 44]. For instance, since the beginning of the pandemic, the WeChat app in China has been established to provide online psychological counseling services [45].

Considering that the participants were in the 30-60 age range, the current study presents the limitation that this is not necessarily representative of the general population living in all informal settlements across Peru. However, the large sample size and validity of the FCV-19S provide strength to our findings and analyses. Another limitation is the cross-sectional nature of the study, which may limit assertions about the directionality of our results. Follow-up studies considering a nationally representative sample is needed to confirm our results.

## CONCLUSION

We have surveyed 449 Peruvians living in an informal settlement in the capital city of Peru. It is in these places where the unprivileged people live, that the COVID-19 crisis is having a profound impact on their lives and as a consequence, many of them are living in a state of constant fear. In this study, we have observed that the group of participants who had either a relative infected with COVID-19 or a relative death by this had the highest levels of fear. Furthermore, we have also identified the groups most at risk of displaying high levels of fear of the current pandemic. Some of them are the women, the unemployed, and the stable workers. We expect that our findings will serve Peruvian health authorities and mental health professionals in taking immediate action to target strategies to help the most vulnerable among the inhabitants of informal settlements.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was approved by the Ethics Committee of the

Universidad Maria Auxiliadora, Lima, Peru (Approval No. 012-2020).

## HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All human research procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

## CONSENT FOR PUBLICATION

Informed consent was obtained from all the participants.

## AVAILABILITY OF DATA AND MATERIALS

The data used to support the findings of this study are available at GitHub [https://github.com/coto20/COVID\\_CARMEN\\_ALTO](https://github.com/coto20/COVID_CARMEN_ALTO)

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None.

## CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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Declared none.

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