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The COVID-19 Fear Scale (FCV-19S): Psychometric properties and invariance of the measure in the Spanish version

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SUMMARY

Introduction. The emergence of COVID-19 worldwide has had serious consequences for physical and psychological health. Spain is one of the countries that has been most-seriously affected by the pandemic. This study aims to evaluate the psychometric properties of the Spanish version of the COVID-19 fear scale (FCV-19S), assessing its structural validity, differential item functioning, and measurement invariance by gender and age.

Methodology. A cross-sectional study was carried out in several stages. Descriptive, exploratory and confirmatory factor analysis, scale reliability, item differential functioning, and measurement invariance tests were carried out.

Results. We obtained a single-factor scale with excellent goodness-of-fit indices and high internal consistency ($\alpha = .90$; $\omega = .93$) adapted to the general Spanish population. We also found a significant relationship with depression ($r = .72$) and anxiety ($r = .84$). Gender invariance testing indicated that men and women understood the scale items differently, with differences also being found by age group.

Conclusions. This is the first study attempting to assess the gender and age invariance of the FCV-19S scale. The scale demonstrates adequate psychometric properties, high internal consistency, and an appropriate relationship with depression and anxiety. Men and women in the general Spanish population have different perceptions of the fear of infection by COVID-19, and the fear affects some age groups more than others.

keywords. COVID-19, Spanish population, psychometric properties, COVID-19 fear scale, gender and age invariance.

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ESCALA DE MIEDO AL COVID-19 (FCV-19S): PROPIEDADES PSICOMÉTRICAS E INVARIABILIDAD DE LA MEDIDA EN LA VERSIÓN ESPAÑOLA

RESUMEN

Introducción. La aparición de la COVID-19 en todo el mundo ha tenido graves consecuencias para la salud física y psicológica. España ha sido uno de los países más afectados por la pandemia. Por ello esta investigación pretende evaluar las propiedades psicométricas de la versión española de la escala del miedo al COVID-19 (FCV-19S), además de valorar su validez estructural, funcionamiento diferencial de los ítems y la invariabilidad de esta medida según el género y edad.

Metodología. Se realizó una investigación transversal en varias etapas. Se realizaron análisis descriptivos, factoriales exploratorios y confirmatorios, de fiabilidad de la escala, funcionamiento diferencial del ítem e invariabilidad de la medida.

Resultados. Se obtuvo una escala unifactorial con unos excelentes índices de bondad de ajuste y alta consistencia interna ($\alpha = .90$; $\omega = .93$) adaptada a la población general española. Adicionalmente, se detecta una importante relación con depresión ($r = .72$) y ansiedad ($r = .84$). La invariabilidad en cuanto al género muestra que tanto los hombres como las mujeres comprenden de manera diferente los ítems de la escala, existiendo también diferencias según grupo de edad.

Conclusiones. Este es el primer estudio que intenta evaluar la invariabilidad de la medida según el sexo y edad de la escala FCV-19S, presentando adecuadas propiedades psicométricas, alta consistencia interna y una adecuada relación con depresión y ansiedad. El resultado del miedo a la infección por COVID-19 en la población general española es percibido de forma distinta por hombres y mujeres y afecta a unas edades concretas más que a otras.

Palabras clave. COVID-19, población española, propiedades psicométricas, Escala del miedo al COVID-19, Invariabilidad en género y edad.

INTRODUCTION

SARS-CoV-2 virus disease (COVID-19) has become a global public health threat¹ due to the high rate of infection, mass quarantines, and increasing numbers of deaths worldwide^{2,3,4}. In addition, vulnerable subpopulations are at increased risk of mental disorders^{5,6} and suicide attempts^{7,8}. However, this pandemic has also produced a high level of distress in the general population, manifested in moderate to severe symptoms of depression and anxiety⁹. In fact, it has been reported that fear of possible contact with people who may be infected increases stigma and discrimination¹⁰, and this fear may in turn have direct negative consequences for disease control^{11,12} by increasing certain panic behaviours¹³. Fearful reactions to infectious diseases are considered normal¹¹, but the increasing morbidity and mortality rates¹⁴ of COVID-19 highlight the importance of conducting research on fear of infection and fear-related behaviours, especially in the general population¹⁵. However, attempts to assess the psychosocial aspects of fear of COVID-19 infection are hampered by the paucity of validated instruments for measuring this variable.

Recently, the Fear of COVID-19 Scale (FCV-19S)¹⁶ was developed, which demonstrated positive relationships with anxiety, depression and stress¹⁷, and adequate psychometric properties in languages such as English¹⁸, Italian¹⁹, Hebrew²⁰, Arabic²¹, Russian²² and Turkish²³. However, other studies have reported the existence of some psychometric inconsistencies related to the original factor structure^{20,24} and gender and age invariance of this measure¹⁶. These demographic variables are of great interest in the modulation of anxiety, depression²⁵ and fear^{26,27}, and this means that some validation procedures may be incomplete²⁴. However, in order to implement health promotion and prevention programmes in a pandemic, it is essential to assess the impact of demographic variables on the fear of COVID-19 and to study its consequences (anxiety and depression)²⁸.

On 21 May 2020, Spain had the fifth highest number of COVID-19 infections and deaths in the world and the second highest in Europe¹. The FCV-19S was applied to Spanish university students and demonstrated adequate psychometric properties in this population²⁹, albeit with significant gender differences (82% female). Given that we have found no adaptation of the FCV-19S for the general Spanish population subject to compulsory home confinement due to COVID-19, the aim of this study was to evaluate the psychometric properties of the FCV-19S through descriptive and factor analyses, testing its relationship to anxiety and depression and exploring its structural validity, as well as differential item functioning and measurement invariance by gender and age of the population.

METHOD

Participants

The sample consisted of 699 people who responded to a battery of online questionnaires. The criteria for inclusion in the study were: 1) being at least 18 years old, 2) completing all the questionnaires, and 3) living in Spain. The total sample was made up of 402 (57.51%) women and 297 (42.49%) men with ages ranging from 18–73 years old ($M = 27.79$, $SD = 12.68$). For 414 (59.23%) participants, one member of the family performed some essential service or was a health worker. The sample was randomly split for factor analysis³⁰: $n_1 = 349$ people, with 199 (57.02%) women and 150 (42.98%) men, and $n_2 = 350$ people, with 201 (57.59%) women and 149 (42.41%) men.

All other socio-demographic data are given in Table 1.

Table 1	Description of the socio-demographic data of the sample used		
	N(%)	n_1 (%)	n_2 (%)
Age			
18–28	426 (60,94)	211 (49,53)	215 (50,47)
29–39	132 (18,89)	67 (50,75)	65 (49,25)
40–49	124 (17,74)	63 (50,80)	61 (49,20)
over 50	17 (2,43)	8 (47,06)	9 (52,94)
Do you work or study?			
Study	255 (36,48)	128 (50,20)	127 (49,80)
Work	359 (51,36)	178 (49,58)	181 (50,42)
Work and study	49 (7,01)	25 (51,02)	24 (48,98)
Retired	14 (2,00)	8 (57,14)	6 (42,86)
Nothing	22 (3,15)	10 (45,45)	12 (54,55)
Presence of COVID-19 infection			
Yes	19 (2,02)	11 (57,89)	8 (42,11)
No	680 (97,28)	338 (49,70)	342 (50,30)
List of essential services staff			
Yes	414 (59,23)	208 (50,24)	206 (49,76)
No	285 (40,77)	141 (49,47)	144 (50,53)
Total	699 (100)	349 (100)	350 (100)

Instruments

Socio-demographic information including gender, age, activity, living with COVID-19 patients, and living with essential service workers or health professionals.

The *Fear of COVID-19 Scale-FCV-19S* by Ahorsu et al.¹⁶ measures fear of COVID-19 infection. This unidimensional scale consists of seven items which have a 5-point Likert response ranging from 1 (strongly disagree) to 5 (strongly agree), with total scores ranging from 7 to 35 points. The higher the score, the greater the fear of COVID-19 infection. The alpha coefficient for the original version was .82, and it demonstrated adequate concurrent validity with depression ($r = .42$), anxiety ($r = .51$), germ aversion ($r = .45$), and perception of infection ($r = .48$). All versions of this scale are unidimensional, with the exception of the Hebrew²⁰ and Russian²² versions which are two-dimensional, with Cronbach alphas between .81 and .88 in different languages and countries (for a review of the psychometric properties of the FCV-19S see Harper et al.¹⁸).

The *Hospital Anxiety and Depression Scale-HADS* by Zigmond & Snaith³¹ in its Spanish adaptation by Herro et al.³² consists of 14 items with two subscales, one for anxiety and the other for depression. It assesses symptoms of both disorders in the general population and the clinical population³¹. Each subdimension has seven items, with a Likert response format from 0-3. The maximum score for each subdimension is 21 points. The Spanish version has a two-dimensional structure and exhibits adequate internal consistency, with a Cronbach alpha of .71 for the depression subscale and .77 for the anxiety subscale³². In our study, the alpha for the total scale was .86, it was .89 for anxiety and .83 for depression.

Translation of the scale

The original version of the FCV-19S (Ahorsu et al.¹⁶) was translated into Spanish using a standardised translation process^{33,34}. The lead author of this paper compared the Spanish translation with the original English version, based on the rules established by the International Test Commission (ITC)³⁵. An additional bilingual translator supported the translation and revision by working with the primary translator, especially on the items posing the greatest semantic and grammatical difficulties. Subsequently, a doctor in psychology and bilingual translator (English-Spanish) used a reverse translation methodology³⁶. Finally, a review of the whole process was carried out by a three-person committee who were experts in fear and behavioural methodology as recommended by some recent studies³⁷. Following appropriate modifications, this final version of the Spanish FCV-19S scale was used in this research.

Procedure

Data collection took place between 22 April and 21 May 2020. The online survey was published at the link <https://forms.gle/kAU1sr84uCTHCfMu8> and disseminated through a snowballing procedure. The authors contacted the initial potential participants via social media and asked them not only to participate in this study, but also to disseminate it to their own contacts. Before completing all online questionnaires, participants were required to read the information about the study and give explicit informed consent if they wished to participate. Electronic consent was required for participants to be able to access the survey. The study complied with the relevant digital data protection and privacy laws at all times.

Ethical approvals

We obtained prior approval for the project from the bioethics committee of the University of Jaen in Spain (identification number ABR.20/4.PRY). The study followed the principles enshrined in the Helsinki Declaration³⁸.

Data analysis

First, we examined internal consistency, and performed item analysis and exploratory factor analysis (EFA) by means of the FACTOR³⁹ program, using minimum rank factor analysis⁴⁰. We used a classical oblique rotation method to achieve maximum parsimony in the interpretation of the factorial solution: specifically, the direct oblique rotation method was applied with a delta value equal to 0⁴¹. Subsequently, we performed a confirmatory factor analysis (CFA) using the SPSS Amos software on another subsample to evaluate the structure obtained in the previous analysis. The method used was unweighted least squares (ULS) with bootstrap procedures⁴². The fit indices used were the χ^2/df index, the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean residual (RMR), and the adjusted goodness-of-fit index (AGFI). The goodness-of-fit model is considered satisfactory if the TLI and CFI are .95 or above, RMSEA is close to .06, and AGFI is above .94⁴³. Differential Item Functioning (DIF) was examined using Rasch analysis with jMetrik⁴⁴ and we also examined whether there were differences in the invariance of the measure by gender and age using multigroup CFA with AMOS. Two nested models were defined for gender and three models for age. We used the Satorra-Bentler scale (χ^2) and its p-values for measurement invariance, together with the RMSEA with a 90% CI and the CFI, as the incremental fit index⁴⁵.

Measurement invariance exists when the $p > .05$ of $\Delta\chi^2$ (considering sample size bias); RMSEA values $\leq .05$ and the Δ CFI value of the compared models is $< .01^{46}$. Finally, data on the divergent validity of the resulting instrument was obtained by calculating Pearson's correlation coefficients with the HADS scale (depression and anxiety) and reliability was also measured using the internal consistency procedure (Cronbach's alpha and McDonald's omega coefficients). The level of statistical significance required for all tests was a minimum of $p < .05$.

RESULTS

Descriptive statistics and item analysis

The results of the descriptive analysis of the items and the Kolmogorov-Smirnov test, together with the data for skewness and kurtosis showed little variability, indicating normality in this sample (Table 2). Item analysis demonstrated adequate variability. The correlation between the item total and alpha demonstrated adequate correlations for all items ($>.50$), with the exception of item 3 ($r_{it} = .42$).

Table 2 FCV-19S item analysis and descriptive statistics

Original	Spanish	M(SD)	K-S	A		r ítem-total	α if item is removed
				SE = ,37	SE = ,18		
Ítem 1. I am most afraid of coronavirus-19.	<i>Tengo mucho miedo a infectarme por SARS-CoV-2.</i>	4,8(1,12)	,90**	,36	,22	,77	,55
Ítem 2. It makes me uncomfortable to think about coronavirus-19.	<i>Me incomoda pensar en la COVID-19.</i>	3,6(1,79)	,81**	,68	,54	,59	,68
Ítem 3. My hands become clammy when I think about coronavirus-19.	<i>Me sudan las manos cuando pienso en la COVID-19.</i>	3,59(1,22)	,80**	1,34	1,11	,42	,61
Ítem 4. I am afraid of losing my life because of coronavirus-19.	<i>Tengo miedo de perder la vida por SARS-CoV-2.</i>	4,82(.91)	,86**	,39	,85	,61	,78
Ítem 5. When watching news and stories about coronavirus-19 on social media, I become nervous or anxious.	<i>Cuando veo noticias e historias sobre la COVID-19 en las redes sociales, me pongo nervioso o ansioso.</i>	3,11(1,25)	,89**	,58	,79	,75	,63
Ítem 6. I cannot sleep because I'm worrying about getting coronavirus-19	<i>No puedo dormir porque me preocupa estar infectado por SARS-CoV-2.</i>	2,06(1,35)	,80**	,56	,93	,72	,69
Ítem 7. My heart races or palpitates when I think about getting coronavirus-19	<i>Mi corazón se acelera o palpita cuando pienso en contraer el SARS-CoV-2.</i>	3,8(1,45)	,87**	,56	,72	,69	66
		Total	29,34(9,65)	,87**			

M = Mean; SD = Standard deviation; K-S = Kolmogorov-Smirnov Test; ** $p < .01$; A = Skewness; C = Kurtosis; SE = Standard error

Exploratory factor analysis (n₁ = 349)

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (KMO = .92), Bartlett's test of sphericity ($\chi^2 = 5654.219$; $p < .001$), and the determinant of the correlation matrix (.005) showed that the data was suitable for factor analysis⁴⁷. The FACTOR program compares the mean or 95th percentile of the percentage of the common variance explained by the factor for randomly interchangeable data with the common variance explained by the sample⁴⁸. If the observed percentage of a factor exceeds the random percentage, the factor is retained. This process occurred on one occasion for the Spanish FCV-19S. Therefore, the data showed unidimensionality through exploratory factor analysis as shown in Table 3, explaining 88.10% of the total variance. All items loaded above .50. In addition, significant moderate to strong correlations were found between all of the items in the scale.

Confirmatory factor analysis (n₂ = 350)

A confirmatory factor analysis was conducted on another sample of 350 participants, with normality of item distribution (Mardia's test = 2.81)⁴⁹. In addition, the goodness of fit indices for the Spanish FCV-19S in this sample were excellent. Specifically, this model demonstrated $\chi^2 = 120.12$; $df = 58$; $\chi^2/df (2.07)$; $p < .01$ and an RMSEA value (95% confidence interval [CI]) below .02[.01; .03], there were adequate scores for CFI (.99), TLI (.98), and GFI (.92) above the .90 limit, and RMR (.03), with good agreement between the goodness-of-fit indices evaluated.

Based on these results, the acceptability and goodness-of-fit of this model are considered robust. Therefore, the data confirm a unidimensional structure with seven items in this sample of the general Spanish population.

Table 3 Exploratory Factor Analysis and correlation matrix of FCV-19S

	Dimensions			Ítem 1	Ítem 2	Ítem 3	Ítem 4	Ítem 5	Ítem 6	Ítem 7
	Factor 1	Factor 2	h ²							
Ítem 1	,63	,16	,58	1	,83*	,84*	,72*	,76*	,85*	,83*
Ítem 2	,61	,11	,43	,63*	1	,85*	,69*	,79*	,73*	,77*
Ítem 3	,58	,23	,38	,85*	,78*	1	,81*	,62*	,69*	,74*
Ítem 4	,79	,01	,79	,76*	,75*	,83*	1	,76*	,86*	,65*
Ítem 5	,71	,09	,48	,69**	,72*	,74*	,68*	1	,83*	,92*
Ítem 6	,59	,18	,53	,84*	,69*	,77*	,85*	,71**	1	,85*
Ítem 7	,66	,14	,83	,72*	,83*	,79**	,91*	,86*	,89*	1

Rotated load with values >.50 in Factor 1; h²=Communities; *p < .05; **p < .01

Differential Item Functioning (DIF)

Following the CFA, we tested differential item functioning and the fit of the data to the Rasch model using the Weighted Mean Squared-WMS and Unweighted Mean Squared-UMS statistics. Table 4 shows the statistics for the Spanish FCV-19S item set. Neither the WMS nor the UMS values compromised the unidimensionality (range .66-1.72) of the scale.

Table 4 Differential Item Functioning (DIF) and Fit Statistics

Item	Es	Er	WMS	UMS
1	3,31	,06	,93	,98
2	4,03	,06	,82	,84
3	2,02	,06	,91	,96
4	3,61	,06	,66	,73
5	4,52	,06	,83	,79
6	3,71	,06	1,34	1,72
7	4,56	,06	,81	,84

Es = Estimate: difficulty (endorsability) of items; Er = standard error associated with the estimate of each item; WMS = weighted root mean square; UMS = unweighted root mean square.

Gender and age invariance of measurement

The specific models for men and women and for each age group demonstrated a good fit to the data, indicating that a multi-group confirmatory factor analysis-CFA was appropriate. The test for configural invariance (reference model) and metric invariance showed good levels of fit, but they were not equal across genders and ages (Table 5). Configural invariance by gender showed that women understood the FCV-19S items differently to men ($\Delta\chi^2_{(6)} = 32.34$; $p < .05$; $\Delta CFI = .003$). Similarly, the comparison of the groups according to age seemed to show that there was variation in the way fear was understood depending on age group. This difference was greater in the youngest (18 to 28 years) and in the oldest (50 years and older) age groups ($\Delta\chi^2_{(8)} = 27.53$; $p < .05$; $\Delta CFI = .004$).

Reliability and convergent validity

Finally, the results for the Spanish version of FCV-19S (FCV-19S-S) demonstrated high internal consistency (alpha and omega), with $\alpha = .90$ and $\omega = .93$ in the total sample. The minimum score in this sample was 8 and the maximum score was 34. The level of positive significant correlation ($p < .01$) with the HADS scale was .86 for the full scale, it was .72 for depression, and .84 for anxiety.

DISCUSSION

Spain has been one of the most-seriously affected countries in the world by the COVID-19¹ pandemic, suffering enormous consequences⁵⁰. Fear is a key emotion as it modulates how well^{11,12} or badly¹³ people cope with illness. When the Spanish government declared a state of alarm throughout the country on 15 March 2020, the population suffered tremendous uneasiness due to the unprecedented situation, mandatory home confinement, which produced high levels of anxiety and fear. The aim of this study was to evaluate the psychometric properties of the FCV-19S in the general Spanish population subjected to compulsory home confinement due to COVID-19. In addition, we evaluated its structure, differential item functioning, the invariance of the measure by gender and age, and the relationship with psychopathological states such as anxiety and depression.

The results indicate that FCV-19S-S exhibits adequate psychometric properties, including high internal consistency and convergent validity with anxiety and depression. Factor analysis showed a unidimensional structure of the Spanish FCV-19S that explained 88.10% of the variance. This study is the first to add data about differential item functioning and the invariance of this measure by gender and age of the sample. Our findings contrast with two previous studies which suggested two-dimensional structures in the Hebrew⁻²⁰ and Russian-speaking²² populations. However, our results are

Table 5 Fit indices for the invariance tests in gender and age

	χ^2	df	χ^2/df	p	RMSEA (95 % CI)	CFI	$\Delta\chi^2$	ΔCFI
Men (n = 297)	48.11	26	1.85	.05	.03[.01; .04]	.95		
Women (n = 402)	51.18	26	1.54	.00	.02[.01; .03]	.98		
Configural invariance (gender)	88.54	45	2.01	.00	.03[.02; .03]	.99	32.34*	.003
Age (18-28)	118.20	51	2.21	.00	.01[.01; .03]	.97		
Age (29-39)	146.23	53	2.54	.45	.03[.02; .04]	.96		
Age (40-49)	129.56	58	2.23	.10	.01[.01; .02]	.95		
Age (50 and over)	157.49	68	2.14	.00	.03[.01; .04]	.96		
Configural Invariance (age)	187.65	71	1.89	.00	.01[.01; .03]	.95	27.53 ^{ns}	.004

χ^2 = Chi-square; df = degrees of freedom, χ^2/df = Chi-square goodness-of-fit index; p = significance level; RMSEA = root mean square error of approximation; CFI = comparative fit index; $\Delta\chi^2$ = test of difference between configural and metric invariance models; ΔCFI = test of difference between comparative fit index; * = $p < .05$; ** = $p < .01$; ns = not significant.

consistent with the original version tested with an Iranian population¹⁶ and with recent adaptations for other populations such as Italian⁻¹⁹, Arabic⁻²¹ and Turkish-speakers²³.

The Russian study²² did not perform analyses of the psychometric properties of the scale, it was solely a translation of the Iranian original¹⁶ and the collection of information from a survey, the results of which it compared with data from the Iranian population. It found that women, students, and others in Russia reported higher levels of COVID-19-related fear than those in Belarus. Respondents from Russia and Belarus reported less fear than Iranians. Both the Italian¹⁹ and Israeli²⁰ versions did analyse the psychometric properties, as well as determining the factor structure and associated factors in the population, specifically by assessing the scale's reliability and convergent and discriminant validity. Furthermore, in the Hebrew version²⁰, fear of COVID-19 was positively associated with certain socio-demographic such as gender, socio-demographic status, chronic illness, belonging to a risk group and having a family member who died from COVID-19.

Some previous studies have shown discrepancies with respect to gender²⁴.

While the original study found that gender and age did not appear to affect the pattern of fear response in FCV-19S¹⁶, another found that gender modulated levels of anxiety and depression²⁵. In our study, gender appeared to modulate fear of COVID-19, suggesting that the Spanish FCV-19S is better able to explain fear of infection in women than in men. This is consistent with other studies in China^{6,9} and with studies of FCV-19S adaptations in Turkish²³ and Israeli²⁰ populations.

In terms of possible differences in the level of fear measured with the FCV-19S according to the age of the participants, previous studies have suggested that there are no differences in the level of fear experienced by people in different age groups^{16,51,52,53,54}. However, studies identifying the involvement of the age variable in the level of fear give inconclusive results, because there is research in which fear was found to be highest up to the age of 25⁵⁵ (18-25 vs 25-50 years) while in another study⁵⁶ the range varied, with the highest scores for fear from people aged between 30 and 59. In that second study, the results were mediated by the participants' gender (female) and level of psychological distress. Similarly, among Spanish university students²⁹, the level of fear was higher in first year students (compared to students in subsequent years) although these differences may have been influenced by other factors such as the need to cope with a new (i.e. online) teaching system in their first year at university. The results of our study show that younger people (aged 18-28) and those aged 50 and over had higher levels of fear of COVID-19 during the mandatory home confinement due to the pandemic.

Previous research has shown that the COVID-19 pandemic has produced a high level of distress in the general population⁹. In the same vein, previous validation studies have found correlations between FCV-19S scores and psychological distress¹⁵. We found a strong correlation with the anxiety and depression subscales of HADS, in line with various studies^{16,17,20}. However, the relationship between anxiety, depression and gender could be complex²⁸ and explained by age, as anxiety symptoms are more common in women in the early stages of life, but become progressively less prevalent with age²⁵. Other studies have suggested that gender may be a factor in individuals' responses to the traumatic and stressful situation of COVID-19, with women reporting greater fear of infection, perception of personal risk, fear of dying, and fear of infection than men⁵⁷. This finding may be explained by the different roles traditionally assigned to each sex. In Spain, although men and women can care for each other, more women than men usually play the role of caregivers for children and the elderly^{26,27}. Concern about direct transmission from loved ones may increase the fear response and this in turn may increase women's anxiety levels. This is in line with a previous study which found⁵⁷ that fear and worry had a greater impact on women with mental illness than on men with mental illness. Although consideration of these factors is beyond the main focus of this study, other factors that may explain gender differences may be related to greater resilience in women than in men, enhanced by various protective variables^{58,59}. It is important to consider these possible explanations when planning interventions to address fear as a health modulating variable, and to justify future research.

Fear assessment using the FCV-19S can help mental health professionals to monitor and prevent psychological maladjustment in the general population¹² and in groups that may be psychologically vulnerable⁵. The Spanish adaptation of the FCV-19S could be extremely important in detecting fear of COVID-19 in these vulnerable populations, where there can be particularly devastating consequences, with increased suicide attempts and completed suicides^{5,6}. Given that fear of COVID-19 may be a traumatic and stressful experience, and may be associated with depression and anxiety, having a validated follow-up measure could have practical implications for clinicians. Early identification of fear levels could help interventions to treat disorders such as anxiety and depression in the general population, and its notable brevity may make screening easier, allowing strategies to improve fear management⁶⁰ to be developed and targeted. The potential application of the FCV-19SS as a screening or follow-up measure should be investigated further to determine whether the scale is a clinically useful screening tool in primary and specialised care.

The main limitations of this study are related to the lack of analysis to assess the reliability of the scale with respect to the test and the uncertainty with respect to the non-response rate. The latter limits our ability to make generalisations about our results. Despite this limitation, it is important to note that the scales were easy to administer and that the online survey could be completed even if participants were quarantined. Another limitation is the lack of a diagnostic tool to objectively assess depression and anxiety. However, the use of the HADS provides support for the validity of the FCV-19S in Spanish, especially because the FCV-19S correlated with anxiety and depression.

In conclusion, the Spanish version of the FCV-19S seems to be a valid measure to assess fear in the adult population. The present study advances research by supporting the proposed factor structure and providing a confirmatory analysis of the influence of gender (women) and age. Given the factorial validity of the scale, its high internal consistency, and its adequate correlation with HADS, we can recommend the use of the FCV-19S in Spanish to assess fear in future research.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

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