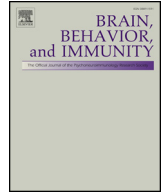




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## Short Communication

## Mental health consequences during the initial stage of the 2020 Coronavirus pandemic (COVID-19) in Spain

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## ABSTRACT

The pandemic caused by Covid-19 has been an unprecedented social and health emergency worldwide. This is the first study in the scientific literature reporting the psychological impact of the Covid-19 outbreak in a sample of the Spanish population. A cross-sectional study was conducted through an online survey of 3480 people. The presence of depression, anxiety and post-traumatic stress disorder (PTSD) was evaluated with screening tests from 14 March. Sociodemographic and Covid-19-related data was collected. Additionally, spiritual well-being, loneliness, social support, discrimination and sense of belonging were assessed. Descriptive analyses were carried out and linear regression models compiled. The 18.7% of the sample revealed depressive, 21.6% anxiety and 15.8% PTSD symptoms. Being in the older age group, having economic stability and the belief that adequate information had been provided about the pandemic were negatively related to depression, anxiety and PTSD. However, female gender, previous diagnoses of mental health problems or neurological disorders, having symptoms associated with the virus, or those with a close relative infected were associated with greater symptomatology in all three variables. Predictive models revealed that the greatest protector for symptomatology was spiritual well-being, while loneliness was the strongest predictor of depression, anxiety and PTSD. The impact on our mental health caused by the pandemic and the measures adopted during the first weeks to deal with it are evident. In addition, it is possible to identify the need of greater psychological support in general and in certain particularly vulnerable groups.

## 1. Introduction

The situation of alarm generated by Covid-19 has turned into a crisis with unprecedented consequences throughout the world. The impact of the pandemic and quarantine measures adopted concerning our mental health is evident, however, there are few large-scale studies containing significant evidence to explain their effects in areas where the outbreak has been more recent such as Europe.

Brooks et al. (2020) in a recent review reported that quarantine is associated with increased psychological distress, diagnostic symptoms of post-traumatic stress disorder (PTSD), depression and in general greater levels of stress. Regarding the current situation, a novel review and meta-analysis of the impact of the pandemic on our mental health,

with 13 studies only carried out in Asian countries, indicated that anxiety and depression are often more than 20% prevalent (Pappa et al., 2020), with differences in gender and occupation.

When the present study was completed on 28 March 2020 in Spain, the alarm situation had already been in place for two weeks. According to official sources at the time of the study Spain presented a total of 72,248 positive results for Covid-19, and 5690 deaths, being the fourth country with the most infections from the pandemic and the second country with the highest number of deaths in the world. This is the first study in the scientific literature reporting the psychological impact of the Covid-19 outbreak in a sample of the Spanish population three weeks after the outbreak of the pandemic and declaration of the alarm state.

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## 2. Methods

### 2.1. Design

A survey was developed to be completed online. The evaluation contained 80 questions and the average time for completion was about 7 min. The consent form to participate in the study and acceptance of the data protection laws was included. The study was also approved by the Deontological Commission of the Complutense University of Madrid with the reference “pr\_2019\_20\_029”. The survey was launched on 21 March and data was collected until 28 March 2020.

### 2.2. Participants

Participants were recruited by sending the survey through various social network channels. The final sample, obtained through the snowball method, had 3480 people, made up of the general population and various specific groups. Inclusion criteria were: 1. To be over 18 years of age; 2. To be living in Spain during the health alarm situation derived from Covid-19.

### 2.3. Variables and instruments

The variables and instruments included in the assessment were the following:

*Sociodemographic variables and variables related to Covid-19* were collected through questions developed ad hoc.

*Psychological impact:* possible symptomatology was measured using the following screening instruments: Patient Health Questionnaire-2 (PHQ-2) (Kroenke et al., 2009; Diez-Quevedo et al., 2001). Generalized Anxiety Disorder Scale-2 (GAD-2) (Spitzer et al., 2006; Garcia-Campayo et al., 2014). Civilian version of the Post-traumatic Stress Disorder Checklist-Reduced version (PCL-C-2) (Lang and Stein, 2005; Weathers et al., 1993). The PHQ-2 and the GAD-2 are brief self-report screening questionnaires that address the frequency of depressive symptoms and anxiety. They consist of 2 Likert-type questions ranging from 0 to 3. The PCL-C-2 was used to detect the presence of certain phenomena related to traumatic experience. The Likert-answers range from 0 to 4.

*Discrimination:* Day-to-Day Discrimination Index (InDI-D) (Scheim and Bauer, 2019). We used the main scale formed by 9 Likert-type items with four response options (1–4). The different questions evaluated the presence of intersectional discrimination from the beginning of the alarm situation.

*Loneliness:* 3-item version of the UCLA Loneliness Scale (UCLA-3) (Russell, 1996), Spanish version (Velarde-Mayol et al., 2016). Three items in Likert-type format with three response options.

*Social support:* Multidimensional Scale of Perceived Social Support (EMAS) (Zimet et al., 1988), adapted to Spanish (Landeta and Calvete, 2002). The scale has 12 Likert-type items with 7 response alternatives (1–7).

*Spiritual well-being:* evaluated through the Spanish version of the Functional Assessment of Chronic Illness Therapy Spiritual Well-Being (FACIT-Sp12) (Cella et al., 1998). The answers were Likert-type from (0–4).

*Self-Compassion Scale (SCS)* (Neff, 2003) Spanish version (Garcia-Campayo et al., 2014) evaluating how the subject usually acts towards himself in difficult moments in different dimensions. The items are Likert type (1–5).

*Sense of belonging:* was evaluated by means of four Likert-type items (1–4) previously used in other studies (Hernan and Rodriguez, 2017). These questions included membership of different groups.

### 2.4. Analysis

Descriptive statistics were calculated. The relationships between each variable and symptomatology measures were reported as a

univariate R<sup>2</sup> value and standardized coefficients, B(std). In addition, linear regression models were calculated for each psychological impact variable. Models were estimated by Least Squares and built with a theory-driven forward strategy (testing the R<sup>2</sup> increase). The statistical analysis was performed using R (3.6.3).

## 3. Results

### 3.1. Psychological impact

The scores on the PHQ-2 depression scale averaged 1.60 (SD = 1.50) with 18.7% of the sample exceeding the cut-off point on the scale for detecting a possible case of depressive disorder. In anxiety, the GAD-2 reported mean scores of 1.79 (SD = 1.63), with 21.6% of the sample exceeding the cut-off point. Finally, with regard to post-traumatic symptoms, the PCL-C-2 presented a mean score of 1.84 (SD = 1.42), with 15.8% of the sample having scores that revealed the presence of moderate to extreme post-traumatic symptoms.

### 3.2. Sociodemographic data and psychological impact

The sample (N = 3480) had a majority of women (75%), with university or postgraduate studies (67%). The average age was 37.92, reflecting a majority of persons aged between 18 and 39 years old (56.63%), and a minority of persons in the 59–80-year-old group (6.81%), where the average age was also 64.85.

Being older was significantly negatively related to depression, anxiety and PTSD, compared to the younger age group. Being female had a positive relationship with all three symptomatology variables.

### 3.3. Covid-19 related data and psychological impact

In relation to Covid-19, 13.9% of the sample declared that they had suffered symptoms compatible with the disease, while only, 7% had been tested positive by Covid-19. However, 28.3% did have a family member or close relative who had been diagnosed, with almost 3% of the sample having to live with an infected person.

Having currently or previously Covid-19 symptoms and having a family member or close relative diagnosed and living with him was positively related to symptomatology. Receiving sufficient information was a protective factor in the appearance of symptoms of depression, anxiety and PTSD.

### 3.4. Psychosocial variables and psychological impact

Loneliness and discrimination showed a significant positive relationship with depressive, anxious and post-traumatic stress disorder symptoms. Social support, sense of belonging, well-being and self-compassion had a significantly negative relationship.

Table 1 shows the results of sociodemographic and psychosocial variables in more detail.

### 3.5. Regressions on depression, anxiety and post-traumatic stress

The model for depressive symptomatology was statistically significant, explaining 39.21% of the variance ( $F(6,3379) = 364.8, p < .001$ ). For anxiety the model was also statistically significant, explaining 28.8% of the variance ( $F(5,3380) = 274.8, p < .001$ ). Regarding the PTSD the model explained 13.96% ( $F(5,3380) = 110.9; p < .001$ ). Significant common variables for the three models were spiritual well-being and loneliness. Female gender was significant for anxiety and PTSD. More detailed results can be seen in Table 2.

## 4. Discussion

This is the first study in the scientific literature reporting the

**Table 1**  
Association between sociodemographic and psychosocial variables and symptoms of depression, anxiety and PTSD.

Variables	n(%)	PHQ-2		GAD-2		PCLC-2	
		B(std)	R2	B(std)	R2	B(std)	R2
Gender							
Man	870(25)	–	0.013***	–	0.027***	–	0.022***
Female	2610(75)	0.262***		0.378***		0.346***	
Age							
18–39	1230(35.3)	–	0.067***	–	0.032***	–	0.006***
40–59	2054(58.9)	–0.461***		–0.214***		0.054	
60–80	203(5.8)	–0.902***		–0.777***		–0.291***	
Relationship							
Single	935(26.8)	–	0.034***	–	0.007***	–	0.001
Couple no sharing	719(2.6)	0.113*		0.168***		0.061	
Couple sharing	1833(52.6)	–0.318***		–0.059		0.097*	
Children							
No	2056(59)	–	0.037***	–	0.012***	–	0
Yes	1431(41)	–0.394***		–0.227***		0.036	
Education							
Elementary	99(2.8)	–	0.032***	–	0.005***	–	0.003**
High school	607(17.4)	0.084		–0.163		–0.177	
Vocational training	446(12.8)	–0.157		–0.202		–0.026	
University	1304(37.4)	–0.282**		–0.252*		–0.055	
Postgraduate	1031(29.6)	–0.439***		–0.341**		–0.162	
Work situation							
Unemployed	289(8.3)	–	0.07***	–	0.025***	–	0.004**
Student	663(19)	0.352***		0.209**		–0.1	
Retired	125(3.6)	–0.708***		–0.651***		–0.394***	
Other	213(6.1)	–0.012		0.107		0.022	
Working	2191(62.9)	–0.271***		–0.051		–0.066	
Professional area							
Administration	332(9.5)	–0.322		–0.063		–0.063	
Commercial	211(6.0)	0.159		–0.002		–0.002	
Education	543(15.5)	–0.415		–0.118		–0.118	
Social-health	1041(29.8)	–0.242		–0.002		–0.002	
Other	1360(39.0)	–	0.012***	–	0.000	–	0.001
Economic situation							
Very bad-bad	356(1.5)	–	0.034***	–	0.014***	–	0.003**
Good-very Good	1994(58.7)	–0.509***		–0.323***		–0.117*	
Regular	1049(3.9)	–0.205***		–0.124*		0.001	
Previous illness							
Nothing	2937(84.2)	–	0.036***	–	0.026***	–	0.012***
Cardiovascular	109(3.1)	–0.053		–0.046		0.219*	
Neurological	57(1.6)	0.349**		0.39**		0.44***	
Respiratory	171(4.9)	0.115		0.192*		0.186*	
Mental health	213(6.1)	0.788***		0.653***		0.394***	
Covid-19 symptoms							
No	3001(86.1)	–	0.007***	–	0.009***	–	0.015***
Yes	486(13.9)	0.243***		0.28***		0.363***	
Covid-19 diagnosis							
No	3462(99.3)	–	0	–	0	–	0.005***
Yes	25(0.7)	0.109		0.181		0.887***	
Covid-19 relative diagnosis							
No	2500(71.7)	–	0.005***	–	0.006***	–	0.012***
Yes	987(28.3)	0.162***		0.176***		0.242***	
Living with someone infected							
No	3392(97.3)	–	0.005***	–	0.001	–	0.005***
Yes	95(2.7)	0.441***		0.175		0.443***	
Information received							
Not enough	617(17.7)	–	0.025***	–	0.042***	–	0.018***
Good	2006(57.5)	–0.328***		–0.413***		–0.272***	
Overinformed	864(24.8)	–0.005		0.011		0.007	
Employment during Covid-19							
Non applicable	1416(4.6)	–	0.022***	–	0.008***	–	0.011***
Presencial	571(16.4)	–0.186***		0.128**		0.271***	
Work from home	1500(43)	–0.332***		–0.134***		–0.032	
Social support M(SD)	51.70(8.6)	–0.289***	0.083***	–0.179***	0.032***	–0.084***	0.007***
Loneliness M(SD)	4.55(1.63)	0.501***	0.25***	0.411***	0.169***	0.273***	0.074***
Discrimination M(SD)	0.48(1.3)	0.195***	0.038***	0.203***	0.041***	0.19***	0.036***
Sense of belonging M(SD)	7.76(1.97)	–0.212***	0.045***	–0.126***	0.016***	–0.07***	0.005***
Self-compassion M(SD)	21.61(5.08)	–0.39***	–0.152***	–0.338***	0.114***	–0.201***	0.4***
Spiritual well-being M(SD)	15.61(3.29)	–0.54***	–0.297***	–0.0458***	0.21***	–0.28***	0.078***

**Table 2**  
Linear regression models for depression, anxiety and PTSD.

PHQ-2	B(Std)	GAD-2	B(Std)	PCL-C-2	B(Std)
SWB	−0.386*** 0.185*** 0.299*** −0.302*** 0.091	SWB	−0.320***	SWB	−0.205***
Loneliness	0.185***	Loneliness	0.148***	Loneliness	0.129***
Student <sup>a</sup>	0.299***	Female	0.271***	Couple no sharing <sup>c</sup>	0.051
Retired <sup>a</sup>	−0.302***	Enough information <sup>b</sup>	−0.233***	Couple sharing <sup>c</sup>	0.281***
Other <sup>a</sup>	0.091	Overinformed <sup>b</sup>	0.015	Female	0.302***
Working <sup>a</sup>	0.006				
R2 adj:	0.392	R2 adj:	0.288	R2 adj:	0.139
F(6, 3379) =	364.8;	F(5, 3380) =	274.8;	F(5, 3380) =	110.9;
p <	0.001	p <	0.001	p <	0.001

SWB = Spiritual Well-being; <sup>a</sup> = reference category for the work situation variables: unemployed. <sup>b</sup> = reference category for the information variable: not enough information <sup>c</sup> = reference category for the even situation variable: not single.

psychological impact of the Covid-19 outbreak in a sample of the Spanish population. The scores of the different scales revealed how 18.7% of the sample disclosed a possible diagnosis of depression and 21.6% was likely to be potentially diagnosed with anxiety. Compared to other recently published studies, our results are slightly lower, although similar, with the numbers consistently around 20% (Cao et al., 2020; Kang et al., 2020; Pappa et al., 2020; Wang et al., 2020a,b). About the symptomatology of PTSD our results were similar to previous research conducted during the SARS epidemic outbreak in Canada (Reynolds et al., 2008).

With regard to the variables related to psychological impact, we have found that the female gender is associated with greater depressive symptoms, anxiety and PTSD. For instance, valuing the personal economic situation in a positive way and being retired or older, acted as protective factors for depression, anxiety and PTSD. This results are similar to the results of Wang et al. (2020a,b), and Kang et al. (2020), and also to another study carried out in the Basque Country, where they found a greater psychological impact on younger people and those with previous illnesses (Dosil-Santamaria et al., 2020). Female gender was also found to be more related to symptomatology in the review of Pappa et al. (2020).

In terms of age, it should be noted that the age range of the oldest people in our study was 60–8, with an average of 64.85 years old, and a very low representation compared to other age groups. The lack of elderly people is also common in most studies, for example, in the study performed by Wang et al. (2020a,b), the age range was 50–59. This indicates that older people are generally under-represented in current studies and no conclusions can be drawn about this age group.

Additionally, the results showed how discrimination and loneliness were related to a greater psychological impact, while the sense of belonging, well-being and self-compassion were protective. Discriminatory behavior against people infected appears to be quite frequent, and the presence of stigma associated with the diagnosis of a new disease quite common, as it has been reported in several previous studies carried out in quarantines (Desclaux et al., 2017). With respect to the current pandemic outbreak, it is possible to speak of certain coronaphobia, as pointed out in a recent article by Asmundson and Taylor (2020).

Concerning regression models, and in coherence with other studies in different clinical settings, spiritual well-being emerged as the most

relevant protective factor for depression, anxiety and PTSD (Krupski et al., 2006; Saiz et al., 2020). Loneliness was the next main predictor for the three dependent variables. The importance of this variable is well established with a lot of studies reporting the relation with loneliness and depression and anxiety (Ausin et al., 2017).

Additionally, different variables were found to be relevant for each type of symptomatology. For depression, being retired was found to be a negative predictor, while being a student was a predictor of positive symptoms. Perhaps this could be because the younger population is less mature and has fewer personal resources to deal with a crisis.

With regard to anxiety, being a woman and feeling that you receive too much information were found to be predictors, while having the right information was a protector from the presence of anxiety. The role of information seemed to be fundamental and a negative relationship with the psychological impact was also found in Wang et al. (2020a,b). However, information can be a double-edged sword if received in excess. The type and source of information in this situation seems fundamental to our psychological well-being (Ko et al., 2020), and raising awareness of the importance of accessing official information channels to avoid fake news, as well as turning to health professionals to resolve doubts or provide guidelines for action could be a priority in terms of measures to be implemented in this situation.

Finally, concerning PTSD, having a partner and being a woman were found to be predictive variables. Thus, the female gender was a predictor of anxiety and post-traumatic symptoms. Perhaps this was because the prevalence of anxiety and PTSD is usually higher among women (Haro et al., 2006). It is also necessary to highlight that women generally tend to assume a caregiving role, having to balance it with work and, usually household tasks, being a group at risk and more vulnerable in this situation of overload.

The current study presents several limitations. Firstly, the sample chosen through the snowball method may not represent the Spanish population. In relation to the data collection method, the use of the online tool limits access to persons who use this technology to a lesser degree, such as the elderly. Additionally, the number of men and older participants was lower than that of women and younger participants, with these groups being underrepresented. Furthermore, the data collected only refers to the first two weeks of the quarantine and alarm situation, and data is needed at a prospective level, including this line of work in our future research.

The results of this study provide the first data about the psychological impact of the Covid-19 carried out in the whole Spanish territory, suggesting the need for greater psychological support in general and in certain groups. Overall, women, younger people, people with previous diagnoses and those who showed symptoms or had a close relative with the disease showed a greater psychological impact, while spiritual well-being and loneliness emerged as the most relevant predictors for the symptomatology.

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