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Short communication

## The impact on mental health patients of COVID-19 outbreak in Spain

Lorena García-Fernández<sup>a,b,c,\*</sup>, Veronica Romero-Ferreiro<sup>c,d,f</sup>, Sergio Padilla<sup>a,e</sup>,  
Pedro David López-Roldán<sup>b</sup>, María Monzó-García<sup>b</sup>, Roberto Rodriguez-Jimenez<sup>c,f,g</sup>

<sup>a</sup> Clinical Medicine Department, Universidad Miguel Hernández, Ctra. de Valencia, Km 87, 03550, San Juan, Alicante, Spain

<sup>b</sup> Department of Psychiatry, Hospital Universitario de San Juan, Ctra. N-332, s/n, 03550, San Juan, Alicante, Spain

<sup>c</sup> CIBERSAM, Biomedical Research Networking Centre in Mental Health, Spain

<sup>d</sup> Brain Mapping Unit, Instituto Pluridisciplinar, Universidad Complutense de Madrid (UCM), of Paseo Juan XXIII, 1, 28040, Madrid, Spain

<sup>e</sup> Infectious Diseases Unit, Hospital Universitario de Elche, Carrer Almazara, 11, 03203, Elche, Alicante, Spain

<sup>f</sup> Department of Psychiatry, Instituto de Investigación Sanitaria Hospital 12 de Octubre (imas 12), Av. Córdoba s/n, 28041, Madrid, Spain

<sup>g</sup> Facultad de Medicina, Universidad Complutense de Madrid (UCM), Plaza Ramón y Cajal, s/n, 28040, Madrid, Spain



## ARTICLE INFO

## Keywords:

COVID-19

Mental disorder

Anxiety

Depression

Acute stress

## ABSTRACT

Public health studies warn of the vulnerability of people with mental disorders during the COVID-19 outbreak. Thus, the aims of this study were to (1) explore the presence of symptoms of anxiety, depression and acute stress among people with a mental disorder (MD); (2) evaluate the rate of COVID-19 infection between MD and non-MD, and (3) study the relationship between the emotional state of people with a mental disorder and some environmental variables. A cross-sectional study starting on March 29 to April 5, 2020 based on a national online survey using snowball sampling techniques was conducted. Symptoms of anxiety (Hamilton Anxiety Scale), depression (Beck Depression Inventory) and acute stress (Acute Stress Disorder Inventory) were compared in MD and non-MD. The rate of COVID-19 confirmed cases among MD and non-MD was compared as well as the relationship between some environmental variables and the emotional state within MD. Up to 1839 [201 (10.9%) MD] participants completed the survey. MD showed significant higher mean (SD) in anxiety [24.7 (11.8) vs. 17 (10.3);  $p = 0.001$ ], depression [7.9 (6.0) vs. 4.2 (4.2);  $p = 0.001$ ] and acute stress [6.3 (3.2) vs. 4.4 (3.1);  $p = 0.001$ ] scores than non-MD. The COVID-19 confirmed cases rate was higher in MD participants than in non-MD (3.5% vs. 0.4%;  $p < 0.001$ ). Among the MD group, being a COVID-19 confirmed case, the lack in basic needs coverage, the presence of violence, drug use and the absence of physical exercise were associated with more severe depressive symptoms. Findings suggest that the COVID-19 has an impact on the emotional state of people with mental disorders.

### 1. Introduction

Several months have passed since the 2019-nCoV, a new strain not previously identified in humans, caused the so called coronavirus disease 2019 (COVID-19), an infectious disease of rapid human to human transmission, which has disrupted the entire world population, turning into a massive and unprecedented pandemic (Wu et al., 2020; Zhu et al., 2020). As of September 26, 2020 the coronavirus has infected almost 32 million people and claimed the lives of 973.653 worldwide (WHO, 2020a). No population group has been immune to infection, but the most vulnerable ones have experienced a more devastating impact, among these, people with mental disorders (MD) have been particularly

affected (Fiorillo and Gorwood, 2020).

The COVID-19 has already proved its potential to generate an emotional impact (Wang et al., 2020a). Furthermore, people with a mental disorder have inevitably become a risk group for both the contagion and the emotional distress (Druss, 2020; Yao et al., 2020). First, there has been described an increased risk of exposure to infection due to social difficulties, barriers in accessing timely health services, unhealthy lifestyle behaviours (smoking, medical comorbidity, sedentary lifestyle and use of drugs), and cognitive deficits, inherent to some mental disorders, that can interfere with self-care and make it difficult to understand and follow appropriately the recommendations given against infection (Kozloff et al., 2020; Shinn and Viron, 2020).

\* Corresponding author. Department of Clinical Medicine, Universidad Miguel Hernández, Edificio Muhammad Al-Shafra, Campus de San Juan, Ctra. de Valencia, Km 87, 03550, San Juan, Alicante, Spain.

E-mail addresses: [lorena.garciaf@umh.es](mailto:lorena.garciaf@umh.es), [lorenagarfer@hotmail.com](mailto:lorenagarfer@hotmail.com) (L. García-Fernández).

<https://doi.org/10.1016/j.jpsychires.2021.01.028>

Received 4 June 2020; Received in revised form 4 November 2020; Accepted 16 January 2021

Available online 21 January 2021

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In addition, the pandemic has become a powerful new stressor for people with a mental disorder, worsening existing emotional problems and precipitating the appearance of new disorders (Yao et al., 2020). Circumstances like the growing social tension, social isolation, marginalization, as well as the information overload, which some have already called “infodemic” (Fiorillo and Gorwood, 2020), are all elements that might contribute to the detriment in mental health of people with a mental disorder. Moreover, a limited availability to Mental Health Services, which at least in Spain have been partially reduced, has arisen as a consequence of the general lockdown (Brooks et al., 2020) promoting the deterioration of the emotional well-being of people with mental disorders.

Public health studies warn of the special vulnerability of people with a mental disorder associated with this current situation (Fiorillo and Gorwood, 2020; Shinn and Viron, 2020). Therefore, the aims of the present study are 1) to explore differential presence of symptoms of anxiety, depression and acute stress among people with a current or past mental disorder (MD) during the COVID-19 outbreak in Spain, compared with a group of participants without any current or past mental disorders (non-MD); 2) to compare the rate of COVID-19 infection between MD and non-MD and to explore how being a confirmed COVID-19 patient with a mental disorder affects symptoms of anxiety, depression and acute stress, and 3) to study the relationship between the emotional state of people with a mental disorder and some environmental variables.

## 2. Methods

### 2.1. Participants and procedure

A total of 201 responders with a current or past mental disorder (MD), and 1638 participants without any current or past mental disorder (non-MD) compose this cross-sectional study (Supplementary material, Fig. 1) based on a national online survey with part of results previously published by our group (PsyCOVID-SanJuan-imas12) (García-Fernández et al., 2020). Participants conducted a self-reported online questionnaire starting on March 29, to April 5, 2020. During this period, which covers the peak of the infection in Spain, COVID-19 confirmed patients ranged from 78.797 to 130.759 cases, becoming the second country with the highest number of cases worldwide after United States and the first one in cumulative incidence rate of COVID-19 cases (WHO, 2020b).

This self-reported survey-based was designed to assess the participants’ symptoms of anxiety, depression and acute stress. Sociodemographic data, direct questions to detect the presence of a current or past mental disorder, questions specifically designed for the pandemic situation, and others to assess the impact of environmental variables possibly related with anxiety, depression and acute stress symptoms, as well as some clinical scales that could be self-applied were included in the questionnaire which was published on the hospital website, advertised in the local media and distributed by social networks, whatsapp, facebook, telegram and twitter, to different geographic regions in Spain, applying an exponential non-discriminative snowball sampling used in similar studies (Roy et al., 2020; Wang et al., 2020b).

During the study period a total of 2710 surveys were obtained. Healthcare workers were excluded as they constitute an especially vulnerable group for the development of emotional distress and have already been part of a specific study designed by our group (García-Fernández et al., 2020).

Informed consent was provided by all survey participants. The survey was anonymous, and confidentiality of information was assured. The study was approved by San Juan’s University Hospital Ethics Committee.

### 2.2. Measures

Sociodemographic information on age, gender and occupation was

required in the survey, as well as whether responders presented symptoms (fever and cough) compatible with COVID-19 (suspected cases) or if they had also undergone PCR with a positive result (confirmed cases). Moreover, the perception of the information received related to infection (insufficient/adequate/excessive), the coverage of basic needs, the presence of violence, the increase in the use of legal or illegal drugs and the practice of regular physical exercise were assessed (Supplementary material, Table 1).

The survey included 3 scales to assess anxiety, depression and acute stress: Hamilton Anxiety Scale (HARS) (Hamilton, 1959), a scale to globally assess the severity of anxiety made up of 14 items, scored from 0 to 4 points each, assessing both intensity and frequency of anxiety symptoms. The scale provides a total score according to the level of anxiety. Beck Depression Inventory (BDI) (Beck, 1988), a self-applied scale that has a brief version of 13 items to assess depressive symptoms. The scale shows 4 possible response options for all items, and provides a total score and also proposes cut-off points: 0–4 absent or minimal depression, 5–7 mild depression, 8–15 moderate depression and >15 severe depression. Acute Stress Disorder Inventory (ASDI), based on the clinical criteria for the diagnosis of Acute Stress Disorder of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2013), a list of symptoms adapted *ad hoc* for this study was developed and transformed into a self-reported questionnaire with dichotomous answer (yes/no). The score of total affirmative responses to each of the items was recorded (Supplemental material, Table 2).

### 2.3. Statistical analyses

Differences in psychological variables between MD and non-MD participants were tested using Student’s t-test as well as chi-squared tests when appropriate. Then, two-way ANCOVAs with Diagnosis (MD, non-MD) and COVID-19, information received, coverage of basic needs, violence, drug use and practice of regular physical exercise were conducted. Analyses presented have been corrected for age and gender, and Bonferroni corrections for multiple comparisons have been applied when appropriate. All statistical analyses were considered to be significant when  $p < 0.05$ .

## 3. Results

### 3.1. Sample characteristics

Up to 1839 participants completed this survey. Among all responders, 201 (10.9%) have or have had a mental disorder. There were no differences between groups in terms of gender ( $\chi^2=.02, p = .88$ ).

**Table 1**  
Relationship between emotional variables and COVID-19 confirmed cases in the study groups.

		HARS		BDI		ASDI	
		MD	Non-MD	MD	Non-MD	MD	Non-MD
COVID-19	No	23.9 (11.8)	16.5 (10.0)	7.4 (5.8)	4.1 (4.2)	6.0 (3.2)	4.3 (3.0)
	Suspected	29.5 (9.0)	20.5 (10.9)	9.8 (5.5)	4.6 (4.0)	8.2 (2.9)	5.0 (3.2)
	Confirmed	31.9 (10.2)	31.0 (14.3)	15.0 (4.4)	6.3 (5.0)	8.7 (1.5)	7.1 (4.9)
Statistic (p value)		$F = 0.5, p = .60$		$F = 4.6, p = .01^*$		$F = 2.0, p = .13$	

MD, Participants with current or past mental disorders; Non-MD, Participants without current or past mental disorders; HARS,

Hamilton Anxiety Rating Scale; BDI, Beck Depression Inventory; ASDI, Acute Stress Disorder Inventory. \*Statistically significant result  $p < .05$ .

**Table 2**  
Relationship between clinical and environmental variables in the study groups.

		HARS		BDI		ASDI	
		MD	Non-MD	MD	Non-MD	MD	Non-MD
Basic needs	No	32.4(12.5)	27.0(12.8)	16.6(8.2)	5.6(4.0)	8.9(2.7)	6.8(2.6)
	Yes	24.2(11.6)	16.9(10.2)	7.3(5.4)	4.2(4.2)	6.1(3.2)	4.4(3.1)
Statistic (p value)		$F = 0.0, p = .99$		$F = 18.3, p < .001^*$		$F = 0.5, p = .49$	
Violence	No	24.3(11.9)	16.8(10.1)	7.4(5.7)	4.1(4.1)	6.1(3.2)	4.3(3.0)
	Yes	28.5(9.7)	23.4(12.1)	12.6(6.7)	6.4(5.5)	7.7(3.0)	6.7(3.3)
Statistic (p value)		$F = 0.1, p = .70$		$F = 7.4, p = .007^*$		$F = 0.3, p = .58$	
Drug consumption	No	22.5(11.9)	16.0(9.9)	6.4(4.8)	3.8(4.0)	5.5(3.1)	4.0(2.9)
	Yes	29.1(10.1)	22.7(10.3)	10.9(6.8)	6.3(4.9)	7.7(3.0)	6.3(3.1)
Statistic (p value)		$F = 0.2, p = .64$		$F = 9.0, p = .003^*$		$F = 0.0, p = .95$	
Exercise	No	27.6(10.9)	19.2(11.4)	10.4(6.5)	5.0(4.8)	6.9(3.2)	4.7(3.5)
	Yes	22.3(11.9)	16.1(9.6)	5.9(4.6)	3.8(3.9)	5.8(3.2)	4.2(3.0)
Statistic (p value)		$F = 2.7, p = .10$		$F = 26.6, p < .001^*$			
Information	Insufficient	24.6(12.2)	19.1(10.9)	8.8(6.7)	4.9(4.5)	6.5(3.4)	4.9(3.3)
	Adequate	23.3(13.0)	15.2(9.5)	6.5(5.5)	3.7(4.0)	5.5(3.3)	3.9(2.9)
	Excessive	26.3(9.6)	16.5(9.7)	8.3(5.3)	3.9(3.8)	6.8(2.7)	4.2(2.8)
Statistic (p value)		$F = 2.6, p = .08$		$F = 2.7, p = .07$		$F = 2.7, p = .07$	

MD, Participants with current or past mental disorders; Non-MD, Participants without current or past mental disorders; HARS, Hamilton Anxiety Rating Scale; BDI, Beck Depression Inventory; ASDI, Acute Stress Disorder Inventory. \*Statistically significant result  $p < .05$ .

Male respondents represented a 31.3% of the sample in the MD group and 31.9% in the non-MD group. Ages ranged from 18 to 84 years old (mean  $40.5 \pm 14.1$  years) in the MD group and from 18 to 73 (mean  $42.4 \pm 13.2$  years) in the non-MD group. Groups did not differ in mean age ( $t = -1.85, p = .06$ ).

### 3.2. Anxiety, depression, and acute stress in the study groups

Regarding anxiety symptoms, there were significant differences between groups ( $t = -8.8, p < .001$ ). MD showed significantly higher HARS scores ( $M = 24.7, SD = 11.8$ ) than non-MD ( $M = 17.0, SD = 10.3$ ). In addition, results showed that MD had higher BDI scores than non-MD ( $t = -8.6, p < .001$ ;  $M = 7.9, SD = 6.0$  and  $M = 4.2, SD = 4.2$ , respectively). In the same line, when clinical cut-off syndrome score of 4 (absent or minimal vs. mild/moderate/severe depression) is applied, a more pronounced depressive syndrome was observed in MD compared with non-MD ( $\chi^2 = 70.4, p < .001$ ; 66.6% vs. 36.0%). Finally, there were significant differences in ASDI scores ( $t = -8.1, p < .001$ ). MD had significantly higher ASDI scores than the healthy group ( $M = 6.3, SD = 3.2$  and  $M = 4.4, SD = 3.1$ , respectively).

### 3.3. COVID-19 confirmed cases in the study groups

There were significant differences between MD and non-MD in the proportion of contagion. More COVID-19 confirmed cases have been found among the MD group (3.5%) than in non-MD (0.4%), ( $\chi^2 = 22.2, p < .001$ ). No differences between MD and non-MD in the proportion of suspected (10.0% vs. 10.1%, respectively) nor absent (86.5% vs. 89.5%, respectively) COVID-19 cases were found.

### 3.4. Anxiety, depression, and acute stress within confirmed COVID-19 cases in people with mental disorders

The analysis of the relationship of the COVID-19 on psychological variables, has shown no effect neither on HARS ( $F = 0.5, p = .6$ ), nor on ASDI ( $F = 2.0, p = .13$ ). However, in BDI scores a significant effect was obtained ( $F = 4.6, p = .01$ ). While in the non-MD group COVID-19 related symptoms (confirmed/suspected/absent) did not modify the presence of depressive symptoms, in the MD group significant differences between being a confirmed case ( $M = 15.0, SD = 4.4$ ) and a suspected case ( $M = 9.8, SD = 5.5$ ) ( $p = .007$ ) and between confirmed cases and those without symptoms ( $M = 7.4, SD = 5.8$ ) ( $p < .001$ ) have been found (Table 1).

### 3.5. Relationship between environmental variables and emotional state in people with mental disorders

Regarding anxiety symptoms, no interaction effects between Diagnosis (MD) and any of the environmental variables were found: Basic needs coverage ( $F = 0.0, p = .99$ ); Violence ( $F = 0.1, p = .70$ ); Drug consumption ( $F = 0.2, p = .64$ ); Regular exercise ( $F = 2.7, p = .10$ ) and Information perceived ( $F = 2.6, p = .08$ ).

In depressive symptoms, the interaction Diagnosis x Basic needs was significant ( $F = 18.3, p < .001$ ). Within MD, those whose basic needs were not met had significantly higher BDI scores ( $M = 16.6, SD = 8.2$ ) than those who considered them covered ( $M = 7.3, SD = 5.4$ ). On the other hand, the Diagnosis x Violence interaction was found significant ( $F = 7.4, p = .007$ ). In this respect, differences in BDI scores between those with and without a mental health disorder were much larger ( $M = 12.6, SD = 6.7$ , and  $M = 6.4, SD = 5.5$ , respectively) when they had suffered violence compared to differences between groups when they were not exposed to violence ( $M = 7.4, SD = 5.7$ , and  $M = 4.1, SD = 4.1$ , respectively). The interaction between Diagnosis and Drug consumption was also found significant ( $F = 9.0, p = .003$ ). Within the clinical group, those who had increased drug consumption experienced higher levels of depression ( $M = 10.9, SD = 6.8$ ) than those who had not increased the consumption of psychoactive medications ( $M = 6.3, SD = 4.9$ ). Finally, a Diagnosis x Exercise significant interaction was found ( $F = 26.6, p < .001$ ). Within the clinical group, those who regularly exercised showed lower BDI scores ( $M = 5.9, SD = 4.6$ ) than those who did not ( $M = 10.4, SD = 6.5$ ). Finally, the Information received did not show a significant interaction with Mental Disorder on BDI scores ( $F = 2.7, p = .07$ ).

In the case of ASDI scores, no variable included in the analysis showed an interaction effect with Diagnosis: Basic needs ( $F = 0.5, p = .49$ ); Violence ( $F = 0.3, p = .58$ ); Drug consumption ( $F = 0.0, p = .95$ ); Exercise ( $F = 2.6, p = .11$ ) and Information ( $F = 2.7, p = .07$ ) (Table 2).

## 4. Discussion

The first objective of the present study was to compare the presence of symptoms of anxiety, depression and acute stress among people with mental disorders during the COVID-19 pandemic with a comparison group of participants without mental disorders. Results globally show that mental health patients have shown more symptoms of anxiety, depression and acute stress compared to healthy responders during the COVID-19 outbreak in Spain. This result is of special relevance, since much has been hypothesized regarding the deleterious impact of the pandemic on the mental health of people with a mental disorder (De

Girolamo et al., 2020; Kozloff et al., 2020) but as the COVID-19 is so recent and ongoing, there are hardly any published studies reporting real data from real world regarding how the outbreak has affected people suffering psychiatric disorders. Hence, this study suggests the existence of a vulnerability to emotional distress in people with mental disorders, as has also been reported in previous epidemics (Maguire et al., 2019).

The second objective of the study was to assess whether people with mental disorders have a higher contagion rate compared with participants without mental disorders and, in what way, suffering from the COVID-19 modifies the emotional well-being of those with a mental disorder. Of note, having a mental disorder has been associated with higher rates of SARS-CoV-2 infection, and what is more worrying, the presence of both a mental health problem and the infection, is associated with an increase in the depressive emotional state.

The third purpose was to study the relation between the emotional state of mental health patients and some environmental variables. The data support the existence of a relationship between the lack of basic needs covered, the presence of violence and the increased in the use of drugs with a more severe level of depressive symptoms in people with mental disorders. Similarly, data show that the absence of regular physical activity in those with a mental disorder is also associated with the presence of depressive symptoms. Contrary to what was expected neither the lack nor the excess of information related to the pandemic has an influence on the emotional symptoms in people with mental disorders.

Results of this study should be interpreted in light of some limitations. Response bias exist as a voluntary online self-administered survey was applied. Moreover, nor has there been any discrimination between participants with a current mental illness or that occurred in the past nor between different diagnostic categories. On the other hand, its main strength includes data collection from a wide general population sample during a particularly difficult period of infection in Spain.

To the best of our knowledge, there are few studies focused on studying symptoms of anxiety, depression and acute stress affecting people with current or past mental disorders in a critical period of the COVID-19 outbreak in Spain (Bobes-Bascarán et al., 2020). In addition, the direct relationship between the COVID-19 infection and the presence of emotional symptoms, as well as the influence of specific environmental variables on people suffering a mental disorder has been analyzed. Data suggest the existence of emotional distress in people with mental disorders during the current pandemic and point out important environmental factors to take into account to guarantee the emotional well-being of people with a mental disorder. Implications for health management and clinical practice can be drawn from the results obtained. Particular attention should be focused on people with a mental disorder, thus mental health services should be prepared to respond to the appearance of symptoms of anxiety, depression and acute stress, even in the long-term.

#### Funding statement

This research received no specific grant from any funding agency, commercial or not-for-profit sectors.

#### Contributors

**Lorena García-Fernández:** Conceptualization, Methodology, Investigation, Writing, Review and Editing. **Verónica Romero-Ferreiro:** Formal analysis, Resources. **Sergio Padilla:** Conceptualization, Software, Data Curation. **Pedro D López-Roldán:** Methodology, Investigation, Resources. **María Monzó-García:** Methodology, Resources. **Roberto Rodríguez-Jimenez:** Supervision, Writing, Review and Editing. All authors contributed and have approved the final manuscript.

#### Declaration of competing interest

Dr. R. Rodríguez-Jimenez has been a consultant for, spoken in activities of, or received grants from: Instituto de Salud Carlos III, Fondo de Investigación Sanitaria (FIS), Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Madrid Regional Government (S2010/BMD-2422 AGES; S2017/BMD-3740), JanssenCilag, Lundbeck, Otsuka, Pfizer, Ferrer, Juste, Takeda, Exeltis, Angelini, Casen-Recordati. All other authors declare that they have no conflict of interest.

#### Acknowledgments

We thank all participants who have kindly responded to the survey.

#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jpsychires.2021.01.028>.

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