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# The impact of the COVID-19 pandemic on patients with OCD: Effects of contamination symptoms and remission state before the quarantine in a preliminary naturalistic study

Prestia Davide<sup>a,b,\*</sup>, Pozza Andrea<sup>c</sup>, Olcese Martina<sup>d</sup>, Escelsior Andrea<sup>a,b</sup>, Dettore Davide<sup>e</sup>, Amore Mario<sup>a,b</sup>

<sup>a</sup> Department of Neuroscience, Rehabilitation, Ophthalmology, Genetics and Infant-Maternal Science, Section of Psychiatry, University of Genoa, Italy

<sup>b</sup> IRCCS Ospedale Policlinico San Martino, Genoa, Italy

<sup>c</sup> Department of Medical Sciences, Surgery and Neurosciences, University of Siena, Siena, Italy

<sup>d</sup> Psychologist, Independent Researcher, Genoa, Italy

<sup>e</sup> Department of Health Sciences, University of Florence, Florence, Italy



## ARTICLE INFO

### Keywords:

COVID-19  
Obsessive-compulsive disorder  
Quarantine  
Lockdown  
Contamination  
Y-BOCS  
Coronavirus

## ABSTRACT

The containment measures implemented to reduce the progression of the COVID-19 pandemic can increase the risk of serious mental disorders, including obsessive-compulsive disorder (OCD). The general fear of getting infected and the importance given to personal hygiene, may have a negative impact on this clinical population. In a group of patients with OCD who had completed an evidence-based therapeutic path for OCD before the quarantine, this study evaluated the changes on OCD symptoms during the quarantine and investigated the effects of contamination symptoms and remission state before the quarantine on OCD symptom worsening during the quarantine. The Yale-Brown Obsessive Compulsive (Y-BOCS) Severity score, administered before the quarantine, was re-administered after six weeks since the beginning of the complete lockdown. A significant increase in obsession and compulsion severity emerged. Remission status on OCD symptoms and having contamination symptoms before the quarantine were significantly associated with more elevated OCD symptom worsening during the quarantine. To our knowledge, this is the first study which assessed OCD symptoms at the COVID-19 time. Our results support the need to improve relapse prevention during the period of social restrictions and develop alternative strategies such as online consultations and digital psychiatric management.

## 1. Introduction

The current outbreak of the COVID-19 pandemic is causing serious mental health problems (Ravi, 2020). In the last months, there has been a growing amount of research regarding the increasing levels of anxiety and depression both in psychiatric patients and general population (Assari and Habibzadeh, 2020; Pfefferbaum and North, 2020). The containment measures, i.e. quarantine, social distancing and self-isolation, imposed globally to reduce the risk of infection, may represent a stressful life event that can cause dramatic mental health outcomes due to the separation from the loved ones, the loss of freedom and feelings of uncertainty (Brooks et al., 2020). Such measures, in fact, can increase loneliness and reduce social interactions, which are risk factors for several mental disorders, mostly in people with pre-existing mental health conditions (Perrin et al., 2009). Social isolation associated with

quarantine can lead to many mental health sequelae even in healthy people. The major symptoms include irritability, insomnia, emotional distress, fear, and panic, because of financial concerns, frustration and boredom, lack of supplies and poor communication (Brooks et al., 2020; Cava et al., 2005; Desclaux et al., 2017; Hawryluck et al., 2004; Usher et al., 2020). Moreover, if these concerns are prolonged, they may increase the risk of serious and disabling mental health conditions, including mood or anxiety disorders, trauma-related disorders and obsessive-compulsive disorder (OCD) (Fiorillo and Gorwood, 2020; Pozza et al., 2020). This type of concerns is particularly evident in Italy, the first severely hit European country, where the lockdown is lasting since the beginning of March 2020.

As well as social restrictions, another important way to slow down the spread of the virus is practicing a good hygiene. For example, celebrities, public figures, governments, and other authorities dealing

\* Corresponding author.

E-mail address: [davide.prestia@hsanmartino.it](mailto:davide.prestia@hsanmartino.it) (P. Davide).

with health-related affairs are prompting people to wash hands repeatedly. While this type of advice is helpful in reducing the infection, it may have a negative impact on people with OCD causing a worsening of symptoms. In fact, among the wide variety of types of obsessions and compulsions, fear of dirt, feeling of being contaminated and excessive washing are the most common ones affecting about 50% of patients (Brady et al., 2010). Patients with OCD try to resist these thoughts and urges to wash themselves, but they often fail to do so (Kumar and Somani, 2020). Due to the general fear of getting infected and the emphasis on washing hands in health advisories, symptoms of OCD might worsen, as shown by the long-term excessive handwashing emerged in the post-quarantine phase reported by some researchers (Reynolds et al., 2008).

Furthermore, more frequent cleaning habits started as a normal protective behavior might lead to contamination-related obsessions and compulsive actions, mostly in vulnerable people who have other types of obsessions and compulsions.

Other variables may have a role as vulnerability or even protective factors during the quarantine. Using online social networking sites to maintain social relations and the possibility of remote working/studying may be protective factors against symptom worsening, as suggested by previous evidence (Brooks et al., 2020). In addition, living with a relative in the same house may be either a protective factor (i.e., through the emotional support provided by a relative during the quarantine) (Brooks et al., 2020), or a vulnerability factor for symptom worsening (i.e., increased risk of family accommodation or expressed emotion) (Cao et al., 2020).

To our knowledge, no study focused on the impact of the COVID-19 pandemic on OCD patients. The present preliminary study aimed to evaluate the changes on OCD symptoms during the quarantine in a group of patients with OCD who had undergone psychiatric care at a specialized clinic for OCD before the quarantine period. The study also investigated the effects of contamination symptoms and remission state before the quarantine on OCD symptom change during the quarantine, controlling for some variables related to the life in quarantine (i.e., using online social networking sites/apps as a way to maintain social relations, living with a relative in the same house, the possibility of remote working/studying). We expected that the COVID-19 outbreak might be a stressful event associated with a greater symptom worsening in patients with contamination symptoms (as compared with patients with other OCD symptoms) and those who had not achieved a remission state before the quarantine (as compared with patients who still showed a remission state before the quarantine).

## 2. Methods

### 2.1. Eligibility criteria and procedure

Subjects were outpatients who had fulfilled the criteria for a primary diagnosis of OCD according to the DSM-5 (American Psychiatric Association, 2013). They had attended the OCD Clinic at the Department of Psychiatry, Policlinico San Martino University Hospital, Genoa, Italy during the last six months before the quarantine, receiving evidence-based psychiatric care (i.e., psychopharmacological with or without cognitive behavioral therapy) according to their needs (Albert et al., 2018). All patients were on stable pharmacological treatment during the last 6 months before the quarantine with adequate drug (mostly selective serotonin reuptake inhibitors such as fluvoxamine and sertraline, and tricyclic antidepressants such as clomipramine) at high doses plus low doses of antipsychotics (mostly risperidone and aripiprazole).

The diagnosis of OCD was made by a semi-structured clinical interview conducted by a psychiatrist with a 10-year experience in OCD and was supported further by the administration of the Yale–Brown Obsessive Compulsive Symptom Scale Symptom Checklist (Y-BOCS-SC; Goodman et al., 1989) by another expert psychiatrist.

Subjects were excluded if they had (a) concurrent psychotic or bipolar disorders, (b) intellectual disability, (c) neurological or other medical diseases. Psychiatric medications were not considered as exclusion criterion since most of the patients with OCD accessing mental health services undergo psychopharmacological treatment.

The study was approved by the institutional ethical committee. Patients provided written informed consent to participate.

### 2.2. Measures

The Y-BOCS-SC was used to identify the content of the obsessions and compulsions. The Y-BOCS Severity Score, a 10-item instrument developed by Goodman et al. (1989), was used to evaluate symptom severity and treatment response. This scale is a reliable semi-structured interview, divided into subscales for obsessions and compulsions. Each one of five types of obsessive and compulsive symptoms is rated on a scale ranging from 0 (no symptoms) to 4 (extreme symptoms): time spent, degree of interference, distress, resistance (greater resistance is assigned lower scores), and perceived control over symptoms. Subscale scores are summed to yield total scores.

In the present study, the Y-BOCS Severity score had been administered at the end of the six-month evidence-based therapeutic path received at the OCD clinic before the quarantine, and subsequently it was re-administered after six weeks since the beginning of the complete lockdown. All subjects were interviewed 6 weeks after the lockdown start (16th–17th April). The YBOCS Severity score before the quarantine had been administered during the months of January and February 2020 (mean weeks before the lockdown = 3.06, *SD* = 1.33).

Remission state on OCD symptom before the quarantine was defined as a score equal or lower than 12 on the Y-BOCS Severity, as proposed by the international expert consensus (Mataix-Cols et al. 2016).

In addition to the Y-BOCS, the subjects completed a questionnaire including information related to the COVID-19 pandemic and the life during the quarantine (i.e., living with a relative in the same house during the quarantine, remote working/studying during the quarantine, using online social networking sites/apps during the quarantine, having been exposed to a relative/friend affected by COVID-19).

### 2.3. Statistical analysis

To assess potential changes on OCD symptoms (total severity, obsession and compulsion severity) from the end of the therapeutic path (before the quarantine) to quarantine follow-up, paired samples Student's *t*-tests were performed.

Subsequently, independent samples Student's *t*-tests were carried out to explore the differences on such symptoms as a function of socio-demographics (gender), variables related to the quarantine (remote working/studying during the quarantine, living with a relative in the same house during the quarantine, using online social networking sites/apps to maintain social relations), and clinical variables (having contamination symptoms before the quarantine, remission status on OCD symptoms before the quarantine).

Finally, to investigate the effects on OCD symptom change (outcome) as a function of these variables, in a first step we conducted a generalized linear model entering the main effects of all the socio-demographic characteristics, quarantine-related variables, and clinical variables on OCD symptom change measured by the difference in the Y-BOCS Total scores and Obsession and Compulsion subscale scores from the pre-quarantine period and to the period during the quarantine. In a second step, we re-run the model removing those variables whose effects were not significant. In particular, we included only the effects of remission status, contamination symptoms, living with a relative in the same house during quarantine and age.

Significance was set at  $p < .01$ . The analyses were carried out through SPSS version 21,00.

**Table 1**  
Demographics and clinical characteristics of the OCD group (n = 30).

	M (SD; range) / n (%)
Age (years)	43.17 (14.87; 20–73)
Gender	
Female	16 (53.33)
Male	14 (46.64)
Variables related to the quarantine period	
Living with a relative in the same house during the quarantine	
Yes	24 (80)
No	6 (20)
Remote working/studying during the quarantine	
Yes	17 (56.70)
No	13 (43.30)
Using online social networking sites during the quarantine	
Yes	17 (56.70)
No	13 (43.40)
Having been exposed to a relative/friend affected by COVID-19	
Yes	3 (10)
No	27 (90)
Variables assessed at the end of the therapeutic path at the OCD Clinic (before the quarantine)	
Contamination/washing symptoms before the quarantine (Y-BOCS-SC)	
Yes	12 (40)
No	18 (60)
Any psychiatric comorbidities before the quarantine	5 (16.60)
Mood disorders	2 (6.60)
Personality disorders	3 (10)
Remission state [Y-BOCS severity score ≤ 12 according to Mataix-Cols et al. (2016)]	
Remitters on OCD symptoms before the quarantine	12 (40)
Still reporting OCD symptoms before the quarantine	18 (60)
Psychiatric medications	30 (100)
Antidepressants	9 (30)
Antidepressants + antipsychotics	2 (6.70)
Antidepressants + antipsychotics + benzodiazepines	11 (36.70)
Antidepressants + benzodiazepines	4 (13.30)
Antidepressants + mood stabilizers	4 (13.30)

Note. OCD = Obsessive-compulsive disorder, Y-BOCS-SC = Yale-Brown Obsessive Compulsive Scale-Symptom Checklist.

### 3. Results

#### 3.1. Descriptive characteristics

Thirty patients were included [mean age (years) = 43.17, SD = 14.87; range = 20–73], of whom 16 (53.33%) were women. A detailed overview of the socio-demographics, variables related to the quarantine and clinical features is provided in Table 1.

#### 3.2. Changes on OCD severity from pre-quarantine assessment to the quarantine follow-up

Twelve patients (40%) were remitters on obsessive-compulsive symptoms before the quarantine; of these 4 (13.33%) patients returned to clinically significant OCD (YBOCS Severity total score > 16).

The results of the pairwise Student's *t*-tests showed significant changes on the severity of total OCD symptoms, obsessions, and

**Table 2**  
Changes on OCD severity during the quarantine (n = 30).

	Mean	SD	Pairwise Student's <i>t</i> -test <sub>(df)</sub>	<i>p</i> -value
Y-BOCS obsessions before the quarantine	8.03	3.882	– 4.36 <sub>(29)</sub>	< 0.001
Y-BOCS obsessions during the quarantine	10.17	4.348		
Y-BOCS compulsions before the quarantine	7.93	4.258	– 4.07 <sub>(29)</sub>	< 0.001
Y-BOCS compulsions during the quarantine	10.27	4.209		
Y-BOCS total before the quarantine	15.97	8.028	– 4.35 <sub>(29)</sub>	< 0.001
Y-BOCS total during the quarantine	20.467	8.4475		

Note. OCD = Obsessive-compulsive disorder, Y-BOCS = Yale-Brown Obsessive Compulsive Scale.

compulsions from before the quarantine to the quarantine period, suggesting an overall worsening on all these outcomes (Table 2).

#### 3.3. Effects of socio-demographic and clinical characteristics on OCD symptom change

Independent samples Student's *t*-tests showed that subjects who could not work/study remotely during the quarantine, those living with a parent in the same house during the quarantine and those with contamination symptoms had a significantly stronger worsening on the severity of total OCD symptoms, obsessions, and compulsions from before the quarantine to the quarantine period. The effects were not significant for the other variables including gender, using online social networking sites/apps during the quarantine, remission status on OCD symptoms before the quarantine (Table 3).

Subsequently a generalized linear model was carried out by entering the main effects of all these variables on OCD symptom change. Then, the effects of the variables which were not significant were removed from the model (i.e., gender, using online social networking sites/apps during the quarantine, remote working/studying during the quarantine).

Thus, the final results of this model showed that remission status on OCD symptoms before the quarantine, having contamination symptoms before the quarantine, and living with a relative in the same house during the quarantine, were significantly associated with more elevated OCD symptom worsening during the quarantine (Table 4).

### 4. Discussion

The spread of fear, anxiety and even panic due to the COVID-19 pandemic can lead to a worsening of pre-existing psychiatric disorders (Yao et al., 2020). Despite the 1–3% prevalence of OCD in the general population (Ruscio et al., 2010) and its peculiar clinical picture (fear of being infected and cleaning rituals), there are no empirical studies on symptom worsening during the quarantine amongst patients with OCD. This is the first report that evaluated the impact of the COVID-19 pandemic on this clinical population.

We explored the changes on OCD symptoms during the quarantine in a group of patients with OCD, and investigated the effects of contamination symptoms and remission state before the quarantine on OCD symptom change during the quarantine, controlling for variables related to the life in quarantine (i.e., using online social networking sites as a way to maintain social relations, living with a relative in the same house, the possibility of remote working/studying).

Overall, an increase in obsession and compulsion severity after the beginning of the pandemic emerged. Contamination symptoms were associated with a more elevated worsening. Perhaps, the continuous catastrophic news on TV, radio and social media combined with hygiene tips could have been a stressful situation for this vulnerable group, particularly for those with pre-existing contamination symptoms (Gao et al., 2020).

We found that remission status on OCD symptoms before the quarantine was associated with more elevated OCD symptom worsening during the quarantine. Therefore, mental health professionals

**Table 3**  
Comparisons on OCD symptom change between socio-demographic and clinical characteristics (n = 30).

	Change on total obsessive-compulsive symptom severity		Change on obsessions severity		Change on compulsion severity	
	Mean (SD)	Student's t-test (p-value)	Mean (SD)	Student's t-test (p-value)	Mean (SD)	Student's t-test (p-value)
Gender						
Male	3.07 (3.43)	-1.30 (0.20)	1.43 (1.65)	-1.42 (0.16)	1.57 (1.86)	-1.31 (0.20)
Female	5.75 (6.94)		2.75 (3.25)		3.00 (3.86)	
Remote working/studying during the quarantine						
Yes	2.29 (4.38)	-2.69 (0.01)	1.00 (2.06)	-2.99 (0.006)	1.24 (2.41)	-2.36 (0.025)
No	7.39 (5.99)		3.62 (2.72)		3.77 (3.46)	
Living with a relative in the same house during the quarantine						
Yes	5.17 (6.14)	2.44 (0.021)	2.50 (2.87)	2.94 (0.007)	2.67 (3.40)	2.12 (0.04)
No	1.83 (1.32)		0.67 (0.51)		1.00 (0.89)	
Using online social networking sites/apps to maintain social relations during the quarantine						
Yes	3.87 (4.76)	-0.60 (0.54)	1.80 (2.21)	-0.67 (0.50)	2.97 (2.65)	-0.46 (0.64)
No	5.13 (6.54)		2.47 (3.11)		2.60 (3.62)	
Having contamination symptoms before the quarantine						
Yes	8.75 (5.08)	4.21 (0.000)	4.17 (2.32)	4.30 (0.000)	4.50 (2.93)	3.72 (0.001)
No	1.67 (4.08)		0.78 (1.95)		0.89 (2.37)	
Remission status on OCD symptoms before the quarantine						
Remission	6.67 (6.67)	1.64 (0.11)	2.92 (3.17)	1.32 (0.19)	3.75 (3.59)	1.98 (0.06)
Still reporting OCD symptoms	3.06 (4.50)		1.39 (2.45)		1.39 (2.45)	

Note. OCD = Obsessive-compulsive disorder.

**Table 4**  
Generalized linear model of OCD symptom change during the quarantine (n = 30).

Predictors	β	Wald's 95% confidence interval		Wald's $\chi^2_{(1)}$	p-value
		Lower	Upper		
Intercept	-8.17	-13.52	-2.83	8.99	.003
Remission status on OCD symptoms before the quarantine					
Remission	5.17	2.73	7.61	17.25	<0.001
Still reporting symptoms	0 <sup>a</sup>	.	.	.	.
Living with a relative in the same house during the quarantine					
Yes	4.26	1.21	7.31	7.50	.006
No	0 <sup>a</sup>	.	.	.	.
Contamination symptoms before the quarantine					
Yes	7.40	5.00	9.80	36.55	<0.001
No	0 <sup>a</sup>	.	.	.	.
Age	.09	.01	.18	5.29	.021

Note. <sup>a</sup> = This parameter is set at 0 because redundant in the model, OCD = Obsessive-compulsive disorder, Y-BOCS = Yale-Brown Obsessive Compulsive Scale.

should provide the necessary support not just treating patients who still report symptoms, but even improving relapse prevention during the period of social restrictions that is supposed to last longer after the end of complete lockdown. We should recommend, for example, to limit the access to news, or to read them only through reliable sources, to spent time daily on pleasant or physical activities that can help to distract from intrusive thoughts and decrease the level of anxiety. Moreover, the lockdown and the limited access to mental health centers, could have discouraged patients in seeking help and delayed the interventions. One of the most plausible explanations of the results is the reduction of treatments delivered to OCD patients during the lockdown period. So, we should educate all patients to ask help from mental health professionals, and we should improve alternative strategies such as online consultations and digital psychiatry (Cosic et al., 2020). Digital technologies may have the advantage of allowing both individual and group sessions, which were found to be effective for OCD (Pozza and Dèttore, 2017). However, while the use of new technologies may be helpful during a lockdown period, the use of Internet to deliver therapies could cause a worsening of symptoms, especially if performed without appropriate guidelines, as recently reported (Király et al., 2020).

Finally, we underline the importance of relapse prevention strategies which should be implemented, particularly at the end of cognitive-

behavioral therapy (Sookman and Steketee, 2010), since they can contribute to reduce the risk of relapse, which is generally quite high amongst patients with OCD irrespective of the pandemic.

Some limitations and future directions should be acknowledged. A relevant issue regards the small sample size and the low statistical power that prevented us from exploring the role of additional variables. Indeed, the study did not assess the effects of other symptoms often observed on symptom worsening amongst OCD patients such as anxiety and depression, or personality comorbidity (Dèttore et al., 2013; Pozza et al., 2013).

The lack of a non-clinical control group without OCD or even another psychiatric group did not allow us to establish whether such a symptom worsening was specific to patients with OCD. In addition, the unavoidable lack of a control group of patients unexposed to the quarantine did not allow us to distinguish the effects of the quarantine from other potential sources of bias such as the lack of psychiatric visits during the quarantine, the inadequacy of the living physical space, or financial concerns caused by the COVID-19 pandemic.

A future area of investigation regards the assessment of reassurance seeking through medical information on the Internet. It might also be interesting to explore other variables potentially related to symptom worsening such as the level of family accommodation during the quarantine.

Another interesting point may be the assessment of inflated responsibility beliefs as a moderator between contamination symptoms and symptom worsening, since they have been found to be cognitive/maintenance vulnerability factors specific to OCD (Pozza and Dèttore, 2014). It may be hypothesized that individuals with OCD who have inflated responsibility beliefs and elevated contamination obsessions do worsen during the quarantine at home, while those who have only contamination symptoms without the fear of potentially contaminating others do not.

In conclusion, our preliminary report is the first work which assessed symptom worsening in OCD patients during the quarantine. Our findings suggest that this stressful period is associated with a significant symptom worsening, particularly amongst the patients with contamination symptoms and a remission state before the quarantine.

**CRedit authorship contribution statement**

**Prestia Davide:** Conceptualization, Investigation, Methodology, Writing - original draft, Data curation. **Pozza Andrea:**

Conceptualization, Formal analysis, Methodology, Writing - original draft. **Olcese Martina:** Conceptualization, Writing - review & editing. **Escelsior Andrea:** Writing - review & editing. **Dettore Davide:** Writing - review & editing, Supervision. **Amore Mario:** Supervision.

### Declaration of Competing Interest

We declare that we do not have any commercial or associative interest that represents a conflict of interest in connection with the work submitted.

### Acknowledgement

In memory of all Italian health care professionals who died for COVID-19.

### Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.psychres.2020.113213](https://doi.org/10.1016/j.psychres.2020.113213).

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