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The impact of COVID-19 on patients with OCD: A one-year follow-up study

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ABSTRACT

Background: Since the onset of the COVID-19 pandemic, concerns regarding its psychological effects on people with preexisting psychiatric disorders have been raised, particularly obsessive-compulsive disorder (OCD). Nevertheless, only a few longitudinal studies have been performed, and a more longstanding follow-up of a clinical sample is needed. In this study, our aim was to investigate the influence of the COVID-19 pandemic on symptom changes in a sample of Brazilian OCD patients for about a one-year period.

Methods: Thirty OCD outpatients seen in a specialized OCD clinic in Rio de Janeiro were evaluated at baseline and after one year (during the pandemic). Sociodemographic and clinical variables were collected along with a questionnaire aimed at quantifying the number of stressful events related to the COVID-19 pandemic. Comparisons between two time points (pre vs. during COVID-19) and two subgroups (patients with vs without worsening of symptoms) were carried out.

Results: As a group, OCD patients treated with SRIs had an overall stabilization of symptoms throughout the follow-up period, regardless of the number of stressful experiences related to coronavirus (median baseline YBOCS remained 22.0 at follow-up). In addition, when individually analyzed, even those who reported an increase in their symptoms did not describe a greater number of COVID-19 related events.

Conclusions: Patients with OCD, who were under treatment, did not show significant symptom deterioration as a result of the COVID-19 pandemic. Individual variations in OCD symptom severity did not seem to be related to experiences linked to coronavirus.

1. Background

The COVID-19 pandemic was announced by the World Health Organization on March 11, 2020. Given its increased transmissibility and a clinical presentation that ranges from asymptomatic to severe pneumonia and death, the COVID-19 pandemic resulted in an unparalleled international public-health crisis (Habas et al., 2020). However, the effects of the COVID-19 outbreak have transcended its physical implications. For instance, it is now known that the SARS-CoV-2 (the virus that causes COVID-19) can also affect the brain and result in delirium and other acute mental disorders (for a review, see Manolis et al., 2021). At the same time, the constant threat of being infected and the potential loss of loved ones has resulted in unappreciated levels of psychological distress in the general population (Holmes et al., 2020; Xiong et al., 2020).

The threat posed by the COVID-19 crisis has led to several changes in individuals' daily lives. For instance, social restrictions have been crucial to slow down the pandemic. However, they may also represent stressful life events (SLEs) (Brooks et al., 2020). Another containment measure is practicing good hygiene. To reduce the spread of contamination, authorities have repeatedly recommended individuals avoid contact with potential contaminants, to wash hands frequently, and to use hand sanitizers (Güner et al., 2020). As the performance of these behaviors may mimic the presentation of obsessive-compulsive disorder (OCD), it has been speculated that the COVID-19 pandemic might have an adverse impact on OCD patients (Fontenelle and Miguel, 2020).

Yet, studies of the effect of the pandemic on obsessive-compulsive symptoms are mixed, i.e. they reported symptoms to increase, stabilize and even attenuate in severity (e.g. Fontenelle et al., 2021; Jelinek et al., 2021; Littman et al., 2020; Perkes et al., 2020; Schwartz-Lifshitz

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et al., 2020). The reasons for these discrepancies vary, but they may be linked to the type of populations under study [i.e. clinical (e.g. Khosravani et al., 2021; Sharma et al., 2021) vs. non-clinical (e.g. Fontenelle et al., 2021; Knowles and Olatunji, 2021) samples], to methodological designs [i.e. early cross-sectional data (e.g. Kaveladze et al., 2021) vs short-term follow-ups (e.g. Carmi et al., 2021; Davide et al., 2020)], and to the geographical origin of the study [countries have differed in their lockdown policies and death rates during the pandemic (e.g. Alonso et al., 2021; Højgaard et al., 2021; Matsunaga et al., 2020)]. For instance, compared to other regions in the world, Brazil has been known for its inconsistent lockdown policies and, at different moments in the pandemic, one of the world’s fastest growing COVID-19 infection rates (de Souza et al., 2020)).

Lastly, even within the same city and under the same lockdown policies, individuals may be exposed to different SLEs. Therefore, by considering the pandemic one single and homogeneous SLE, previous studies might have also neglected the individual variability in the experience of stress associated with the pandemic. Recently, we have developed a tool that aims to quantify the total number of pandemic related SLEs (Fontenelle et al., 2021). To the best of our knowledge, with the exception of Khosravani et al. (2021) (which addressed stress-related symptomatology associated with the pandemic), no study included a psychometric measure to assess the impact of the pandemic on an OCD clinical sample. Therefore, the aim of this study was to investigate the influence of the COVID-19 pandemic and related stressors on symptom change in Brazilian patients with OCD who were followed for about a one-year period by using a valid quantitative measure. Given the infectious threats posed by the COVID-19, we hypothesized that the number of stressful coronavirus-related events would be linked to the worsening of OCD symptoms during the pandemic.

2. Methods

2.1. Participants

The current study was part of a larger study on OCD. The sample included a total of 30 OCD patients recruited consecutively at the OCD Clinic from the Obsessive, Compulsive, and Anxiety Spectrum Research Program Clinic at the Institute of Psychiatry of the Federal University of Rio de Janeiro. Inclusion criteria were as follows: (i) a primary diagnosis of OCD; (ii) age between 18 and above; and (iii) being able to read and fill out forms. Participants had their diagnosis confirmed by the Mini International Neuropsychiatric Interview (MINI) (Amorim, 2000).

The local ethics committee approved the protocol and all patients provided written informed consent. The first assessments were conducted in-person between January 2019 and January 2020 (before the COVID-19 outbreak) at the clinic. Participants completed the follow-up assessment about one year later (on average 13.1 months, ranging from 11 to 17 months), as part of their evaluation plan (see Table 1). To limit the transmission of COVID-19 in the healthcare setting, the follow-up data were collected remotely through Research Electronic Data Capture (REDCap) hosted at the D’Or Institute for Research and Education.

Table 1
Schedule of assessments.

	Baseline	Follow-up
Demographics	✓	
YBOCS	✓	✓
OCI-R	✓	✓
DASS-21	✓	✓
COROTRAS		✓

Footnote: ✓ Indicates the timepoint of recording the measurements; YBOCS = Yale Brown Obsessive-Compulsive Scale; OCI-R = Obsessive-Compulsive Inventory – Revised; DASS = Depression Anxiety Stress Scale; COROTRAS = Coronavirus Traumatic and Stressful Life Events Scale.

Except for the MINI evaluation, which was carried out by a specialist at the baseline at the clinic, all data was collected through self-reported instruments. Therefore, the measurements were not affected by changing the process from an in-person to a remote assessment.

2.2. Measures

2.2.1. Demographics

Participants responded to a questionnaire that included information on age, gender, education, ethnicity, marital status and employment status.

2.2.2. Severity of symptoms

To assess severity of OCD symptoms, the self-report Yale-Brown Obsessive-Compulsive Scale (YBOCS) was administered at the baseline (in-person) and at follow-up (remote) assessments. The YBOCS is the most widely used instrument to measure severity of OCD. It includes a total of 10 items that cover time, interference, anxiety or distress, resistance and control for obsessions and compulsions separately (Goodman et al., 1989a, 1989b). Its scores vary from 0 to 40.

2.2.3. Coronavirus related events

The Coronavirus Traumatic and Stressful Life Events Scale (COROTRAS) is a self-report inventory that lists 16 potential life events related to the COVID-19 pandemic (e.g. “have you lost your job or had a reduction in your salary as a consequence of the COVID-19 pandemic?”) (Fontenelle et al., 2021). Through COROTRAS, it is possible to quantify the (i) the total number of life changes related to coronavirus, (ii) the total number of SLEs related to coronavirus and (iii) the intensity of each emotion experienced as a result of the most stressful coronavirus event. For the purposes of this study, we used the total number of life changes related to coronavirus and SLEs related to coronavirus.

2.2.4. OCD dimensions

The scores on different symptom dimensions were evaluated through the OCI-R (Foa et al., 2002). This is an 18-item self-report scale assessing six areas of obsessive-compulsive experiences over the month before, specifically washing, ordering, checking, obsessing, neutralizing, and hoarding. For each item, the individual rated how distressed or bothered they had been during this time (not at all, a little, moderately, a lot, or extremely, scored 0–4 respectively).

2.2.5. Psychological distress

Participants completed the brief Depression Anxiety Stress Scale (Lovibond and Lovibond, 1995; Vignola and Tucci, 2014). The DASS-21 contains 21 self-report items assessing depression, anxiety, and stress/tension symptoms. Respondents are asked to rate how much a specific statement applies to them during the past week (‘did not apply to me at all’ to ‘applied to me very much’, scored 0–3 respectively). The measurement of interest in this study was the total score, reflecting general psychological distress.

2.3. Data analysis

Descriptive statistics were described in percentages, means and standard deviations, or medians and range (minimum-maximum values). Quantitative variables were compared between two time points (pre vs. during COVID-19) and two subgroups (patients with vs without worsening of symptoms) using Wilcoxon Signed Ranks and Mann-Whitney tests, respectively. Qualitative variables were compared using Fisher’s exact test. Significance was set at 0.05. The analyses were carried out through SPSS version 23.0.

3. Results

3.1. Descriptive statistics

The sample’s mean age was 38.7 (SD 13.79), with 66.7% being female. The mean age at onset of OCD was 15.7 (SD 8.99) years, and the patients’ main compulsive behavior were washing (26.7%), checking (20.0%), symmetry/ordering (3.3%), and other behaviors (46.7%). The mean duration of follow-up was 13.09 (SD 1.4) months. Almost all patients (N = 29, 96.67%) were regularly treated with the maximum tolerated doses of serotonin reuptake inhibitors [Fluoxetine (N = 8, 26.67%), Citalopram (N = 5, 16.67%), Sertraline (N = 5, 16.67%), Escitalopram (N = 4, 13.33%), Paroxetine (N = 4, 13.33%), Clomipramine (N = 4, 13.33%) and Fluvoxamine (N = 1, 3.33%)], with just one patient being treated with high dose venlafaxine. Of note, clomipramine was added as an augmentation strategy to other selective serotonin reuptake inhibitors (N = 2, 6.67%). A detailed overview of the socio-demographics and clinical features is provided in Table 2.

3.2. Severity of symptoms

As seen in Table 3, the YBOCS total scores medians for both assessments suggest that this sample had a moderate pattern of OCD symptoms (i.e. 22.0 before COVID-19 and 20.0 during COVID-19). Accordingly, the results of the Wilcoxon signed rank test showed no significant changes on the severity of total OCD symptoms, obsessions, and compulsions between baseline and endpoint, suggesting an overall stabilization of these outcomes (Table 3). A similar result regarding symptom stability was found in the OCI-R analysis, except for the obsessing dimension score, which decreased over time (see supplementary material).

However, when individually analyzed, patients showed different symptoms trajectories (Fig. 1). More specifically, the delta (Δ) YBOCS

Table 2
Sample demographics and clinical variables.

	N	%
Gender		
Female	20	66.7
Male	10	33.3
Marital Status		
Single	19	63.3
Married	8	26.7
Divorced	2	6.7
Widowed	1	3.3
Ethnicity		
Caucasian	18	60.0
Black	4	13.3
Asian	2	6.7
Other	6	20.0
Education		
Up to 8 years	0	0.0
9–11 years	2	6.7
12 years or more	28	93.3
Occupation		
Working	16	53.3
Unemployed	5	16.7
Retired due to disability	2	6.7
Housekeeping	1	3.3
Student	3	10.0
Other	3	10.0
Psychiatric Comorbidity		
Major depression	10	33.3
Dysthymic disorder	1	3.3
Panic disorder	2	6.7
Agoraphobia	6	20.0
Social anxiety	7	23.3
PTSD	1	3.3
GAD	8	26.7

Footnote: PTSD = post-traumatic stress disorder; GAD = generalized anxiety disorder.

Table 3
Changes on OCD severity during COVID-19 outbreak.

	Before COVID-19	During COVID-19	Wilcoxon Signed Ranks
	Medians (min-max)	Medians (min-max)	
YBOCS obsessions	10.5 (1–18)	11.0 (2–19)	Z = -0.836; p = 0.4
YBOCS compulsions	11.0 (1–18)	10.0 (0–18)	Z = -0.967; p = 0.33
YBOCS total	22.0 (2–36)	20.0 (2–37)	Z = -0.849; p = 0.39

Footnote: OCD = Obsessive-Compulsive Disorder; YBOCS = Yale Brown Obsessive-Compulsive Scale.

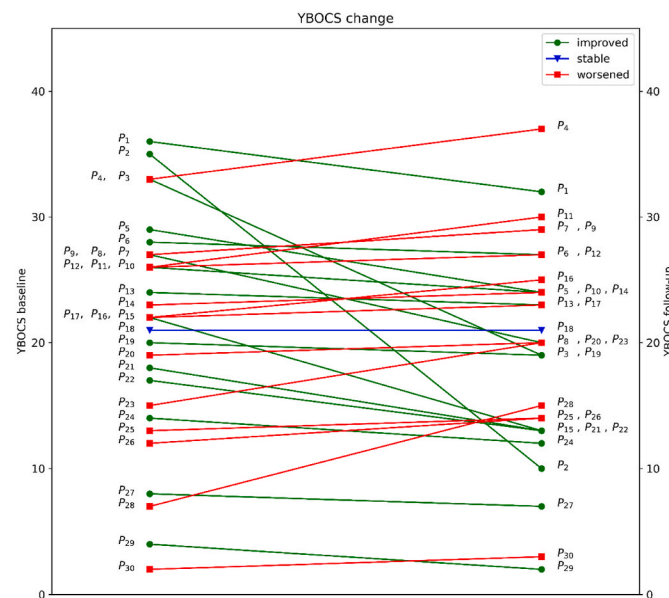


Fig. 1. YBOCS scoring changes from baseline (before COVID-19) to follow-up (during COVID-19). Footnote: YBOCS = Yale Brown Obsessive-Compulsive Scale; P₁, P₂, P₃, ..., P₃₀ = YBOCS scoring of patients 1 to 30.

for each patient was calculated as the difference between baseline (before COVID-19) and follow-up (during COVID-19) YBOCS scores. According to these analyses, 50% of the sample had a Δ YBOCS ≥ -1 [the OCD severity improvement (OSI) group], 46.66% had a Δ YBOCS ≤ -1 [the OCD severity worsening (OSW) group] and 3.34% remained stable (Δ YBOCS = 0). The OSI and the OSW groups showed comparable gender frequencies (p > 0.05, Fisher’s exact test). However, patients with OSW were younger (U = 159.0; p = 0.018) and had a shorter duration of illness (U = 156.5; p = 0.023) than patients with OSI.

3.3. Coronavirus related events

The median number of life changes related to coronavirus experienced by patients, which were not necessarily stressful, was 4 (minimum 0 and maximum 9), whereas the median number of SLEs related to coronavirus outbreak was 2 (minimum 0 and maximum 7). Among the COROTRAS items, being forced to self-isolate because of the COVID-19 was endorsed as stressful by twelve participants, whereas being separated from the family, having someone close testing positive for COVID-19, and having witnessed people die or undergo severe respiratory distress as a consequence of COVID-19 infection was endorsed as stressful by seven participants each.

3.4. Coronavirus related events and OCD severity

There was no correlation between the Δ YBOCS and the number of life events ($\rho = -0.197$; $p = 0.29$) or the number of SLEs related to coronavirus outbreak ($\rho = -0.115$; $p = 0.54$). Accordingly, there was no significant difference in the number of life events ($U = 94.5$; $p = 0.65$) or in the number of SLEs related to coronavirus between patients with OSI and OSW ($U = 68.5$; $p = 0.11$).

3.5. Other clinical features and OCD severity

There was no correlation between the Δ DASS-21 and the number of life events ($\rho = -0.001$; $p = 0.99$) or the number of SLEs related to coronavirus pandemic ($\rho = -0.044$; $p = 0.82$). Also, no significant differences between patients with OSI and OSW in terms of psychological distress emerged, i.e. baseline DASS 21 scores ($U = 123.5$; $p = 0.246$) and the Δ DASS-21 were similar between patients with OSI and OSW ($U = 102$; $p = 0.874$).

Finally, no correlation between the Δ OCI-R and the number of life events or the number of SLEs related to coronavirus outbreak were found (Table 4). However, patients with OSI showed greater baseline neutralizing scores when compared to patients with OSW (Table 5).

4. Discussion

In this study, we investigated the relationship between the COVID-19 pandemic (measured by the number of life changes and SLEs related to coronavirus) and the change in symptoms severity of individuals with OCD. Overall, patients displayed similar levels of OCD symptoms during the pandemic. This is consistent with the results of other modern long-term studies of OCD patients using the YBOCS, in which most OCD cases in adults have shown to be chronic and non-remitting (Eisen et al., 2013). Thus, the hypothesis that the threatening environment caused by the COVID-19 crisis would negatively affect the severity of OCD symptoms (Fontenelle and Miguel, 2020; Kumar and Somani, 2020; Pozza et al., 2020) was not confirmed at a group level in the present clinical sample.

In fact, most [but not all (Davide et al., 2020; Khosravani et al., 2021)] clinical studies that did not employ a quantitative assessment of SLEs related to the pandemic have also found that the majority of OCD outpatients did not display short-term (<1 year) symptoms deterioration (Alonso et al., 2021; Benatti et al., 2020; Carmi et al., 2021; Chakraborty and Karmakar, 2020; Matsunaga et al., 2020; Schwartz-Lifshitz et al., 2020; Sharma et al., 2021). This is in line with the assumption that people with a previous mental disorder may have more resources to deal with the pandemic, since they chronically experience fear and isolation states in their daily lives (Florence et al., 2020). In addition, it has been suggested that the maintenance of a mental health support during the COVID-19 outbreak could prevent individuals from increasing vulnerability and symptoms relapse (Carmi et al., 2021; Hamada and Fan,

Table 4
Correlation between Δ OCI-R subscores and number of coronavirus related events.

		Number of life changes related to coronavirus	Number of SLEs related to coronavirus
Δ washing	Spearman's correlation	-0.163	-0.180
	p-value	0.388	0.343
Δ checking	Spearman's correlation	-0.152	-0.042
	p-value	0.421	0.826
Δ ordering	Spearman's correlation	-0.153	-0.129
	p-value	0.419	0.496
Δ obsessing	Spearman's correlation	0.229	0.169
	p-value	0.224	0.373
Δ hoarding	Spearman's correlation	-0.316	-0.290
	p-value	0.089	0.121
Δ neutralizing	Spearman's correlation	-0.128	0.033
	p-value	0.501	0.865

Footnote: OCI-R = Obsessive-Compulsive Inventory – Revised; SLEs = stressful life events.

Table 5

Summary of OCI-R subscores differences between patients with OSI and OSW (Mann-Whitney U Test).

	Patients with OSI (N = 15)	Patients with OSW (N = 14)	p-value
Baseline measurements	Mean rank	Mean rank	
Washing	16.47	13.43	0.354
Checking	16.50	13.39	0.331
Ordering	15.97	13.96	0.533
Obsessing	16.30	13.61	0.400
Hoarding	14.37	15.68	0.683
Neutralizing	18.77	10.96	0.012 ^a
Δ measurements			
Washing	16.80	13.07	0.252
Checking	17.00	12.86	0.201
Ordering	15.00	15.00	1.000
Obsessing	16.77	13.11	0.252
Hoarding	15.17	14.82	0.914
Neutralizing	17.93	11.86	0.057

Footnote: OCI-R = Obsessive-Compulsive Inventory - Revised; OSI = obsessive-compulsive disorder severity improvement; OSW = obsessive-compulsive disorder severity worsening.

^a Significant at $p \leq 0.05$.

2020; Holmes et al., 2020). It is also possible that being under continuous high dose serotonin reuptake inhibitors might have contributed to this non-exacerbation of symptoms during the COVID-19 crisis.

An alternative explanation for the lack of difference between baseline and endpoint general symptom severity might be related to greater adherence to social restrictions by some of our participants. As reported above, Brazilian citizens have not undergone a full 'lockdown'. They were encouraged to stay home and avoid agglomerations by local (city) health authorities to different degrees, making it difficult to operationalize a concept of 'lockdown', which may have different meanings to different people. Therefore, it is conceivable that the avoidance of dreaded situations (e.g. touching public handles, for those with contamination fears; causing harm to someone, for those with aggressive thoughts; being in contact with others, for those with concerns about sexually inappropriate behavior, etc) might have resulted in greater perception of OCD symptoms stability.

As a matter of fact, patients that described an improvement in the severity of OCD symptoms (the OSI group) had a greater neutralizing scoring before the pandemic (Table 5). The OCI-R items related to this dimension measure how distressed the individual was about counting and related mental compulsions (Abramovitch et al., 2020). Admittedly, we can only speculate on the significance of this finding. Compared to other patients, who tend to perform their rituals (e.g. washing or checking) at home, OCD patients with counting symptoms and other mental rituals may easily perform their behaviors while outside, thus being more sensitive to the effects of lockdown and social isolation.

Surprisingly, but in accordance to at least one study (Chakraborty and Karmakar, 2020), washing was not more severe in OSW vs OSI.

It has been suggested that the pandemic might increase the psychological distress in general, especially among people with a previous mental illness (Hamada and Fan, 2020; Iasevoli et al., 2021). However, since our sample was retrieved from a clinic specialized in OCD, other severe mental illnesses that were likely to be impacted by the pandemic [e.g. bipolar disorder (Fornaro et al., 2021)] were rare. Accordingly, no significant differences regarding changes in psychological distress were found between patients with OSI and OSW. There was, however, a difference in the median age and duration of illness between these two subgroups. Since patients with OSI were older and had a longer duration of illness than patients with OSW, it is possible that younger people were more vulnerable and overwhelmed during the pandemic, impacting at some extent the trajectory of their OCD symptoms.

In fact, young people had to adapt to an entirely new way of life as they faced significant changes in education, career, and leisure opportunities (Efuribe et al., 2020). Alternatively, getting older and living with OCD for a longer time may have somehow increased patients' adaptability to new SLEs, preventing the worsening of their symptoms. This hypothesis is consistent with the finding that, after a natural disaster, being older was a protective factor regarding mental health outcomes. Acierno and colleagues found that, among several individuals affected by the 2004 hurricanes in Florida, older adults were more resilient than younger adults since they displayed lower symptom levels of post-traumatic stress disorder, mood and anxiety disorders (Acierno et al., 2006).

Some limitations of this study should be acknowledged, such as its small sample size and a debatable definition of improved vs worsened OCD. Admittedly, a larger sample could have allowed more sophisticated statistics and the identification of independent variables related to a greater chance of having an OSW or OSI. Moreover, one could argue that the definition of OSW and OSI patients' groups was arbitrary. Indeed, while there is widely adopted definition of response in OCD (>25% YBOCS) (Mataix-Cols et al., 2016; Pallanti et al., 2002), we were unable to identify a definition of worsening - the closest definition being relapse, whose utility is nevertheless restricted to patients who were previously remitted. Eventually, we decided to classify OCD patients according to the direction of the slope as depicted in Fig. 1.

Finally, one could argue that our findings are not completely generalizable to other settings or countries that were under different lockdown policies. Only studies comparing samples under different lockdown policies can help us answer this question. Despite the problems listed above, our findings suggest that OCD patients who are receiving treatment as usual during the pandemic tended to remain stable, regardless of the number of life changes or SLEs related to coronavirus. We acknowledge though, that specific patients may occasionally show variable symptom trajectories that need to be studied in the future.

Author contribution

Maria E. Moreira-de-Oliveira: Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing – Original Draft. Gabriela B. de Menezes: Conceptualization, Writing – Review & Editing, Supervision. Carla C. Loureiro: Investigation, Writing – Review & Editing. Luana D. Laurito: Investigation, Writing – Review & Editing. Lucy Albertella: Writing – Review & Editing. Leonardo F. Fontenelle: Conceptualization, Methodology, Formal analysis, Writing – Review & Editing, Supervision, Funding acquisition.

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Role of funding source

The funding sources had no role in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication.

Declaration of competing interest

The authors have no conflict of competing interesting to report.

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Appendix A. Supplementary data

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