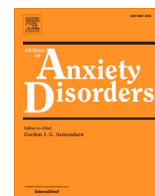




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## How is the COVID-19 pandemic affecting individuals with obsessive-compulsive disorder (OCD) symptoms?

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### ABSTRACT

The novel coronavirus disease (COVID-19) pandemic has caused substantial public health burden and widespread anxiety. The adverse mental health effects caused by COVID-19 may be particularly acute for individuals with obsessive-compulsive disorder (OCD). For the present study, we developed an online survey to investigate how COVID-19 has affected the OCD community. The survey included both quantitative and qualitative questions to assess multiple facets of how the pandemic has affected individuals with OCD symptoms. Responses were collected from adults with self-identified OCD recruited from OCD-specific forums and websites ( $n = 252$ ). The majority (76.2 %) of respondents reported that their OCD symptoms had worsened since the outbreak, though there was substantial variability in individual responses. Negative effects of COVID-19 were more strongly linked to contamination and responsibility for harm symptoms than for other symptom dimensions. The self-identified OCD group also reported heightened concerns about COVID-19 compared to a community control sample recruited through Amazon's Mechanical Turk (MTurk). Lastly, many participants reported that the pandemic had interfered with their OCD treatment, yet they remained mostly satisfied with how their treatment providers had handled the crisis. These results highlight the importance of considering how COVID-19 has affected the OCD community, with possible implications for treatment providers.

### 1. Introduction

The novel coronavirus disease (COVID-19) was initially detected in Wuhan, China in late 2019 and has since spread rapidly across the globe. On March 11, 2020, it was officially declared a pandemic by the World Health Organization (WHO, 2020). Although the crisis continues, COVID-19 has already severely strained healthcare systems and disrupted economic activity. At the time of this writing, the United States has experienced more than 28 million positive COVID-19 cases and over 500,000 COVID-19 related deaths (CDC, 2021). In addition to its physical health effects, the pandemic and imposition of disease mitigation efforts (i.e., quarantine, economic shutdowns, and social distancing) are also having an enormous impact on mental health and emotional well-being, for both the general public (Fitzpatrick, Drawve, & Harris, 2020; Qiu et al., 2020; Shigemura, Ursano, Morganstein, Kurosawa, & Benedek, 2020; Wang et al., 2020) as well as individuals with mental health disorders (Asmundson et al., 2020; Yao, Chen, & Xu,

2020).

The mental health consequences of the COVID-19 pandemic may be particularly acute for individuals with obsessive-compulsive disorder (OCD). OCD is estimated to have a prevalence rate of 2% (Ruscio, Stein, Chiu, & Kessler, 2010) and tends to be chronic when not treated (American Psychiatric Association, 2013). OCD is characterized by obsessions (recurrent thoughts, images, or urges that provoke anxiety/distress) as well as compulsions (repetitive behaviors or mental acts performed according to rigid rules). Although the content of obsessions and compulsions varies greatly, one consistently reported OCD symptom dimension involves contamination obsessions and washing/cleaning compulsions (Mataix-Cols, Rosario-Campos, & Leckman, 2005; McKay et al., 2004). Indeed, contamination concerns are among the most common OCD subtypes, experienced by 30–40% of those with OCD (Pinto et al., 2008). Frequently these concerns center on fear of germs and contracting illnesses, as well as spreading illnesses to others. Given the high transmissibility of the SARS-CoV2 virus that causes COVID-19,

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individuals with contamination fears might be particularly affected by the pandemic threat (Knowles & Olatunji, 2021). Indeed, past work has linked contamination fear with anxiety about the spread of past pandemic illnesses, including H1N1 “Swine Flu” (Brand, McKay, Wheaton, & Abramowitz, 2013; Wheaton, Abramowitz, Berman, Riemann, & Hale, 2012), Zika Virus (Blakey & Abramowitz, 2017), and Ebola (Blakey, Reuman, Jacoby, & Abramowitz, 2015).

Since the COVID-19 pandemic began, several editorials have highlighted the possibility that individuals with OCD will experience heightened mental health burden (Asmundson & Taylor, 2020a, 2020b; Banerjee, 2020; Fineberg et al., 2020; Rivera & Carballea, 2020; Rivera & Carballea, 2020; Silva, Shavitt, & Costa, 2021). However, empirical study is needed to determine the full extent to which those with OCD are affected by COVID-19. Currently, only a limited number of reports have provided empirical data, and these have been characterized by small sample sizes and mixed findings. French and Lyne (2020) reported a case study of an individual OCD patient who experienced exacerbated contamination symptoms that were precipitated by media reports of COVID-19. In a naturalistic study conducted in Italy, Davide et al. (2020) re-contacted patients ( $n = 30$ ) who had completed their OCD treatment before the outbreak of COVID-19 to assess their symptoms and clinical status 6-weeks into the lockdown. Results revealed that the group’s mean OCD severity (as assessed by the Yale-Brown Obsessive Compulsive; Y-BOCS; Goodman et al., 1989) significantly increased (from  $M = 15.97$  before to  $M = 20.47$  during the quarantine), indicating worsening symptoms. Moreover, four out of twelve patients who had achieved remission before the outbreak experienced a relapse into clinically significant OCD.

On the contrary, Kuckertz et al. (2020) reported on a case series of eight OCD patients completing a residential treatment program for OCD during the early stage of the outbreak. The authors reported that these patients were remarkably resilient to the pandemic, as their OCD symptoms tended to improve to the same extent as past cohorts of patients treated in their clinic before the pandemic. Moreover, most patients maintained their therapeutic gains even after returning home following discharge. Although these results came from a small and unique sample (patients undergoing intensive residential OCD treatment) they suggest that not all individuals with OCD will be negatively impacted by COVID-19. Other emerging data are similarly mixed regarding the extent to which the COVID-19 pandemic will cause worsening OCD symptoms among individuals with OCD. In a German sample of individuals with self-identified OCD recruited through online sources related to OCD, 72 % reported OCD symptom worsening due to COVID-19 (Jelinek, Moritz, Miegel, & Voderholzer, 2021). Other reports have suggested lower rates of worsening: In an Israeli sample of OCD patients, Littman, Naftalovich, Huppert, and Kalanthroff (2020) reported that participants were roughly evenly distributed in reporting improvement ( $n = 21$ ), worsening ( $n = 21$ ), and no change ( $n = 23$ ) in symptom severity during COVID-19 lockdown. Similarly, Benatti et al. (2020), reported that roughly a third of their sample of treatment-seeking OCD patients in Northern Italy experienced clinical worsening of OCD symptoms. In contrast, Chakraborty and Karmakar (2020) reported an extremely low rate (~5%) of exacerbation of OCD symptoms in a sample of Iranian OCD patients. Therefore, greater empirical work is needed to add to these mixed findings on the effects of COVID-19 on the OCD community.

Important questions remain in terms of how this outbreak may affect individuals with OCD given that this population is noted for its heterogeneity. Due to its nature, the COVID-19 outbreak would appear to be particularly triggering for those with obsessions about contracting or spreading illnesses (Dennis, Radnitz, & Wheaton, 2021). However, not all individuals with OCD experience contamination concerns. Other common symptom dimensions include fears of being responsible for harm, unacceptable “taboo” thoughts, and needs for symmetry and exactness (Abramowitz et al., 2010). Thus, it is unclear how those whose symptoms primarily fall within these other dimensions will respond to

COVID-19. Some reports suggest that OCD symptoms can shift over time (Rettew, Swedo, Leonard, Lenane, & Rapoport, 1992), so these individuals may develop new obsessions centered on the threat posed by COVID-19. Yet, data on the stability of OCD symptoms generally find that, although symptoms may fluctuate within a dimension (i.e., someone with contamination fears transitioning from fearing HIV to fearing another illness), the symptom dimensions remain quite stable over time, and it is relatively rare for patients to shift from one symptom dimension into an entirely new theme (i.e., a patient with religious obsessions shifting to contamination; Fullana et al., 2009; Mataix-Cols et al., 2002). Therefore, individuals with symptoms unrelated to contamination might not experience COVID-19 to be an OCD-specific threat and may instead continue to experience their typical obsessions and compulsions as the pandemic unfolds.

There is also evidence to suggest that OCD symptoms worsen during periods of general stress (Coles, Pietrefesa, Schofield, & Cook, 2008; Vidal-Ribas et al., 2015). Thus, to the extent that the spread of the virus and imposition of disease mitigation efforts (e.g., lockdown and social distancing) increased stress, individuals with OCD without contamination-related symptoms may still experience worsening OCD symptoms. Thus, in addition to assessing for symptom worsening, it is important to understand whether individuals with OCD experience COVID-19 to be within the domain of their symptoms (i.e., developing obsessions and compulsions related specifically to COVID-19) or if they instead experience the virus as something separate from their OCD concerns.

In addition, it is critical to explore how the COVID-19 pandemic has affected individuals’ ability to receive and benefit from OCD treatment. Fortunately, effective treatments exist for OCD, including pharmacotherapy with serotonin reuptake inhibitors and cognitive-behavioral therapy (CBT; Koran & Simpson, 2013). However, efforts to slow the spread of COVID-19 such as restrictions on in-person gatherings, social distancing guidelines, and mandatory lockdowns may have hindered patients’ abilities to receive these treatments. Furthermore, CBT consisting of exposure and response prevention (EX/RP), which involves repeated and prolonged confrontations with anxiety-provoking stimuli, may not be safe or practical when there is a realistic disease threat (Fineberg et al., 2020), though adaptations to make EX/RP deliverable during the COVID-19 pandemic have recently been reviewed (Sheu, McKay, & Storch, 2020). Public health and governmental recommendations have encouraged frequent handwashing and utilization of disinfecting products (Centers for Disease Control, 2021), which may complicate efforts to resist compulsive washing via response prevention. Therefore, in addition to its direct effects, the COVID-19 outbreak might also increase the mental health burden on individuals with OCD by interfering with treatment.

In the present study, we sought to explore how the COVID-19 pandemic is affecting individuals with self-identified OCD. To collect data quickly while the crisis was still unfolding, we recruited a large sample of members of the OCD community via online convenience recruitment. We developed a survey instrument designed to ascertain how the COVID-19 pandemic has affected individuals with OCD symptoms. This questionnaire utilized a mixed-methods approach that combined forced-choice (quantitative) items as well as free response items that were analyzed qualitatively. Survey questions were designed to assess multiple facets of OCD-related experiences during the pandemic, including changes in OCD severity and whether concern about the virus was experienced as a part of OCD or as a separate concern. The survey also included a section that evaluated whether the COVID-19 pandemic had interfered with individuals’ OCD treatment and/or their satisfaction with their treatment providers during this time. Furthermore, we sought to determine whether individuals with OCD experience heightened concerns about the spread of COVID-19. To evaluate this possibility, we compared individuals with OCD to unaffected community controls on the COVID-19 Threat Scale (CTS; Wheaton, Prikhidko, & Messner, 2021), a scale designed to assess anxiety and behavioral responses to the

threat of the spread of COVID-19.

## 2. Method

### 2.1. Participants

Participants were drawn from two sources. To evaluate the impact of COVID-19 on individuals with OCD symptoms, we recruited a large group of individuals with self-identified OCD via online convenience recruitment. This group ( $n = 252$ ) was 89.4 % female with a mean age of 31.31 years ( $SD = 10.38$ , range 18–70). These participants were 85.3 % non-Hispanic White, 2.0 % African American, 8.7 % Hispanic, 3.2 % Asian/Pacific Islander, and 0.8 % “other.”

We also recruited a community sample of adults recruited through the Amazon Mechanical Turk (Mturk) marketplace ( $n = 305$ ). This group was 40.9 % female with a mean age of 37.67 years ( $SD = 12.73$ , range 20–78). The ethnic-racial composition of this group was 62.6 % non-Hispanic White, 6.0 % African American, 22.8 % Hispanic, 8.3 % Asian/Pacific Islander, and 0.3 % “other.”

Mturk participants were asked if they had ever been diagnosed with OCD by a mental health professional. Those who responded affirmatively were combined with the OCD group for the group comparison to test whether individuals with OCD experienced heightened concerns about COVID-19 (see below).

### 2.2. Procedure

Recruitment of participants with self-reported OCD was the same as in [Jelinek et al. \(2021\)](#). Specifically, these participants were recruited through websites, social media platforms, and web forums for individuals who self-identify as having been diagnosed with OCD (including the International OCD Foundation). The recruitment advertisement posted on these sites specifically recruited individuals who self-identified as having OCD. Within the survey participants were asked “have you been diagnosed with OCD by a mental health professional?” As in [Jelinek et al. \(2021\)](#) endorsement of this item was required as an inclusion criterion for this group. Self-reported mental health diagnoses have been shown to be an acceptable indicator of mental health status ([Mawani & Gilmour, 2010](#); [Sanchez-Villegas et al., 2008](#)) and have been utilized to study the effects of COVID-19 on individuals with pre-existing mental health concerns ([Asmundson et al., 2020](#)). Full details of the recruitment materials and sources are available upon request from the authors. These participants completed the survey in exchange for an entry into a raffle for a \$100 gift card. Responses were recorded from 4/1/2020 to 8/12/2020, which represents a period of heightened COVID-19 spread in the United States.

Community control participants were recruited through Mturk, an online marketplace that connects eligible participants with research studies that is increasingly being used in psychological research ([Buhrmester, Kwang, & Gosling, 2011](#)). These participants were offered monetary compensation to complete the study measures. In line with best practices in collecting data via online surveys ([Thomas & Clifford, 2017](#)), we included “catch” items designed to detect inaccurate responding. Data presented here comes from participants who passed the validity check by correctly endorsing all catch items. Both groups of participants completed the study measures online using Qualtrics, an online survey development tool. Mturk responses were collected in batches from 4/3/2020–8/11/2020 to mirror the timeframe of data collection from the OCD respondents. The study was reviewed and approved by the local Institutional Review Board (IRB) and all participants provided informed consent.

### 2.3. Measures

#### 2.3.1. Survey instrument

For the present study, the authors developed a survey instrument to

probe how the COVID-19 pandemic has affected individuals with OCD symptoms and their treatment experiences. The survey included forced-choice and free response questions to gather both quantitative and qualitative data. Fixed response items were used to assess how respondents perceived their OCD symptoms changing following the COVID-19 outbreak, whether concerns about COVID-19 were experienced as part of their OCD or as separate, and whether their responses to COVID-19 were excessive/irrational. Fixed response items were also utilized to assess interference in treatment, satisfaction with treatment providers, and preferences for adaptations to treatment regarding COVID-19. Free-response questions were utilized to allow respondents to share qualitative data about how the pandemic had affected their OCD symptoms and whether COVID-19 had impacted their OCD treatment (See [Appendix A](#) for the full survey). This instrument was administered only to the OCD participants recruited through OCD-specific recruitment sites. In addition, the following previously developed measures were administered to both the OCD group and the Mturk sample:

#### 2.3.2. COVID-19 Threat Scale (CTS; [Wheaton et al., 2021](#))

The CTS is a questionnaire that was developed by adapting a self-report inventory developed to assess anxiety about the H1N1 “Swine Flu” Influenza ([Wheaton et al., 2012](#)). CTS items utilize a 5-point Likert Scale (from 1-Not At All to 5-Very Much) with higher scores indicating greater anxiety and threat-related behaviors in response to COVID-19. Items assessed fear that COVID-19 will spread widely in the United States, fear about becoming ill or family members becoming ill, and behavioral changes in response to COVID-19 (e.g., decisions to be around other people, handwashing). With minor variations, these same items were used to assess fears of past pandemic outbreaks, including H1N1 ([Brand et al., 2013](#); [Wheaton et al., 2012](#)), Ebola ([Blakey et al., 2015](#)), and Zika Virus ([Blakey & Abramowitz, 2017](#)). In the above-referenced studies, the total scores on these items have demonstrated good psychometric properties and convergent validity with anxiety-related constructs. In the present sample, CTS scores demonstrated good internal consistency ( $\alpha = .83$ ).

#### 2.3.3. Dimensional Obsessive-Compulsive Scale (DOCS; [Abramowitz et al., 2010](#))

The DOCS is a 20-item self-report inventory of OCD symptom severity (with higher scores indicating more severe symptoms). The DOCS includes subscales assessing four empirically-supported OCD symptom dimensions: contamination/washing, responsibility for harm, symmetry, and unacceptable “taboo” thoughts. For each of these dimensions, five items (scored 0–4) assess the following parameters of severity: (a) time occupied by obsessions and compulsions, (b) avoidance, (c) distress, (d) functional impairment, and (e) difficulty dis-regarding the obsessions and refraining from compulsions. The DOCS has high internal consistency and good test-retest reliability ([Abramowitz et al., 2010](#)). In the present sample, the DOCS total score had good reliability ( $\alpha = .95$ ) as did the four subscales (range in  $\alpha = .88-.93$ ).

#### 2.3.4. Depression Anxiety Stress Scales 21 (DASS-21; [Antony, Bieling, Cox, Enns, & Swinson, 1998](#))

The DASS-21 is a self-report inventory that is frequently utilized in research studies to assess distress symptoms. It has three subscales, measuring self-reported depression, anxiety, and stress symptoms. Each item is rated on a 0–4 scale with higher scores indicating greater severity. The DASS-21 subscales have been found to have good reliability and construct validity in both clinical and non-clinical samples ([Antony et al., 1998](#)). The three DASS subscales demonstrated good reliability in the present study (range in  $\alpha = .90-.93$ ).

### 2.4. Quantitative analysis

Quantitative data was analyzed with IBM SPSS (Version 25).

Descriptive statistics were utilized to characterize the sample. Next, we compared the OCD and community control samples by way of independent samples *t*-tests for continuous measures and Chi-square tests for categorical variables. Participants from the Mturk sample who reported that they had been diagnosed with OCD by a mental health professional were added to the OCD group for this analysis. To test the hypothesis that individuals with OCD experience heightened concerns about COVID-19 we compared groups' mean scores on the CTS (first via independent samples *t*-test and then via ANCOVA controlling for group differences in demographics and lower order distress symptoms).

To study how the COVID-19 pandemic is affecting individuals with OCD symptoms we focused subsequent analyses in the OCD group who completed the study-specific COVID-19 impact survey instrument. We first report descriptive frequencies for the answers to items about COVID-19 impact, followed by correlations among COVID-19 concerns and symptoms of OCD, depression, anxiety, and stress (DASS subscales). In light of multiple significance tests, we chose a conservative alpha set at  $p \leq .01$ .

### 2.5. Qualitative analysis

As in other studies (Patel & Simpson, 2010; Patel et al., 2018) we analyzed responses on the free-response questions via thematic analysis using an inductive process suggested by Hill, Thompson, and Williams (1997). Specifically, three coders each developed a preliminary list of themes by independently reviewing the open-ended question data. The coders then met and iteratively modified themes until they reached consensus. They then coded all participant responses, making final decisions based on consensus. Results from the qualitative analysis were tabulated for the emergent themes that were expressed by at least 10 participants.

## 3. Results

### 3.1. Do individuals with OCD symptoms experience heightened concerns about COVID-19?

Table 1 displays the group mean scores on each of the study measures, as well as the demographic characteristics for each group. The self-identified OCD group's scores on the DOCS were similar to those reported in patients formally diagnosed with OCD (Abramowitz et al., 2010). As expected, between-group *t*-tests (see Table 1) revealed that the OCD group had higher scores than the adult community control group on the DOCS. The OCD group also had elevated distress symptoms on the DASS-21. In line with our hypothesis, the OCD group had significantly higher scores on the CTS with a moderate to large effect size (Cohen's  $d = .74$ ), indicating greater anxiety about COVID-19. A subsequent analysis of covariance (ANCOVA) revealed that the group difference in CTS scores remained significant after controlling for differences in age,

gender, and race-ethnicity,  $F(1, 528) = 38.32, p < .001, \eta^2 = .07$ . Similarly, an ANCOVA revealed that group differences in CTS scores remained significant after accounting for general distress (DASS-21 subscales),  $F(1, 514) = 34.55, p < .001, \eta^2 = .06$ .

### 3.2. Impact of COVID-19 on individuals with self-identified OCD

Among OCD participants who completed the survey instrument, the great majority (99.2 %) had heard of COVID-19. A slight majority (50.1 %) reported that they were more anxious about COVID-19 than they perceived most other people to be, and a minority (30.6 %) reported that their anxiety about COVID-19 was excessive or irrational.

#### 3.2.1. Quantitative analysis of COVID-10 impact on OCD

Participants were asked whether their level of concern about COVID was experienced as part of their OCD or as a separate issue. On this item, 58.3 % reported that their concern about COVID-19 had become an obsession within the scope of their OCD, whereas 41.7 % reported instead that concern about COVID-19 was a separate issue. Regarding fears related to infection with the virus that causes COVID-19, only a minority (14.7 %) were primarily concerned with contracting the virus themselves, whereas 40.6 % were more concerned about infecting other people, and 44.7 % were equally afraid of infection for themselves and others. Participants were presented an item to determine whether concerns about COVID-19 had overtaken their OCD concerns: 70.9 % of participants reported that their OCD concerns remained primary, while 29.1 % replied that their OCD had taken a "backseat" to concern about COVID-19.

On a forced-choice question about the change in OCD severity since the COVID-19 outbreak, the majority of the sample (76.2 %) reported worsening symptoms, though the plurality of responses were for "a little worse" (46.8 %) and fewer for "a lot worse" (29.4 %). A sizable minority (19.8 %) reported no change in symptom severity, whereas a small minority (4.0 %) expressed improvement.

### 3.3. Zero-order correlations

Zero-order correlations were computed among these items and the CTS, DOCS, and DASS-21 shown in Table 2. Results showed that concerns about COVID-19 (CTS scores) were slightly, yet significantly, correlated with overall OCD severity on the DOCS ( $r = .19, p = .002$ ). Analysis of the DOCS subscale found that CTS scores were significantly correlated with DOCS Contamination ( $r = .39, p < .001$ ) and Responsibility for Harm ( $r = .20, p = .001$ ) but not the other two DOCS subscales. CTS scores were also significantly correlated with DASS-21 Stress ( $r = .30, p < .001$ ) and DASS-21 Anxiety ( $r = .30, p < .001$ ) but not DASS-21 Depression.

Point-biserial correlations revealed that individuals who reported that COVID-19 had become a part of their OCD had higher scores on the

**Table 1**  
Demographic and clinical characteristics for the self-identified OCD and community control groups.

Variable	OCD	Control	Test of the difference	Effect size
<i>Demographic characteristics</i>				
Mean age (SD)	32.2 (10.78)	38.19 (12.96)	$t(468.43)^* = -5.74, p < .001$	$d = -.51$
No. Female (%)	243 (79.2 %)	100 (41.5 %)	$\chi^2(1) = 81.78, p < .001$	$\Phi = .39$
No. non-Hispanic White (%)	248 (79.0 %)	156 (65.0 %)	$\chi^2(1) = 13.47, p < .001$	$\Phi = .16$
<i>Clinical characteristics</i>				
CTS	41.26 (5.81)	36.65 (6.79)	$t(475.83)^* = 8.46, p < .001$	$d = .74$
DOCS	33.14 (14.95)	25.0 (16.90)	$t(455.33)^* = 5.80, p < .001$	$d = .52$
DASS-Depression	19.65 (12.02)	15.84 (12.88)	$t(533) = 3.79, p < .001$	$d = .33$
DASS-Anxiety	17.15 (10.99)	13.72 (12.54)	$t(468.93)^* = 3.29, p = .001$	$d = .26$
DASS-Stress	23.73 (10.21)	15.72 (11.77)	$t(456.61)^* = 8.21, p < .001$	$d = .73$

Note. Effect sizes are phi ( $\Phi$ ) for chi square and Cohen's  $d$  for *t*-tests. CTS = COVID-19 Threat Scale; DOCS = Dimensional Obsessive Compulsive Scale; DASS = Depression Anxiety Stress Scales.

\* Degrees of freedom adjusted due to unequal variances.

**Table 2**  
Correlations among self-identified OCD group.

	CTS	DOCS- Total	DOCS- Contam	DOCS- RH	DOCS- Thoughts	DOCS- Symm	DASS- Depres	DASS- Anxiety	DASS- Stress
CTS	–	.19*	.39**	.20*	.01	–.03	–.01	.30**	.30**
More concerned than most other people	.44**	.36**	.48**	.35**	.09	.11	.14	.40**	.37**
Excessive COVID-19 anxiety	.26**	.24**	.40**	.21*	.02	.07	.14	.32**	.35**
COVID-19 become part of OCD	.40**	.30**	.47**	.29**	.07	.05	.16	.34**	.34**
OCD takes “backseat” to COVID-19	.23**	–.04	.12	–.02	–.03	–.19*	–.10	.04	.03
OCD worsening following COVID-19	.26**	.35**	.38**	.27**	.22**	.13	.36**	.36**	.43**

Note. CTS = COVID-19 Threat Scale; DOCS = Dimensional Obsessive Compulsive Scale; RH = Responsibility for Harm; Thoughts = Taboo thoughts; Symm = Symmetry Concerns; QLESQ = Quality of Life and Enjoyment Questionnaire; DASS = Depression Anxiety Stress Scales.

\*\*  $p < .001$ .

\*  $p < .01$ .

CTS, as well as the DOCS Contamination and Responsibility for Harm subscales (but not DOCS Taboo Thoughts or Symmetry). Similarly, these two subscales were significantly correlated with the endorsement of excessive anxiety about COVID-19. Self-reported worsening of OCD symptoms after the COVID-19 pandemic was correlated with the CTS, DASS-21 subscales, and with all DOCS symptom dimensions except Symmetry concerns.

### 3.3.1. Qualitative analysis of effects on OCD

Table 3 shows the results of the qualitative analysis of emergent themes from the free-response question in which participants were asked to comment in their own words on how the pandemic had impacted their OCD. As with the forced-choice item, a common theme in participants’ responses concerned the worsening of OCD symptoms (Theme 1). Within this theme, some responses indicated the development of new obsessions and compulsions directly related to COVID-19, whereas another subtheme related to the worsening of OCD symptoms that were not related to the virus. Another commonly discussed theme was an increase in general anxiety and stress as a result of the pandemic (Theme 2). Although less frequent, other participants reported that their OCD symptoms remained stable or even improved (Theme 3).

In another theme, many responses mentioned the negative impact of disruptions in routine and isolation associated with social distancing and lockdown mandates (Theme 4). Other emergent themes related to the worsening of comorbid conditions such as depression and skin picking (Theme 5) and concern about family members becoming ill (Theme 6). Another emergent theme centered on respondents’ difficulty determining whether their responses to the outbreak were irrational or excessive (Theme 7). Lastly, a theme emerged in which some participants expressed that having been involved in OCD treatment had helped them prepare for and/or manage their responses to the COVID-19 pandemic (Theme 8).

## 3.4. Effects of COVID-19 on OCD treatment

### 3.4.1. Quantitative analysis of treatment impact

The next section of the survey aimed to understand the effects of the COVID-19 pandemic on respondents’ OCD treatment experiences. Regarding current treatment, 63.5 % of respondents reported that they were currently taking medication for OCD and 61.2 % reported currently being enrolled in psychotherapy. Of those in therapy, the majority (65.7 %) selected that they were engaged in CBT that included ERP, while 12.4 % selected cognitive therapy without exposure, 11.2 % selected supportive psychotherapy, 2.4 % selected psychodynamic therapy and 8.3 % weren’t sure which form of therapy they were receiving.

Individuals enrolled in treatment (n = 171) answered follow-up questions. On a forced-choice Yes/No question, 59.1 % reported that the COVID-19 outbreak had interfered with their treatment. A minority (24.7 %) of respondents reported missing appointments with their treatment provider due to COVID-19, while the great majority (85.4 %) reported that they had utilized phone or video (telemedicine) for appointments due to the COVID19 outbreak.

The majority (71.2 %) reported that their treatment provider had addressed the COVID-19 outbreak directly in treatment. In terms of specific factors, 56.7 % reported that their providers had addressed their consumption of COVID-19-related media and 40.4 % had discussed modifying exposure practices in light of COVID-19. Participants were asked a single forced-choice question to rate their satisfaction with how their treatment provider had handled the outbreak in the context of their OCD treatment: 50.9 % reported that they were “very satisfied”, 16.4 % were “somewhat satisfied”, 15.2 % were “neutral”, 7.6 % were “somewhat unsatisfied” and 9.9 % were “very unsatisfied.”

Participants were then asked how important it would be for their treatment provider to offer specific treatment factors in the context of COVID-19. Of these, the ability to offer remote sessions via phone or video was rated as either “very” or “extremely” important by 91.2 % of respondents, followed closely by “Offer genuine care and support” which was rated “very” or “extremely” important by 89.3 % of respondents. Somewhat lower numbers were present for flexibility with scheduling appointments (71.6 % rated as “very” or “extremely” important) and offering specific guidelines regarding virus precautions (62.1 % rated as “very” or “extremely” important).

### 3.4.2. Qualitative analysis of treatment impact

Table 4 shows the results of the thematic analysis of participants’ free responses about how COVID-19 had impacted their OCD treatment. A frequently occurring theme centered on the switch to telehealth appointments rather than in-person sessions (Theme 1). Of note, a sub-theme emerged within these responses in which some participants specifically mentioned that they found virtual appointments to be less helpful than face-to-face sessions (Theme 1a). However, another emerging subtheme indicated that some respondents mentioned that telehealth appointments were as good as or even better than in-person meetings (Theme 1b). Another common emergent theme in responses was that the pandemic had interfered in respondents’ ability to complete exposure practices (Theme 2). Some participants mentioned that they were unable to access care or had to stop treatment altogether due to COVID-19 (Theme 3). Lastly, some participants reported that COVID-19 had complicated treatment because it had become a new treatment focus, taking session time away from other concerns (Theme 4).

**Table 3**

Thematic analysis of participant qualitative responses to the effects of COVID-19 on their OCD.

Theme 1: Worsening of OCD symptom severity, $n=82$
Example comments: "COVID-19 has definitely made my symptoms worse." "it has definitely made by OCD worse!" "It has become debilitating. I had to take leave from work" "My ocd has gotten significantly worse since I am at home all day." "OCD has been worse. I have been getting stuck more often." "It has definitely increased the severity of my OCD obsessions and resulted in extreme avoidance of all things." "My OCD symptoms and compulsions got worse when coronavirus hit."
Subtheme 1a: Emergence of COVID-19 related OCD symptoms, $n=34$
Example comments: "My main OCD is scrupulosity. The virus added contamination OCD to my illness." "I obsessively focus on my lung function, an obsession I never had before." "I have developed OCD symptoms that I have never had before, and made others worse." "And the only obsession I had is that I could spread the virus to other people." "I already suffer from intrusive thoughts about harm coming to my loved ones, since coronavirus, these have gotten markedly worse and are mostly now on the subject of the virus"
Subtheme 1b: Worsening of OCD symptom unrelated to COVID-19 $n=17$
Example comments: "General stress of the situation exacerbated existing OCD symptoms that are not related to COVID19" "Old compulsions that I had stopped completely for months or years came back, even though they weren't related to COVID." "My obsessions are not related to contamination, but I think there has been a general increase in anxiety, and with that comes more frequent OCD thoughts around completely unrelated things." "It has increased my anxiety overall, which has increased my OCD symptoms, but they are unrelated to contamination obsessions." "The biggest impact that I have seen is how much my existing compulsions have ramped up."
Theme 2: Increase in general anxiety/Stress, $n=36$
Example comments: "My OCD has remained fairly the same but my anxiety has spiked greatly." "It's affected my anxiety more so than my actual OCD obsessions and compulsions." "Made general anxiety worse" "I'm very anxious about my finances"
Theme 3: Minimal or no impact on OCD, $n=23$
Example comments: "my OCD has managed it surprisingly well." "Overall, I've been handling it pretty well." "Actually made OCD better." "It hasn't impacted my OCD at all" "My OCD has remained fairly the same but my anxiety has spiked greatly."
Theme 4: Negative impact of isolation/disruption of routine, $n=22$
Example comments: "For me, a large factor has been the increase in time spent alone because that is when I partake in my rituals." "The outbreak has made my OCD far worse as I rely on a routine to keep grounded." "Being stuck indoors has increased my OCD/stress levels." "Losing my routine has increased my anxiety. Working from home and living alone means I have no human interaction, which has increased my anxiety and intrusive thoughts." "Also the loss of routine, seeing people at work/socially, not being able to be in nature, or have anything to really plan or look forward to just really raises stress and makes it easier to focus on OCD thoughts."
Theme 5: Worsening of comorbid conditions, $n=16$
Example comments: "I additionally suffer from trichotillomania and skin picking and I have noticed an increase in these behaviors as I have spent more time at home." "it is greatly increasing my depression" "My skin-picking has flared up a lot." "My depression has gotten worse" "My tic is acting up more (blinking)."
Theme 6: Concern for family members, $n=15$
Example comments: "I already suffer from intrusive thoughts about harm coming to my loved ones, since coronavirus, these have gotten markedly worse and are mostly now on the subject of the virus" "My main concern is just my family."
Theme 7: Difficulty determining rational responses from excessive concerns, $n=11$
Example comments: "I find it harder to recognize whether my thoughts about COVID 19 are rational or due to my OCD." "I now have a more difficult time deciding if my actions are reasonable in terms of Covid 19 or if they are just more OCD." "It is very confusing as in ERP I was learning to do exposures to face my contamination fears. Everything now just validates my OCD" "And it's hard to know right now what's normal and what's obsessive. I'm washing my hands so many times a day that they are red and painful, but is that obsessive or is that common sense and reasonable during a pandemic?"
Theme 8: Helpful effects of treatment, $n=10$
Example comments: "While it has kicked up my symptoms, having done ERP has provided me with good coping tools."

*(continued on next page)*

**Table 3** (continued)

Theme 8: Helpful effects of treatment, <i>n</i> =10
"I am very fortunate that my medication has been keeping my OCD under very good control"
"I feel like previous ERP/therapy and treatment helped me prepare for this outbreak and my anxiety surrounding it."
"I honestly feel that my experience in exposure therapy has prepared me very well for dealing with obsessions in the time of the pandemic without resorting to compulsive behavior."

**Table 4**

Thematic analysis of participant qualitative responses to the effects of COVID-19 on treatment for OCD.

Theme 1: Switched to telehealth, <i>n</i> =77
Example comments:
"Unable to see one provider face to face, having to move to virtual sessions."
"I will see my therapist via Skype or zoom and not in person to abide by the shelter in place order."
"I am doing tele-therapy with my therapist instead of seeing them in person which is just different for me."
"Switched to phone appts/video conferencing vs. meeting in real life"
Theme 1a: Dislike telehealth /difficulties with telehealth, <i>n</i> =22
Example comments:
"Changed to virtual, and I have a hard time feeling connected. I am tired of staring at a computer screen by the time it is time for therapy. I am just exhausted, and it is hard to make use of the session."
"Comfort with therapy decreased, inability to properly communicate and do in person exposures"
"Not being able to meet in person and I'm not comfortable with online video chat"
"My therapy has moved from in-person to teletherapy which is more difficult for me."
"My therapist has been incredible and so necessary in working through new exposures, but teletherapy is difficult when I'm used to being in-person."
"My therapy sessions via phone are not as effective as the ones in person."
"my therapist switched to online sessions only (she did this very early on) and it's made doing exposures so much harder because I don't have her with me in person"
Theme 1b: Telehealth is fine or better, <i>n</i> =11
Example comments:
"Truthfully, I prefer telemedicine and the outbreak has forced my insurance provider to allow coverage for my online appointments."
"We are telehealth and that's as good as face to face"
"I'm all for using telemedicine so that's not something that I feel has affected my treatment."
"Although not ideal, teletherapy is a great alternative to face to face sessions at this time"
"We've also moved to tele therapy, which has been hugely helpful for me."
Theme 2: Interfered with exposures, <i>n</i> =37
Example comments:
"I can't do my exposures in public places anymore and get to avoid a lot do to quarantine."
"I have been doing ERP for about 9 months and I'm the past few months have been engaging in dating exposures, which are now no longer possible and is causing me to feel some frustration about regression in progress."
"Exposures need to be modified to fit with government guidelines."
"It has prolonged it and it has made it difficult to overcome my hardest exposures because they are against what the CDC/WHO are recommending at this time."
"I think it's making my exposures harder because the threat is actually real and not just imagined."
Theme 3: Had to stop/can't access/can't start treatment, <i>n</i> =27
Example comments:
"I cannot afford treatment because I was laid off."
"I'm not going to appointments bc I don't want to leave the house."
"Since my campus has closed down, I am no longer able to see my Counselor in person, though he has offered support via email should I need it."
"Unable to continue looking for therapist and difficult to pick up medication from pharmacy"
"I had been looking forward to joining a new (in person) OCD support group in my neighborhood that was going to start. I'm disappointed that it was cancelled."
Theme 4: New treatment focus, <i>n</i> =13
Example comments:
"A lot of my time in therapy is now spent talking about the coronavirus"
"I have had to spend time on ritual prevention for new compulsions related to the fear of coronavirus which has taken the focus away from my primary treatment concerns."
"Counseling has shifted to dealing with daily concerns and developing rituals because of the COVID19 pandemic."
"my checking is taking a back seat to contamination issues which are now the topic of my sessions."

#### 4. Discussion

The present study sought to examine the effect of the COVID-19 pandemic on individuals with OCD symptoms. The COVID-19 pandemic is causing unprecedented disruption and may lead to worsening of pre-existing psychiatric illnesses (Yao et al., 2020). In particular, recent perspectives have raised the possibility that COVID-19 may be particularly impactful for individuals with OCD (Asmundson & Taylor, 2020a, 2020b; Dennis et al., 2021; Fineberg et al., 2020), and yet the emerging data investigating this issue is decidedly mixed (e.g., Benatti et al., 2020; Jelinek et al., 2021; Littman et al., 2020). Therefore, we sought to gather information from a large sample of individuals with self-identified OCD utilizing both qualitative and quantitative data. Our

results highlight some of the multifaceted ways in which this public health crisis is affecting individuals with OCD.

Utilizing the CTS, we found that individuals who self-identified as having OCD had elevated concerns about COVID-19 compared to unaffected community controls. This is consistent with work in some other past pandemic illnesses, as OCD symptoms were significantly correlated with fears of H1N1 Swine Flu using a previous version of this scale (Brand et al., 2013). These results suggest that individuals with OCD experience elevated fears regarding the spread of pandemic illnesses, including COVID-19.

Our results shed additional light on the specific ways in which COVID-19 has affected individuals with OCD symptoms. Given that OCD is noted for its complicated nature and heterogeneity, it should perhaps



not be surprising that responses to the COVID-19 outbreak were also highly variable. For some respondents, concerns about COVID-19 were experienced within the umbrella of their OCD concerns, while others experienced anxiety about COVID-19 as a separate phenomenon. Even though the self-identified OCD group experienced elevated anxiety about COVID-19, the great majority reported that their pre-existing OCD concerns remained their primary clinical concern; relatively few reported that OCD concerns took a backseat to COVID-19. Importantly, the majority of respondents reported that their OCD symptoms had worsened after the outbreak, although there was substantial variability in responses: many experienced what they perceived to be slight worsening, while fewer experienced substantial worsening or no change. Regarding the OCD symptom dimensions, participant self-reports suggested that OCD worsening post-COVID-19 was more strongly linked to contamination and responsibility for harm symptoms more so than for taboo thoughts or symmetry symptoms. This result is in line with past research linking contamination concerns to anxiety about past pandemics (Blakey & Abramowitz, 2017; Blakey et al., 2015; Brand et al., 2013; Wheaton et al., 2012), suggesting that outbreaks of communicable illnesses are particularly salient threats for individuals with this dimension of symptoms.

Thematic analysis of qualitative data similarly highlights the heterogeneous ways in which COVID-19 has affected individuals with OCD symptoms. Many participants wrote about negative mental health outcomes including worsening of not only OCD symptoms but also general anxiety and stress. Other participants reported that they were less affected by the pandemic. Importantly some participants reported that they had a difficult time discerning whether their anxiety and behavioral responses to COVID-19 were excessive or rational responses to an unprecedented illness threat. Similarly, on the quantitative questions, only a slim majority of participants reported that they were more anxious about COVID-19 than most other people, and only a minority reported that their concerns about COVID-19 were excessive/irrational. These data should be interpreted within the context that the spread of COVID-19 has caused widespread anxiety among the general population (Taylor et al., 2020; Twenge & Joiner, 2020; Wang et al., 2020). Our data similarly suggest deleterious effects of COVID-19 on the OCD community.

Our survey also included items to assess how the COVID-19 outbreak has affected OCD respondents' treatment experiences. The majority of participants who were currently enrolled in treatment at the time of the outbreak reported that COVID-19 had interfered with their treatment. The great majority of these participants reported that their treatments had adapted to COVID-19 by switching to telemedicine (i.e., video or phone appointments). Participants reported that most of their treatment providers had addressed COVID-19 with them in treatment, including by modifying exposure instructions and setting guidelines for consumption of COVID-19 related media. The majority of respondents were satisfied with the way their treatment providers had handled COVID-19, though some were unsatisfied, suggesting room for improvement. In terms of adaptations to treatment, most respondents were highly interested in being able to complete treatment remotely, as well as receiving extra support regarding the virus.

Qualitative analysis of the emergent themes from free responses about how COVID-19 had affected treatment was similar to the quantitative data. Many participants wrote about the transition to

telemedicine, and responses were variable. Some respondents reported that the transition was smooth and found telemedicine helpful, while others reported that they preferred face-to-face treatment. Responses also indicated that COVID-19 had interfered with treatment by predominating the focus of treatment and by complicating their ability to complete exposure and response prevention. These results suggest that individuals with OCD may need extra support from their treatment providers during this unprecedented time. Simultaneously, treatment will need to be adapted to be safe and effective. Fortunately, treatment providers have already begun to consider how to do so. For example, Fineberg et al. (2020) published initial guidelines for clinicians to consider when providing care to individuals with OCD during the pandemic, including recommendations for how to set clear guidelines on how to follow realistic disease prevention efforts while resisting excessive compulsive acts. Adapting treatment to address the enormous challenges caused by COVID-19 represents an important public health mission. Fortunately, specific ways to adapt EX/RP to be delivered safely during COVID-19 restrictions have recently been suggested (Sheu et al., 2020). In addition, emerging evidence supports the use of internet-based CBT for OCD (Andersson et al., 2012) which may provide an essential delivery modality during times of quarantine and shutdown. Greater outreach efforts may also be needed to help individuals connect with treatment services.

The results of the present study should be interpreted within the context of several study limitations. First, our study utilized online data collection with self-report questionnaires and convenience sampling, which allowed us to gather data quickly while the pandemic was still unfolding. However, no formal clinical evaluations were made of participants. Although we recruited individuals who reported that they had been diagnosed with OCD from OCD-specific online recruitment sources, the lack of official diagnoses is a limitation that should be addressed by further research among clinical populations. Additionally, participants completed measures at a single time point after the pandemic began, and thus reports of clinical worsening were retrospective. A longitudinal study is needed to determine the long-term consequences of the pandemic on members of the OCD community. Our OCD sample was also primarily female and non-Hispanic White. Thus, future research is needed in more diverse samples.

Notwithstanding these limitations, the present study provides new data on how the COVID-19 epidemic has affected those with OCD symptoms. Although responses have been variable, COVID-19 appears to have had substantial mental health implications for many individuals with OCD, as it has contributed to worsening of symptoms and complicated treatment for many. The impact has been especially significant for individuals with contamination and responsibility for harm symptoms. Future clinical and research attention is needed to address the mental health burden of COVID-19 on individuals with OCD. Outreach to increase treatment accessibility and adapting treatment delivery to be safe and effective during times of quarantine and social distancing represents an important challenge facing the field during this unprecedented time.

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There was no external funding for this project.

## Appendix A. Survey Items

### Questions Regarding Effects of COVID-19 on OCD Symptoms

Questions	Response Options
Have you heard of the Coronavirus (COVID-19)?	Yes, No, Not sure
Are you more anxious/fearful about Coronavirus (COVID19) than most other people?	Yes, No
Is your anxiety about Coronavirus (COVID19) excessive or irrational?	Yes, No
Has the Coronavirus (COVID19) become part of your current OCD concerns?	"Yes, concern with coronavirus has become an OCD obsession of mine" or "No, any concerns I have about coronavirus are separate from my OCD"
Which is true of you?	"My OCD concerns have taken a backseat to my current concern about coronavirus" or "My OCD concerns remain primary even if I am concerned about coronavirus"
Since the outbreak of the Coronavirus (COVID19), has the severity of your OCD symptoms changed?	"OCD symptoms have gotten a lot worse", "OCD symptoms have gotten a little worse", "OCD symptoms are about the same", "OCD symptoms have gotten a little better", or "OCD symptoms have gotten a lot better"
Regarding the possibility of infection with coronavirus (COVID19) are you:	"More concerned that I will infect other people", "More concerned that I will be infected myself", or "Equally concerned about myself and other people."
Would you like to share anything about how the Coronavirus (COVID19) outbreak impacted your OCD?	Participants provided with text box.

### Questions Regarding Effects of COVID-19 on OCD Treatment

Questions	Response Options
Are you currently taking medication for your OCD?	Yes, No
Are you currently seeing a therapist for your OCD?	Yes, No
What type of therapy are you currently receiving?	Cognitive Behavioral Therapy including exposure and response prevention, Cognitive therapy without exposures, Psychodynamic therapy, Supportive therapy, Not sure, N/A I am not in therapy
Has the Coronavirus (COVID19) outbreak interfered with your OCD treatment?	Yes, No, N/A I am not in treatment
Have you had to miss appointments with your treatment provider due to the Coronavirus (COVID19) outbreak?	Yes, No, N/A I am not in treatment
Have you utilized phone or video (telemedicine) appointments to reach your provider due to the Coronavirus (COVID19) outbreak?	Yes, No, N/A I am not in treatment
Has your mental health treatment provider addressed Coronavirus with you?	Yes, No, N/A I am not in treatment
In response to the Coronavirus (COVID19) has your treatment provider given you specific guidelines regarding (check all that apply)	"Managing your information flow by choosing reliable sources of news and establish boundaries on checking for updates when looking for information about the coronavirus", "Modifying exposure practices due to COVID19", "Modifying response prevention instructions due to recommendations regarding handwashing", "None of these", "N/A I am not in treatment"
How satisfied have you been with your treatment provider's handling of the Coronavirus (COVID19) outbreak in the context of your OCD treatment?	Very unsatisfied, Somewhat unsatisfied, Neutral, Somewhat satisfied, Very satisfied, N/A I am not in treatment
How important would it be for your OCD treatment provider to offer you each of the following in the context of Coronavirus outbreak?	Participants ranked options from not at all important to very important: "Offer genuine care and support", "Be flexible with appointments and scheduling", "Offer remote sessions via phone or video", "Offer specific information about guidelines to follow regarding what precautions to take about coronavirus"
Would you like to share anything about how the Coronavirus (COVID19) outbreak affected your OCD treatment?	Participants provided with text box.

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