

# Obsessive-compulsive disorder during the COVID-19 pandemic

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## 1. Introduction

The COVID-19 pandemic has impacted billions of people globally. Governments have ordered travel bans, lockdowns, quarantines, physical distancing and self-isolation measures in order to curb the spread of this coronavirus. Although these extraordinary measures have been effective in containing COVID-19, it is possible they may have contributed to the onset or exacerbation of symptoms related to mental illnesses. Historically, significant global events, such as SARS and 9/11, have contributed to psychological distress (Marshall and Galea, 2004; Nickell et al., 2004) and the exacerbation of mental health symptoms (Lancee et al., 2008; Li et al., 2018). Within the context of COVID-19, a Chinese report indicated the pandemic was associated with significant psychological burden (Lai et al., 2020) and a report from the United Kingdom alluded to the emerging mental health crisis (Holmes et al., 2020). Recent research suggests that individuals may experience heightened levels of stress or anxiety symptoms during a pandemic, including fear of infection, fear of contact with contaminated surfaces, compulsive hand-washing, and checking and reassurance-seeking associated with pandemic-related threats (Matsunaga et al., 2020).

Individuals with obsessive-compulsive disorder (OCD) may be particularly vulnerable to the mental health implications of the pandemic due to the overlap in public health recommendations with OCD symptoms (Davide et al., 2020; Khosravani et al., 2021; Knowles and Olatunji, 2021; Matsunaga et al., 2020). OCD is defined as patterns of unwanted and intrusive thoughts, images, or urges (obsessions) and repetitive behaviours that intend to decrease the resulting distress from the obsessions (compulsions) (APA, 2013). A significant cluster of OCD symptoms includes fear of contamination (Leckman et al., 1997), which often triggers ritualized hand-washing and other cleaning rituals in order to neutralize the thought. The primary psychological treatment for OCD is Exposure and Response Prevention (ERP) (Abramowitz, 2006), which in the case of contamination typically involves exposure to the thought of being contaminated and not engaging in the washing/cleaning rituals. The widespread public health demands for increased and “proper” hand-washing techniques, cleaning, and encouragement to use disinfectants as a result of the COVID-19 pandemic may have been confusing for patients with OCD undergoing Exposure and Response Prevention treatment. Although these instructions are in line with their obsessions, the public health guidelines

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counter the treatment instructions which may have been provided by their clinician. Distinguishing between normal de-contamination practices and pathological OCD behaviours may therefore be challenging during this pandemic (Tandt et al., 2021).

Survey studies conducted during the H1N1, Ebola and Zika virus pandemics have demonstrated that individuals with OCD symptoms, particularly those with high contamination OCD symptoms, were at risk of developing excessive pandemic-related fears (Brand et al., 2013; Wheaton et al., 2021; Blakey et al., 2015). Current studies have assessed the relationship between pre-pandemic OCD symptoms and COVID-19 fears, as well as the impact of the COVID-19 pandemic on OCD onset and/or symptom severity, but they have yielded contrasting results. Some studies have indicated a worsening in OCD symptoms during the course of the pandemic and others have not. This may be attributed in part to the large degree of heterogeneity across these studies, including differences in sample sizes, study designs, study locations, study durations, public health measures, lockdowns, and access to OCD treatments. Therefore, current study therefore aimed to comprehensively examine the psychological impact of the pandemic on individuals suffering from OCD using an international, cross-sectional online self-report survey. The primary objectives were to understand the impact of the COVID-19 pandemic on OCD symptom severity, anxiety and depressive symptoms, and functional impairment.

## 2. Methods

### 2.1. Study design and participants

A survey was developed to assess the impact of the COVID-19 pandemic on individuals with OCD and to characterize the experience of respondents. A link to an online survey, hosted on a secured McMaster University server (Hamilton, Ontario, Canada), was posted to following social media sites: Facebook, Twitter, and Reddit. The survey link was also posted directly on the MacAnxiety Research Centre website, the International College of Obsessive-Compulsive Spectrum Disorders website as well as a number of OCD clinic websites. Study data were collected using Research Electronic Data Capture (REDCap) (Harris et al., 2009) between May 2020 and July 2021, in English, Italian and Portuguese. Electronic informed consent was obtained after participants had been provided with the details of the study.

Eligibility criteria required patients to be at least 16 years of age; be able to read and understand English, Italian or Portuguese (>8th grade level); and to have been diagnosed with OCD at some point in their life. This study was approved by the Hamilton Integrated Research Ethics Board.

### 2.2. Assessments

Participants provided demographic information regarding their age, geographic location, education, occupation and living arrangements. Participants were asked about their mental health history, specifically past/current therapy status, and changes to medication dosage/frequency since the onset of the COVID-19 pandemic. Participants were also asked mental health questions pertaining to their OCD. These questions included changes in their OCD symptoms during the COVID-19 pandemic and a description of what symptoms had changed (compulsions, repetitive behaviours). They were also asked questions pertaining to their pandemic experiences; specifically to describe how COVID-19 has impacted their behaviour patterns, emotions and other stressors (questionnaire is provided in Supplementary Materials), and they were additionally screened for perceived emotional support. Questions utilized a 5-point or 6-point (where applicable) Likert type scale for indicating the extent to which behaviours increased or decreased (e.g. "To what degree has your overall 'screen time' behaviour changed?"). The specific Likert options presented to participants were as follows: very much decreased, slightly decreased, no change, slightly

increased, very much increased. For many variables—including use of alcohol, cannabis, and drugs; social media; online gaming; or pornography—a sixth option of "I do not do this" was included.

Psychiatric symptoms were evaluated using validated symptom severity scales, all having demonstrated good sensitivity and specificity. The Obsessive Compulsive Inventory- Revised (OCI-R) was used to assess participants' obsessive-compulsive symptoms over the past month. Items are rated on a 5-point Likert scale and total scores are calculated based on the sum of all 18 items, and a cut score of  $\geq 21$  was used to indicate clinically significant OCD symptoms (Foa et al., 2002). Contamination symptoms were evaluated using the Washing Subscale of the OCI-R, where a score of  $\geq 8$  on this subscale was considered "high-contamination symptomatology", (Huppert et al., 2007). The General Anxiety Disorder - 7 (GAD-7) (Spitzer et al., 2006) was used to measure anxiety over the past two weeks. A 4-point Likert scale is used to rate items and total scores are calculated based on the sum of all items. In the present study, a cut score of  $\geq 10$  was used to indicate clinically significant anxiety, (Spitzer et al., 2006). Participants also completed the Patient Health Questionnaire - 9 (PHQ-9), a 9-item tool measuring depressive symptoms over the past two weeks, often used to screen for symptoms in research studies, (Kroenke et al., 2001). Items on the PHQ9 are rated on a 4-point Likert scale and summed to obtain total scores. A cut score of  $\geq 10$  was used to indicate clinically significant depression in the present study, (Kroenke et al., 2001). Finally, participants completed the Sheehan Disability Scale (SDS) (Sheehan, 1983), a three-item tool assessing current levels of impairment in work, social life/activities, and with family life/home activities. Items on the SDS are rated on a 10-point Likert scale ranging from "not at all" to "severely". Participants were also presented with a "not applicable" option. For the purpose of this study SDS scores of 5 or greater on any of the 3 domains was considered significant impairment, (Leon et al., 1997).

### 2.3. Statistical methods

#### 2.3.1. Statistical analyses

Frequencies were generated for all demographic variables and questions specific to the perceived impact of the COVID-19 pandemic. Differences in demographic variables based on continent of residence were examined using ANOVAs for continuous and  $\chi^2$  tests for categorical outcomes. Then ANCOVAs were utilized to evaluate the differences in severity of OCD symptoms and comorbid conditions between continents, controlling for relevant covariates in each analysis. Between continents relevant covariates included (1) sex and (2) education. Logistic regression analysis was performed to explore potential predictors of worsening OCD symptoms and predictors of increased treatment during the COVID-19 pandemic. Given significant comorbidity between GAD and MDD, a combined GAD and/or MDD variable was created for this model. We selected variables that seemed relevant to the relationship between OCD symptom severity and the pandemic. Both models included sex, age (<25 years, 25–40 years and >40 years), living situation (alone versus with others), comorbidity (GAD or MDD), high contamination symptoms and geographical residence. Finally, differences in perceived behavioural change and emotional supports in the sample was examined across using ANOVAs and Tukey's test (two-tailed) to identify which comparisons were significant.

All analyses were conducted in SPSS (Version 26) and an alpha value of 0.05 was used to denote statistical significance.

## 3. Results

The characteristics of the sample are presented in Table 1. Although  $n = 1067$  started the survey, it was completed at least up to and including the OCI-R by  $n = 417$  (39%). Most respondents (90%) who began the survey reported not being diagnosed with OCD; their participation was automatically terminated after the first question. Female sex was reported by 75% and the mean age of this sample was  $31.4 \pm 11.3$

**Table 1**  
Sociodemographic characteristics.

	Total (n = 417)	
	X	(SD)
Age	31.4	11.3
	n	(%)
Sex		
Male	98	(23.5)
Female	312	(74.5)
Country		
North America	233	(55.9)
South America	94	(22.5)
Europe	90	(21.6)
Education		
High School or less	69	(16.5)
College, University or Diploma Degrees	228	(54.6)
Professional or graduate degree	120	(28.8)
Living Situation		
Alone	56	(13.4)
With Family/Relatives	196	(47)
With Partner/Spouse	145	(34.8)
With Roommates/Friends	20	(4.8)
Household		
Number of people	2	(1.4)
Number of Rooms	4.4	(2.4)
Pandemic Work Effects		
No Change	87	(20.9)
Working from Home with Pay	127	(30.5)
Working from Home (Self-Employed)	34	(8.2)
Laid-Off	37	(8.9)
Not Working Prior to the Pandemic	132	(31.7)

years. Most were from North America (NA) (56%), while 22% were from South America (SA) and the other 22% reported European residence. The mean scores on all symptom severity scales were above the

**Table 2**  
Mental health characteristics of the sample.

	Total (n = 417)	
	n	(%)
Contamination-Based OCD	180	(43.2)
Perceived Changes in OCD Symptoms During Pandemic		
Increase/Worsening	318	(76.3)
No Change	76	(18.2)
Decrease/Improvement	23	(5.5)
Perceived Increase by Symptom Type		
Intrusive/Repetitive Thoughts	95	(22.8)
Repetitive Behavior/Rituals	27	(6.5)
Both	197	(47.2)
Perceived Decrease by Symptom Type		
Intrusive/Repetitive Thoughts	10	(2.4)
Repetitive Behavior/Rituals	1	(0.2)
Both	12	(2.9)
Symptom Severity	X	(SD)
OCD, OCI-R Mean (SD)	28.9	(12.4)
Anxiety, GAD-7 Mean (SD)	13.8	(5.7)
Depression, PHQ-9 Mean (SD)	14.1	(7.2)
Impairment, SDS Mean (SD)	19.6	(8.1)
Mental Health Treatment During Pandemic	n	(%)
Current OCD Treatments	285	(68.3)
Current OCD Medication	232	(55.6)
Current OCD Psychotherapy	180	(43.2)
Increase in Treatment During Pandemic	129	(30.9)
Changes to Medication During Pandemic		
Increase	106	(46.6)
No Change	150	(36)
Decrease	9	(2.2)
Discontinue	20	(4.8)
Changes to Psychotherapy During Pandemic		
Increase in Frequency	47	(11.3)
No Change	92	(22.1)
Decrease	13	(3.1)
Missing	27	(13.9)

clinically significant threshold, including the OCI-R:  $28.9 \pm 12.4$ , (Table 2). Based on the OCI-R Washing Subscale score, 32.9% also reported high contamination symptoms. Most (76%) reported a worsening of their OCD symptoms during the first wave of the pandemic, with increases in both intrusive thoughts and rituals. Nearly 70% reported current OCD treatment (56% medications, 43% psychotherapy) and 45% of this group reported increasing their treatment dose or frequency during the pandemic. Comorbidity was also high with 80.1% meeting cut score criteria for at least once concurrent disorder: 73.4% had probable GAD (GAD-7 > 9) and 69.5% had probable Depression (PHQ-9 > 9). High rates of functional impairment according to the SDS were also reported, with 86.1% of the sample reported significant impairment in either the domains of work/school, social life or family life/responsibilities.

Predictors of worsening OCD included being younger than age 40 ( $p < .01$ ), having comorbid GAD or MDD ( $p < .001$ ) and having high contamination symptoms, ( $p < .01$ ), while being from Europe was associated with decreased risk of worsening symptoms ( $p < .05$ ), (Table 3). Similarly, significant predictors of increased OCD treatment (pharmacological or psychological) during the pandemic were comorbid GAD or MDD ( $p < .01$ ) and having high contamination symptoms ( $p < .05$ ), Table 4).

### 3.1. Behavioural changes and perceived emotional support

Differences in pandemic-related alterations in behaviour were compared between the continents, (Fig. 1). North Americans reported greater increases in cannabis use (vs. South Americans (SA)), screen time (vs. Europeans), video streaming (vs. SA), social media use (vs. Europeans), gaming (vs. SA), messaging and video chatting (vs. SA and Europe) and online shopping (vs. SA) during the pandemic. Individuals who reported that their OCD symptoms worsened over the pandemic reported greater increases in watching the news, digital information seeking and screen time as well as greater decreases in sleep and daily communication with loved ones, compared to individuals who did not feel their OCD symptoms had worsened, (Fig. 2).

In terms of perceived emotional support, no significant differences were found between the continents, however, individuals with high OCI-R scores (>20) and those with high contamination symptoms reported significantly less perceived emotional support, as well as more anxiety about contracting and transmitting COVID-19 or a loved one contracting COVID-19, (Figs. 3–4).

No significant differences were found in terms of perceived emotional support between the continents. Nor were there significant differences between the continents for OCI-R, PHQ-9, GAD-7 or SDS scores.

**Table 3**  
Predictors of worsening OCD.

Variable [Reference Category]	Total (n = 417)	
	OR	(95% CI)
	OCD Worse	
Female [No]		
Yes	0.89	0.51 to 1.56
Living Alone [No]		
Yes	1.02	0.50 to 2.11
Age [>41 years]		
<25 years	2.09	1.08 to 4.06 *
25–40 years	2.26	1.24 to 4.13 **
GAD-7 or PHQ-9 >9 [No]		
Yes	2.92	1.68 to 5.08 ***
High Contamination Symptoms [No]		
Yes	2.39	1.33 to 4.3 **
Continent [North America]		
South America	0.60	0.32 to 1.11
Europe	0.53	0.53 to 0.96

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 4**  
Predictors of treatment increasing during the pandemic.

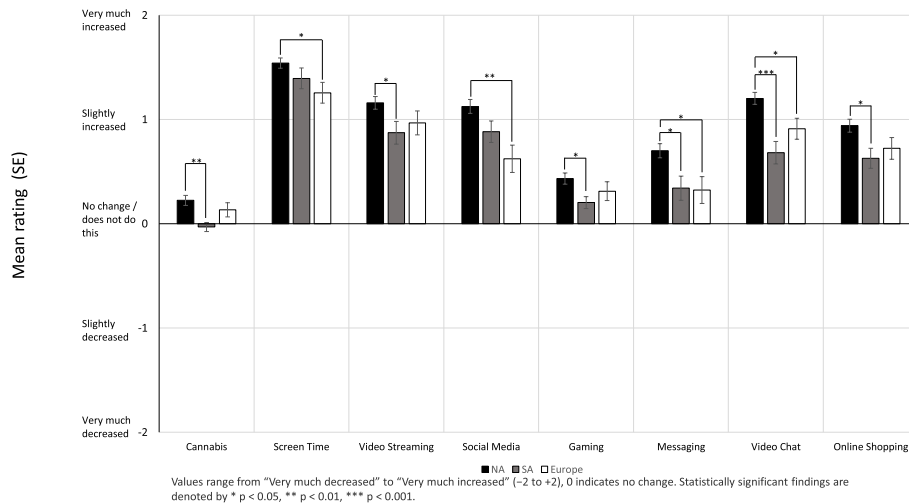
Variable [Reference Category]	Total (n = 417)	
	OR	(95% CI)
Female [No]		
Yes	1.21	0.71 to 2.04
Living Alone [No]		
Yes	0.75	0.39 to 1.44
Age [>41 years]		
<25 years	0.67	0.36 to 1.24
25–40 years	0.70	0.40 to 1.24
GAD-7 or PHQ-9 >9 [No]		
Yes	2.38	1.25 to 4.52 **
High Contamination Symptoms [No]		
Yes	1.57	0.99 to 2.47 *
Continent [North America]		
South America	0.68	0.39 to 1.19
Europe	0.67	0.39 to 1.17

\*p < .05, \*\*p < .01.

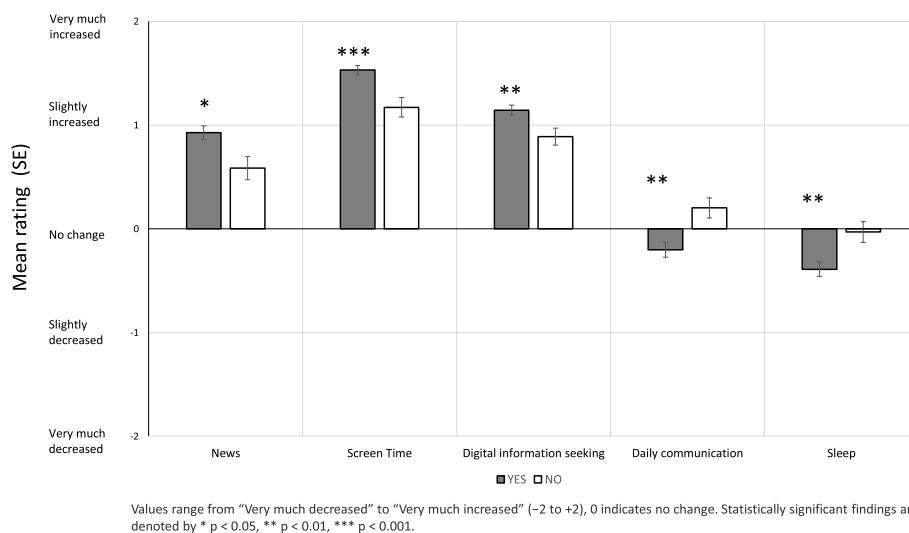
Given that high contamination emerged as a predictor, we examined it more closely. Individuals with high OCI-R scores (>20) and those with high contamination symptoms reported significantly less perceived

emotional support, as well as more anxiety about contracting and transmitting COVID-19 or a loved one contracting COVID-19, (Fig. 3a and b and Fig. 4a and b). In addition, significantly higher rates of high contamination symptoms were found in females (83%) versus males (15%) or other (2%),  $\chi^2$  9.1,  $p = .01$ ; and in North Americans (49%) versus South Americans (32%) and Europeans (19%),  $\chi^2$  10/7,  $p = .005$ . All symptom severity scale scores were significantly higher in those who had high contamination symptoms, even when controlling for gender and geographical residence (Table 5),

A post-hoc mediation analysis was also conducted to examine the potential influence of perceived social support and OCD and depression severity (OCI-R and PHQ-9 scores). The path from OCI-R to perceived social support was negative and statistically significant (coefficient  $-0.0224$ ,  $p < .0001$ ), such that higher OCI-R score resulted in less perceived social support. The path between perceived social support to PHQ-9 was also negative and statistically significant (coefficient  $-1.0463$ ,  $p < .0001$ ), indicating lower perceived social support resulted in higher depression scores. Finally, the path between OCI-R to PHQ-9 was both positive and statistically significant (coefficient  $0.2839$ ,  $p < .0001$ ), indicating that respondents with higher OCI-R scores were more likely to report higher PHQ-9 scores. An indirect relationship with perceived social support was also significant, indicating some mediation

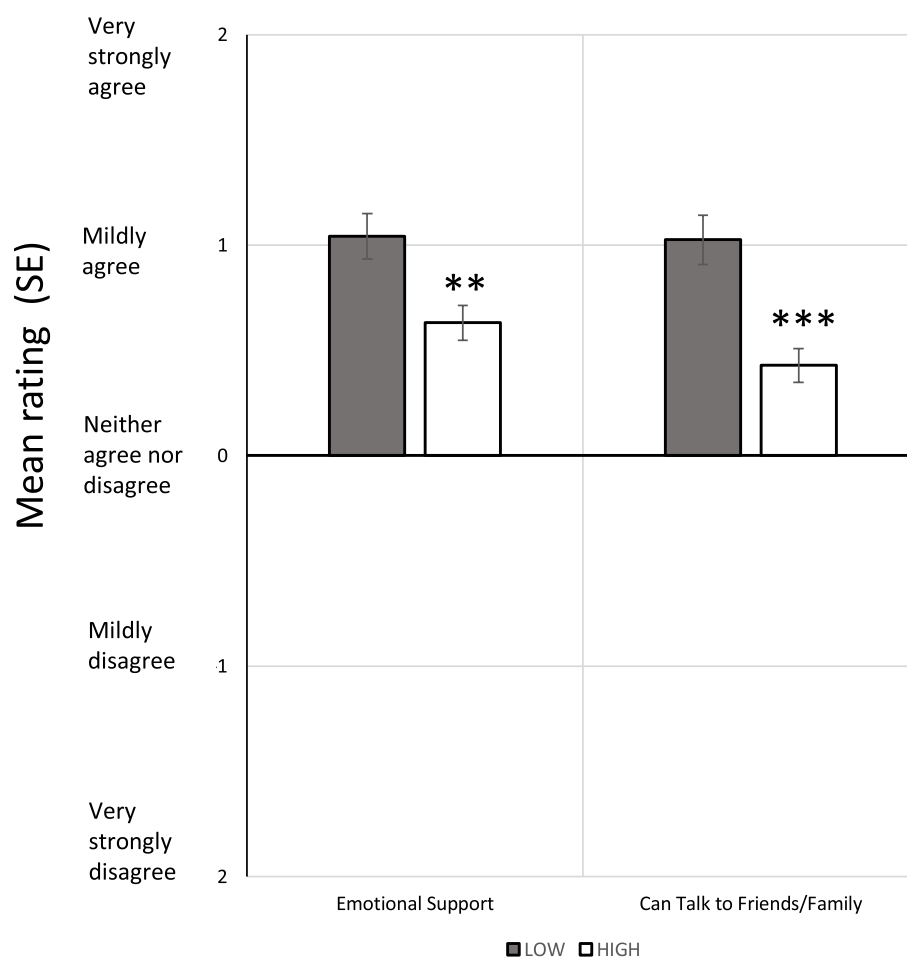


**Fig. 1.** Mean ratings of perceived change in life domain by Continental Residence.



**Fig. 2.** Mean Ratings of Perceived Change in Life Domain in those whose OCD symptoms did/did not worsen during the pandemic.

**a: Perceived Emotional Support in those with high/low OCI-R Scores**



Values range from “Very strongly disagree” to “Very strongly agree” (-2 to +2), 0 indicates no change. Statistically significant findings are denoted by \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

**Fig. 3a.** Perceived Emotional Support in those with high/low OCI-R Scores.

with this variable, (95% CI: 0.0098 to 0.0404).

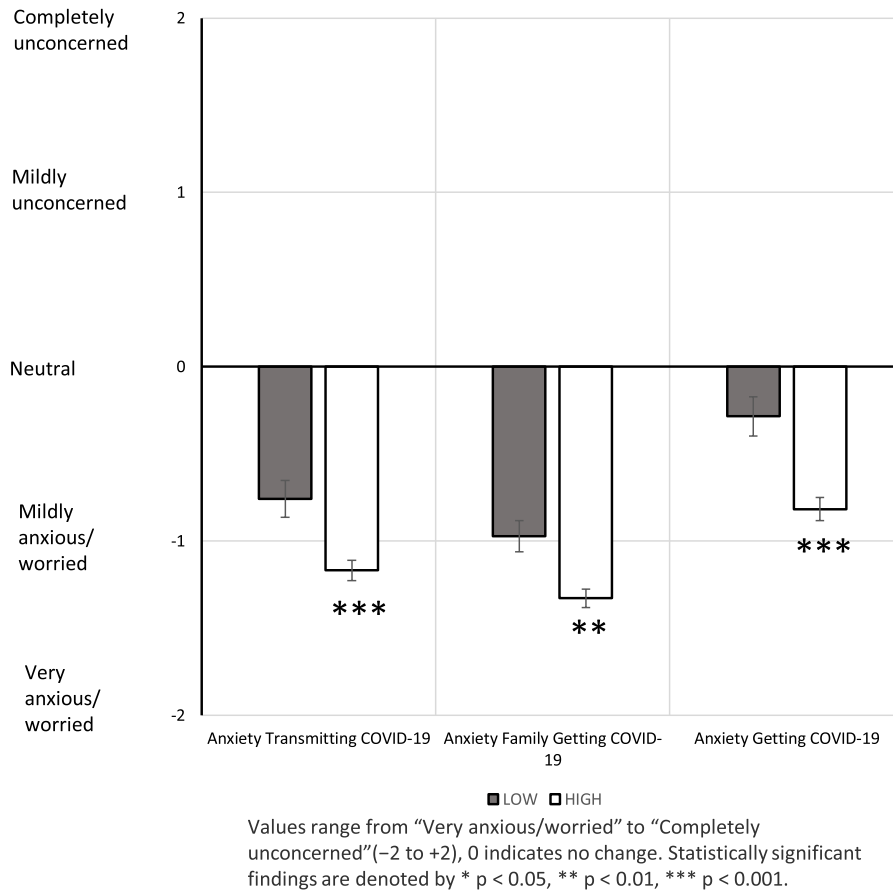
**4. Discussion**

In the largest and only international sample of OCD individuals to date, most perceived a worsening of their OCD symptoms during the COVID-19 pandemic. This was further evidenced by the 45% who increased their psychological or pharmacological treatment during the pandemic. Individuals with high contamination symptoms reported more severe mental health severity (GAD-7, PHQ-9 and OCI-R), even when controlling for demographic factors, including continental residence. Those with high contamination also reported significantly less perception of emotional support, more anxiety about contracting and transmitting COVID-19 or a loved one contracting COVID-19.

High contamination symptoms were reported by 43% of our sample. This is much higher than non-pandemic rates reported in the National Comorbidity Survey Replication (NCS-R), where 26% of those with lifetime OCD reported having contamination symptoms, (Ruscio et al., 2010). The relationship found between contamination OCD symptoms and pandemic-related worry in this sample is consistent with findings from previous pandemics (Brand et al., 2013; Wheaton et al., 2021; Blakey et al., 2015). There have been several studies of OCD patients in

the wake of COVID-19. Although the bulk of individuals in our sample reported a worsening of OCD symptoms during the pandemic, several previous reports have noted findings in contrast to this. In a Japanese cross-sectional study of fully (n = 24) and partially (n = 36) remitted patients with OCD, only 10% of the patients had a greater than 3-point increase in their Yale Brown Obsessive-Compulsive Scale (Y-BOCS) score after the COVID-19 outbreak (Matsunaga et al., 2020). In a 30-day Iranian cross-sectional study of OCD patients (n = 84), 48.8% experienced no change in their Y-BOCS score, 39.3% experienced less than a 5% increase in their Y-BOCS score, and only 12% experienced a greater than 5% increase in their Y-BOCS score (Chakraborty and Karmakar, 2020). A small Israeli study (n = 29) found no significant difference in OCD severity between the first two months of the first wave and the year preceding the pandemic, as measured by Clinical Global Impression Scale- Severity subscale (CGI-S) scores (Schwartz-Lifshitz et al., 2021). During a two-week quarantine period, an Israeli cross-sectional study (n = 65) found an even distribution among patients reporting an increase (n = 21), decrease (n = 21), or no change (n = 23) in their OCD symptom severity. Among the patients reporting a change in symptom severity, more than 70% reported it was a mild change (Littman et al., 2020). Similarly, in a study evaluating the short-term effects of COVID-19, the researchers recruited 240 participants with OCD during the pandemic

**b: Anxiety about Contracting or Transmitting COVID-19 in those with high/low OCI-R Scores**



**Fig. 3b.** Anxiety about Contracting or Transmitting COVID-19 in those with high/low OCI-R Scores.

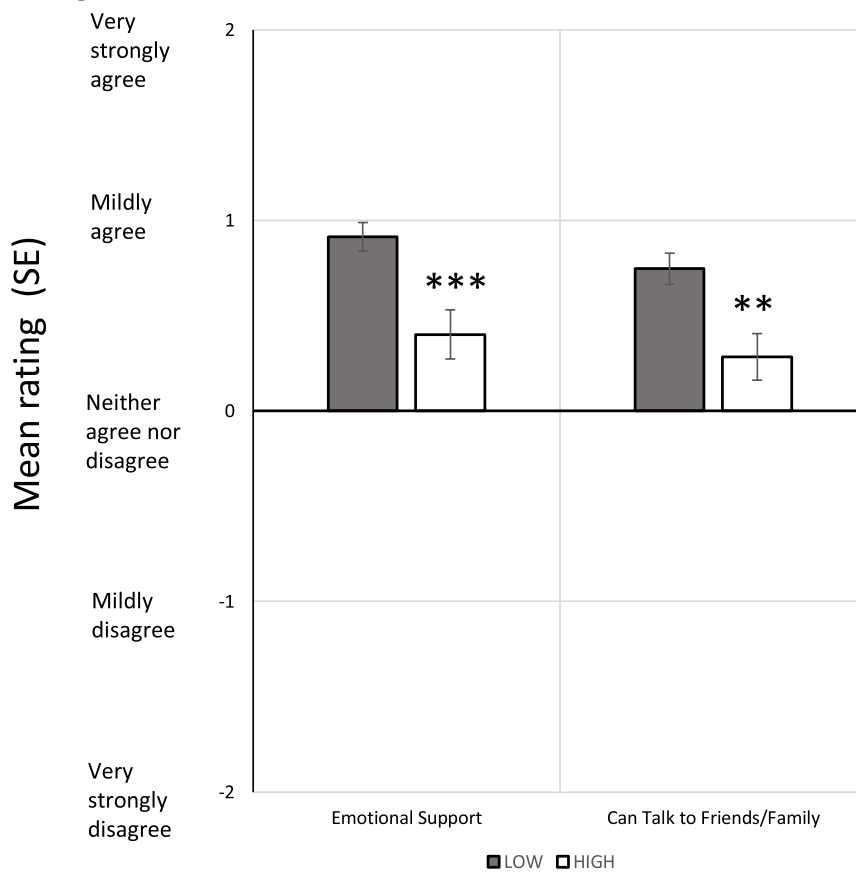
and 207 controls with OCD from one year prior. They found no significant difference in the Y-BOCS score trajectories or relapse rates between the pandemic and control groups (Sharma et al., 2021).

However, similar to this study, results of several other reports have demonstrated stronger relationships between the COVID-19 pandemic and increased OCD symptom severity, as well as positive correlations between contamination symptoms and COVID-19. In a pediatric Turkish cohort (n = 61), 54.1% of the patients reported increased OCD symptom severity, according to both the Children’s Yale-Brown Obsessive Compulsive Scale (CY-BOCS) and CGI-S scales, assessed over a 6-week study period (Tanir et al., 2020). They found a significant increase in frequency of contamination fears (p = .008) and in cleaning and washing compulsions (p = .039). In an Italian cross-sectional study (n = 123), 36% of patients exhibited worsened OCD symptoms during the COVID-19 outbreak. In comparison to patients without worsened OCD symptoms, these patients had more new obsessions and compulsions, more avoidant behaviour due to contamination fears, more suicidal ideation, and greater needs for medication adjustments, (Benatti et al., 2020). In a Danish cohort (n = 201), 61.2% of patients reported an increase in OCD severity, as measured with Y-BOCS. Female sex, self-reported contamination symptoms, isolation, and psychiatric comorbidity were significantly associated with increased OCD severity (Højgaard et al., 2021). Similarly, another study (n = 270) found that Y-BOCS scores had significantly increased during the pandemic (p < .001) (Khosravani et al., 2021). The researchers suggested that COVID-19 impacts several OCD symptoms, including contamination fears, responsibility for harm, unacceptable thoughts, and symmetry. An

Italian study of OCD patients (n = 30) also reported significant increases in Y-BOCS scores during the pandemic (6-weeks post-lockdown) in comparison to the time period prior (Davide et al., 2020). They also found that having pre-quarantine contamination symptoms was significantly associated with increased OCD symptom severity during the quarantine period, (Davide et al., 2020). Within the United States (U.S.), Storch and colleagues conducted a cross-sectional study (n = 169) of clinicians who provide exposure and response prevention treatment to patients with OCD. They found that 38% of clinicians suggested that their patients’ OCD symptoms worsened due to COVID-19, while 47% observed no change (Storch et al., 2021). Similarly, another U.S. cross-sectional study (n = 557) found that 76.2% of survey participants reported their OCD symptoms had worsened since the pandemic (Wheaton et al., 2021).

The rates of comorbid mood and anxiety disorders were high in this sample, with approximately 73% meeting anxiety disorder cut scores and 70% meeting cut scores for depression. Although the rate of anxiety disorder is similar to that reported in the NCS-R (76%), the rate of depression is much higher in our sample compared to pre-pandemic rates (41% - NCS), (Ruscio et al., 2010). Comorbidity was also found to be a predictor for worsening OCD and for OCD treatment increasing during the pandemic in our sample; as similar findings to two previously described COVID-19 OCD reports in adults, which examined the impact of comorbidity (Littman et al., 2020; Højgaard et al., 2021). These findings were also reported in pediatric populations with one study reporting psychiatric comorbidity, specifically depression (1.61 (0.21–3.01) p = .025) and anxiety (2.46 (0.96–3.95), p = .002) were

## a: Perceived Emotional Support in those with high/low Contamination Scores



Values range from “Very strongly disagree” to “Very strongly agree” (-2 to +2), 0 indicates no change. Statistically significant findings are denoted by \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Fig. 4a. Perceived Emotional Support in those with high/low Contamination Scores.

correlated with worsening OCD symptoms, (Nissen et al., 2020). Another study evaluated possible mediating effects of depression and anxiety regarding the relationship between pandemic related fear and OCD symptoms in an adolescent population with OCD (Seçer and Ulaş, 2020). Their model validated full mediating role of depression, anxiety along with emotional reactivity and avoidance ( $\chi^2(247) = 487.16/1.97$ ; CFI = 0.96; TLI = 0.96; SRMR = 0.062; RMSEA = 0.062). Comorbid depression and anxiety has also been associated with greater use of inappropriate coping strategies (denial, blame, substance use) by individuals with OCD plus comorbidity, during the pandemic compared to those without comorbidity (Rosa-Alcázar et al., 2021), which could explain in part, the worsening of symptoms.

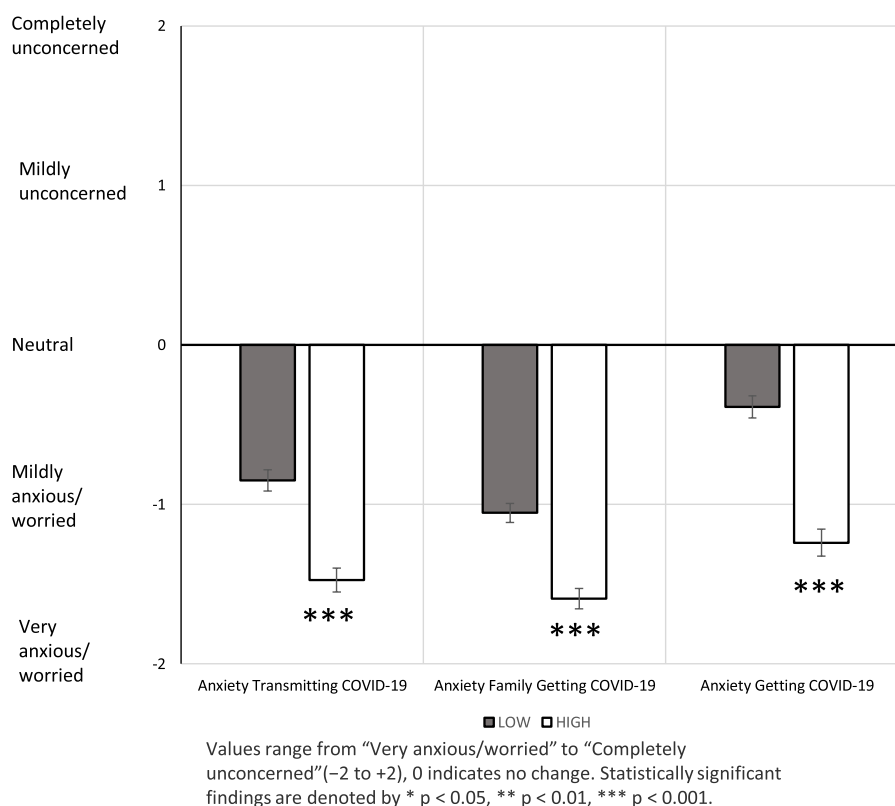
Also in line with the findings of this study, greater increases in watching the news, digital information seeking and screen time during the pandemic have been reported to correlate with increased OCD symptom severity in both general populations and OCD populations. In Portugal, a survey of the general population found that greater time spent consuming COVID-19 information ( $\geq 1$  h per day) was associated with increased symptom severity on the OCI-R ( $p < .001$ ) (Silva Moreira et al., 2021). Talking and searching on social media about COVID-19 was identified as a predictor (OR: 3.728, CI:  $p = .18$ ) for overall OCD

symptom severity, measured by CY-BOCS in a pediatric study (Tandt et al., 2021). A study in an adult population, also found that OCD symptom severity was significantly associated with digital information seeking and that this correlation remained significant 4 months after the first assessment and after controlling for demographic variables such as age, gender and IQ ( $r(414) = 0.218$ ,  $p < .001$ ) (Loosen et al., 2021).

### 4.1. Limitations

There are several limitations associated with this report. The cross-sectional nature of our study limited the conclusions possible from our findings. Although all participants reported having a diagnosis of OCD, the diagnosis was not confirmed by a clinician or structured diagnostic assessment. The increases in Y-BOCS scores may have pre-dated the pandemic but were unable to confirm this as we did not have pre-pandemic Y-BOCS scores. In addition, although no differences were found across continents in terms of OCD severity, having European residency was associated with a decreased risk of perceived worsening of symptoms. This may be attributed to another limitation of our study, namely the timing of survey. Data collection was staggered and the survey was posted when COVID-19 cases were decreasing in Europe,

## b: Perceived Emotional Support in those with high/low Contamination Scores



**Fig. 4b.** Perceived Emotional Support in those with high/low Contamination Scores.

**Table 5**  
Symptom severity scale comparisons – ANCOVA results (n=417).

	GAD-7		PHQ-9		OCI-R		SDS	
	$\chi$ (SD)	p	$\chi$ (SD)	p	$\chi$ (SD)	p	$\chi$ (SD)	p
North America	13.7 (5.5)	.82	13.4 (6.8)	.14	27.7 (12.2)	.13	19.8 (7.6)	.49
South America	13.6 (6.5)		15.1 (7.6)		30.5 (13.6)		19.4 (9.1)	
Europe	13.7 (6.1)		14.6 (8.1)		29.9 (12.6)		18.9 (8.2)	
High Contamination	15.1 (4.9)	.01	15.7 (6.9)	.02	35.8 (10.4)	<.001	22.2 (7.9)	<.001
Low Contamination	13.1 (6.0)		13.3 (7.3)		25.4 (11.7)		18.4 (7.8)	

GAD-7 = Generalized Anxiety Disorder –7; OCI-R = Obsessive Compulsive Inventory – Revised; PHQ-9 = Patient Health Questionnaire-9; SDS = Sheehan Disability Scale.

while North and South America were at the height of the first wave. It is also possible that our sample was slightly biased towards those selectively responding to the survey if they had contamination fears, given that it was an OCD survey related to COVID-19. We have no way of disentangling this possibility from the sample, however, but note that it may have been a possibility. Finally, since the sample was comprised only of those with OCD (no other comparison group), the study also cannot answer the question of whether COVID-19 impacted other obsessive compulsive and related disorders similarly, or whether the impacts were unique to OCD.

### 5. Conclusions

Nevertheless, these results provide further evidence to illustrate the profound impact incurred by the COVID-19 pandemic on the symptoms of individuals with obsessive compulsive disorder. These individuals were particularly vulnerable to symptom exacerbation and relapse

secondary to pandemic-related messaging and restrictions. It is important for clinicians to recognize the need for a more nuanced treatment approach for OCD patients during this challenging health crisis. Potential solutions for this clinical conundrum are described in the recent guidelines for OCD during COVID-19, written by the International College of Obsessive Compulsive Spectrum Disorders (ICOCS), (Fineberg et al., 2020).

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### Declaration of competing interest

**Dr. Van Ameringen** reports being on the Advisory Boards of Allergan, Almatica, Brainsway, Lundbeck, Myriad Neuroscience, Otsuka,

Purdue Pharma (Canada), Tilray and Vistagen; he is on the Speaker's Bureau for Allergan, Lundbeck, Purdue Pharma (Canada), and Takeda; he has received research support from Purdue Pharma (Canada), the Canadian institute for Health Research and Hamilton Academic Health Sciences Organization (HAHSO) and honoraria from UpToDate; and leadership roles at the International College of Obsessive Compulsive Spectrum Disorders (unpaid) outside the submitted work.

**Ms. Patterson** has nothing to disclose.

**Dr. Turna** has nothing to disclose.

**Ms. Lethbridge** has nothing to disclose.

**Dr. Goldman Bergmann** has nothing to disclose.

**Ms. Lamberti** has nothing to disclose.

**Ms. Rahat** has nothing to disclose.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jpsychires.2022.02.001>.

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