

LONGITUDINAL COURSE OF OBSESSIVE-COMPULSIVE SYMPTOMS DURING THE COVID-19 PANDEMIC: A SYSTEMATIC REVIEW OF THREE YEARS OF PROSPECTIVE COHORT STUDIES

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Abstract

Objective: During the pandemic, there has been a slight increase in obsessive-compulsive symptoms in both clinical and non-clinical samples. Three years after the pandemic, we conducted the first systematic review of prospective cohort studies assessing temporal changes in obsessive-compulsive symptoms and their extent in both patients with obsessive-compulsive disorder (OCD) and community samples, regardless of age or socio-cultural background, during any phase of the pandemic.

Method: Prospective cohort studies were included if validated self-report questionnaires or standardized interviews for obsessive-compulsive symptoms were used. Studies that enrolled OCD patients were included if OCD was diagnosed before the outbreak of the pandemic. The following were our exclusion criteria: cross-sectional and case-control studies, single case studies, editorials, commentaries, and reviews. Studies assessing the effectiveness of an intervention were excluded.

Results: 15 studies were included. Overall, studies showed a small upsurge in obsessive-compulsive symptoms, especially washing/contamination symptoms, during the coronavirus outbreak. The severity of symptoms seemed to follow the pattern of restriction measures and the increase in the number of COVID-19 cases.

Conclusions: Factors contributing to the worsening of obsessive-compulsive symptoms during the pandemic were discussed.

Key words: obsessive-compulsive disorder, obsessive-compulsive subthreshold symptoms, COVID-19, pandemic, longitudinal, washing compulsions

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Introduction

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is a novel coronavirus that led the World Health Organization (WHO) to declare a pandemic in March 2020 due to its widespread infectivity (Wang et al., 2020; World Health Organization, 2020). The Coronavirus Disease can cause severe lung injury, which has been responsible for severe acute respiratory failure and high death rates (Pascarella et al., 2020). In the summer of 2020, a second wave of infections appeared in the European Union after an initial and apparent reduction in contagions (Bontempi, 2021). The second wave of the COVID-19 infection led to a range of long-lasting negative psychological effects (Brooks et al., 2020), such as anxious-depressive or panic symptoms (Wang et al., 2020), sleep disturbances (Forte et al., 2020), stress and irritability (Pfefferbaum & North, 2020), pervasive feelings of hopelessness and desperation, and long-term behavioral changes (Serafini et al., 2020). Also, protective

measures (e.g., social distancing, lockdown) adopted by governments worldwide to slow contagion have had a substantial psychological impact on individuals (Cullen et al., 2020).

A substantial number of studies show the increased risk of psychological distress for specific groups, including individuals diagnosed with COVID-19, healthcare providers (Qiu et al., 2020), young adults (Shanahan et al., 2022; Varma et al., 2021), women (Forte et al., 2020), and psychiatric samples (Zhu et al., 2020). In the literature there are studies documenting an increase in psychopathological symptoms, e.g., depressive (Bueno-Notivol et al., 2021), anxious (Santabárbara et al., 2021), and obsessive-compulsive symptoms (OCS). During the second wave of the COVID-19 pandemic, among all psychiatric patients, those with obsessive-compulsive disorder (OCD) reported the most significant worsening of symptoms, accompanied by an increased distress (Fineberg et al., 2021).

OCD is a disabling mental disorder characterized

by the presence of intrusive, persistent, and unwanted thoughts, urges, or images (obsessions) and/or repetitive behaviors or mental acts (compulsions) that an individual feels driven to perform in response to an obsession (American Psychiatric Association, 2013), that significantly compromise quality of life (Coluccia et al., 2015; Pozza et al., 2018, 2020). OCD presents heterogeneous manifestations (Kühne et al., 2020; McKay et al., 2015) and is characterized by acute, episodic, or chronic symptom development (National Collaborating Centre for Mental Health (UK), 2006): a chronic course implies that symptom severity might wax and wane, without a complete relief from them; an episodic course is characterized by the presence of an episode without symptoms presenting themselves in the remaining time (Sharma & Math, 2019). Nevertheless, the course of OCD symptoms is typically chronic and persistent, thus leading to significant impairment in daily functioning if left untreated (Catapano et al., 2006; Eisen et al., 2010). However, the severity of symptoms can vary over time and can be influenced by various neurobiological, genetic, and psychosocial factors, including major life events, comorbidities, and stress (Adams et al., 2018; American Psychiatric Association, 2013; Raposo-Lima & Morgado, 2020), such as that induced by objective infectious situations at risk of contagion (e.g., parasitical, bacterial, or viral infections). In fact, stress may serve as both a triggering and aggravating factor, meaning it can prompt symptoms to appear while also contributing to their exacerbation, especially in several OCD dimensions (Adams et al., 2018; Fontenelle et al., 2021; Raposo-Lima & Morgado, 2020).

OCD onset typically occurs more frequently before adult age, with approximately 20% of patients experiencing symptoms during childhood (Dell'Osso et al., 2016). Young people with OCD exhibit some cognitive similarities with adult patients, and their symptoms tend to remain stable over time (Fernández De La Cruz et al., 2013; Marzuki et al., 2020; Pozza et al., 2019). Nevertheless, the most common symptoms in children and adolescent OCD patients include miscellaneous obsessions, aggressiveness, religiousness, checking, miscellaneous compulsions, cleaning-washing, and repeating (Luo et al., 2020). Stressful life events predict OCS change in adults as well as in adolescence at a phenotypic level (Krebs et al., 2019).

The preventive measures implemented to contain the spread of COVID-19 share similarities with these OCD symptoms, which raises concerns about the impact of infection prevention measures on OCD manifestations. Studies have shown that OCD patients may use maladaptive coping strategies when facing the pandemic (Rosa-Alcázar et al., 2021). OCD symptoms increased in both severity and frequency in response to the pandemic, with contamination fears, excessive hand washing, cleaning, and checking behaviors being the most common (Fineberg et al., 2021; Moccia et al., 2020). Indeed, the pandemic has been a precipitating factor for the potential increase of OCD symptoms due to reinforced cleaning habits, now considered legitimate and socially accepted (Ornell et al., 2021; Sulaimani & Bagadood, 2021). Overall, the COVID-19 pandemic has had a significant impact on the trajectories of OCD symptoms. The fear of contamination, combined with increased stress and anxiety, has led to an increase in OCD symptoms. Understanding the impact of the pandemic on OCD symptoms is crucial in developing effective interventions to manage OCD during future pandemics.

Rationale and aims of the study

More than three years have now passed since the first case of SARS-CoV-2 was diagnosed in China and the persistence of the pandemic in OCD patients has been poorly investigated. To the best of our knowledge, our study is the first systematic review of prospective cohort studies assessing obsessive-compulsive symptom changes in both clinical (i.e., patients with OCD) and non-clinical (i.e., general population) populations, regardless of age or socio-cultural background, during any phase of the pandemic. Given the heterogeneous course of the disorder, it is important to understand how the symptoms change through an analysis of longitudinal studies for a better understanding of the variation of symptoms before, during, and after the pandemic. Three years after the pandemic, it is important to understand how OCD has evolved over time and to understand in which way and how much obsessive-compulsive symptoms have changed, both in clinical and non-clinical samples. To fully understand the impact of the COVID-19 pandemic on mental health, it is important to closely examine the development and progression of obsessive-compulsive symptoms over time. The current study aims to determine whether symptoms related to washing or contamination have intensified or worsened during the pandemic. In fact, several studies have reported the emergence of new obsessions and compulsions related to the risk of COVID-19 contamination in OCD patients (Alonso et al., 2021). Instead, prior to the pandemic, obsessions and compulsions related to contamination/washing were the most frequently observed, affecting about 50% of patients (Brady et al., 2010). By tracking these symptoms, we can gain valuable insight into the long-term effects of the pandemic on individuals' mental well-being. Additionally, this study can aid in understanding how OCD symptoms progress over time, particularly during the recent pandemic period and whether they improve, stabilize, or worsen. According to recent studies (Jelinek, Göritz, et al., 2021), there has been a slight increase in obsessive-compulsive symptoms (OCS) in community samples during the first weeks of the pandemic. Individuals who had previously experienced OCS related to contamination were found to be more likely to exhibit a temporary OCS response to the pandemic (Jelinek, Göritz, et al., 2021). Moreover, a comprehensive review can assist in developing timely strategies for early interventions or enhancing those already in place during these months.

On these grounds, one of the reasons why we decided to study OCD patients is because they could have focused their main fears on the coronavirus or, on the other hand, could be worried about contaminating others by spreading COVID-19 (Fontenelle & Miguel, 2020). Further, we hypothesize that the pandemic has had a significant impact on individuals in relation to general OCD symptom severity (Cox & Olatunji, 2021; Grøtte et al., 2022). In fact, during the early stages of the pandemic, there was an increase in obsessive-compulsive symptoms, particularly related to contamination and cleanliness, which later improved (Jelinek, Göritz, et al., 2021).

Methods

Eligibility criteria

The present systematic review summarizes the available evidence published in English, Spanish, or Italian in peer-reviewed journals in any country on the

variability of obsessive-compulsive symptoms during the COVID-19 pandemic. Prospective cohort studies that examined OCD symptom changes in individuals of any age (children, adolescents, and adults), separately in community samples (general population and undergraduates) and in OCD samples during any phase of the pandemic were reviewed.

Studies were included if they used validated self-report questionnaires or standardized interviews for OCD or obsessive-compulsive symptoms administered by a clinician in person or over the telephone, or using online platforms. Studies that enrolled OCD patients were included if OCD was diagnosed before the outbreak of the pandemic.

The following were our exclusion criteria: cross-sectional and case-control studies, single case studies, editorials, commentaries, and reviews. Furthermore, we excluded experimental studies that assessed the effectiveness of an intervention, whether psychotherapeutic or pharmacological, that was initiated directly at the time of inclusion in the study on all included patients, using any research design (e.g., single-group open study, randomized controlled trials), because in the study the treatment variable was not to be manipulated.

Information sources and search procedure

Studies were identified by conducting an online systematic search of electronic databases using the following keywords and Boolean operators: (obsessive compulsive disorder [Abstract] OR OCD [Abstract] OR obsessions [Abstract] OR compulsions [Abstract]) AND (COVID-19 [Abstract] OR pandemic [Abstract]). The search was conducted during the last week of March 2023 by using the databases Medline and PsycINFO.

Selection of studies

Studies were screened against eligibility criteria by four authors working independently in two stages. During the first stage, studies were examined with regard to the inclusion criteria after reading the title and the abstract. During the second stage, authors examined independently the full text of the papers. We contacted the corresponding authors if the relevant data was not provided, and we included such data in the analyses. After each stage, the authors compared their selections. Any disagreement about the inclusion or exclusion of studies was discussed and resolved in a meeting with a fourth author.

Data extraction and coding

All the information was extracted from each included study by four authors (MGH, NLA, DP, IA) working independently and inserted into an Excel spreadsheet. The following information was extracted and coded from each study: name of the first author, publication year, country, participant's inclusion criteria, participant's exclusion criteria, target population, sample size, mean age and standard deviation, percentage of females, instruments used to establish OCD diagnosis, patients on concurrent psychiatric medication, presence of concurrent psychotherapeutic treatment, online vs. in-office vs. phone assessment, online vs. in-office therapy, patients with contamination obsessions and/or washing compulsions, comorbid disorders, percentage of people meeting the criteria for OCD diagnosis, number

of people meeting the criteria for OCD diagnosis, percentage of people reporting symptoms that score above the cut-off (OCD), number of people reporting symptoms that score above the cut-off (OCD), number and percentage of patients who reported a worsening/improvements/no-change in OCD symptoms during the pandemic, mean score and standard deviation on OCD symptom measures across time points, and Student's *t*. A fifth author (AP), not involved in data extraction, checked the correctness of the data entered into the database. Any discrepancies were discussed.

Quality assessment

The quality of the included studies was assessed using the Newcastle-Ottawa Scale (NOS; Wells et al., 2014). This tool has recently been recommended by guidelines for conducting systematic reviews as the most reliable instrument (Zeng et al., 2015). It consists of eight items, grouped into three key domains: (1) selection, (2) comparability, and (3) outcome (cohort studies) or exposure (case-control studies) according to the study design. A star system is used to allow a semi-quantitative quality assessment: the highest quality studies receive a maximum of one star for each item and two stars for the item related to comparability. Thus, scores on the scale range from zero to nine stars. Two authors (DP, NA) assessed the quality of the studies independently. Any discrepancies were resolved at a consensus meeting with two other authors (AP, FI).

Results

Selection of studies

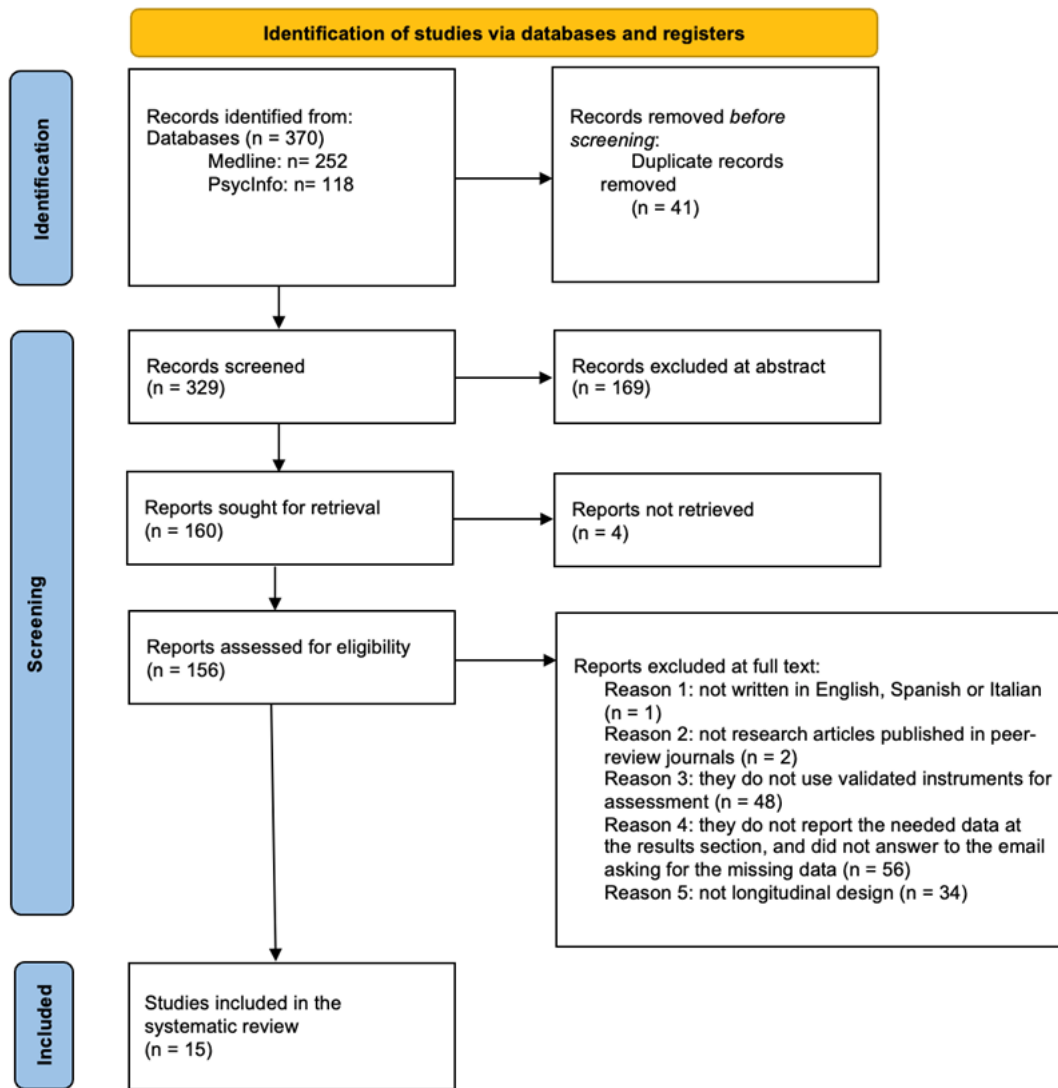
The search through the databases (Medline and PsycInfo) produced a total of 370 records, assessed independently in the first phase by three authors. Forty-one duplicate records were removed before the screening, therefore a total of 329 records were screened. 169 records were excluded based on the contents of the abstracts. 160 records were sought for retrieval and four records were not retrieved. 156 records were assessed for eligibility. Reviewing the full text of the records, 141 records were excluded. After this selection process, 15 studies were included in the systematic review. The PRISMA flowchart of the study selection process is provided in **figure 1**.

Descriptive characteristics of the included studies

The studies included were published between 2020 and 2022, with most of the studies ($n = 9$) published in 2021. Three studies were published in North America (Cox & Olatunji, 2021; Hezel et al., 2022; Knowles & Olatunji, 2021), seven in European countries (Alonso et al., 2021; Grøtte et al., 2022; Jelinek, Göritz, et al., 2021; Jelinek, Voderholzer, et al., 2021; Loosen et al., 2020; Prestia et al., 2020; Tandt et al., 2021), four in Asia (Khosravani et al., 2021; Liao et al., 2021; Siddiqui et al., 2022; Tanir et al., 2020), and one in Oceania (Kroon et al., 2022). Thirteen studies involved adults, while two studies included children (Tanir et al., 2020) and undergraduates (Knowles & Olatunji, 2021).

Eight studies included participants with OCD (Alonso et al., 2021; Jelinek, Göritz, et al., 2021; Khosravani et al., 2021; Liao et al., 2021; Prestia et al., 2020; Siddiqui et al., 2022; Tandt et al., 2021; Tanir et

Figure 1. PRISMA flowchart



PRISMA 2020 flow diagram

al., 2020), four considered community samples (Cox & Olatunji, 2021; Grøtte et al., 2022; Jelinek, Göritz, et al., 2021; Loosen et al., 2020), and one study enrolled both OCD patients and healthy controls (Hezel et al., 2022); two studies included respectively parents of children (Kroon et al., 2022) and undergraduates (Knowles & Olatunji, 2021). Participants' exclusion criteria were not reported in many studies, while some excluded, for example, people who were actively treated with psychopharmaceuticals or had residency abroad (see **table 1**).

The most commonly used tools for evaluating obsessive-compulsive symptoms were the Obsessive-Compulsive Inventory – Revised (OCI-R; Cox & Olatunji, 2021; Hezel et al., 2022; Jelinek, Göritz, et al., 2021; Jelinek, Voderholzer, et al., 2021; Knowles & Olatunji, 2021; Liao et al., 2021) and the Yale-Brown Obsessive Compulsive Scale (Y-BOCS; Alonso et al., 2021; Khosravani et al., 2021; Prestia et al., 2020; Siddiqui et al., 2022; Tanir et al., 2020).

The percentage of females was reported in most of the studies (ranging from 56.97% to 100%). Eight studies reported the presence of a concurrent medication and seven the presence of a concurrent

or past psychotherapy. The modality of assessment (online, in-office, or phone) also varied, with some studies using online assessment (e.g., Tandt et al., 2021) and others using in-office or phone assessment (e.g., Hezel et al., 2022); however online assessment was the most frequent method adopted to evaluate participants. Seven studies focused on specific OCD symptoms such as contamination obsessions and/or washing compulsions (Alonso et al., 2021; Grøtte et al., 2022; Jelinek, Göritz, et al., 2021; Jelinek, Voderholzer, et al., 2021; Knowles & Olatunji, 2021; Prestia et al., 2020; Siddiqui et al., 2022). The characteristics of the included studies are reported in **table 1**.

Quality Assessment

According to the Newcastle-Ottawa Scale, methodological quality was adequate for all studies that were included, with a mean score of 6.2 (**table 2**). The NOS report identified methodological quality issues with the Ascertainment of Exposure and Assessment of Outcomes scales, which received the lowest rating. Meanwhile, the studies included in the report

Table 1. Summary of the articles included in the systematic review (n = 15)

Study	Country	Eligibility criteria	Period	Cohort	Participants	Treatment	% of participants with Contamination symptoms	Instrument used to assess OC symptoms
Alonso et al., 2021	Spain	<p>Inclusion criteria</p> <p>Adult patients who had completed at least one year of treatment in an OCD Clinic and who had been on stable doses of medication for at least 3 months.</p> <p>Exclusion criteria</p> <p>Patients with psychoactive substance abuse/dependence (current or in the previous 6 months), psychotic disorders, intellectual disability, severe organic or neurological pathology (except tic disorders), or autism spectrum disorders at baseline from the cohort.</p>	<p>t0: December, 2019 – March, 2020 (last assessment)</p> <p>t1: April 27 - May 25, 2020</p>	Adults	OCD patients	100%	44.8% (get infected with SARS-CoV-2)	Y-BOCS
Cox & Olatunji, 2021	United States	<p>Inclusion criteria</p> <p>Adult general population from United States who participated in a previous insomnia and anxiety, related symptoms survey study.</p> <p>Exclusion criteria</p> <p>-</p>	<p>t0: 2016</p> <p>t1: April 1, 2020 - April 8, 2020</p>	Adults	General population	-	-	OCI-R
Grøtten et al., 2022	Norway	<p>Inclusion criteria</p> <p>General population from Norway</p> <p>Exclusion criteria</p> <p>-</p>	<p>t0: pre-pandemic</p> <p>t1: April 2020 (early pandemic)</p> <p>t2: December 2020 (late pandemic)</p>	Adults	General population	-	<p>t0 (above cut-off): 2.4%</p> <p>t1 (above cut-off): 27.8%</p> <p>t2 (above cut-off): 24%</p>	DOCS-SF

Table 1. Continued

Study	Country	Eligibility criteria	Exclusion criteria	Period	Cohort	Participants	Treatment	% of participants with Contamination symptoms	Instrument used to assess OC symptoms
Hezel et al., 2022	United States	Healthy controls and individuals diagnosed with OCD who had previously participated in research prior to the pandemic who had received a diagnostic assessment according to DSM-5 when they had enrolled in research prior to the pandemic and again when entering this study.	Acute suicidality	t0: April 2020 t1: May -June 2020 t2: July - August 2020 t3: November - December 2020	Adults	General Population and OCD patients	Psychiatric 21%: (ERP and medication) 18%: (non-CBT therapy and medication) 12%: medication only	3%: ERP only 3%: non-CBT therapy only 23%: supportive therapy only	OCI-R
Jelinek, Göritz et al., 2021	Germany	General population recruited via an online platform	Participants who indicated in the final question of the survey that they had answered the questions of the survey untruthfully or those who exhibited a stereotypical answer pattern	t0: March 30 – April 7, 2014 t1: March 21 - March 30, 2020 (during lockdown) t2: June 22 – June 30, 2020 (easing of lockdown)	Adults	General population	-	OCS+/OCS+ = 36.7% OCS-/OCS+ = 6.7% OCS-/OCS+ = 14.3% OCS-/OCS- = 2.4% Total sample = 9.1%	OCI-R
Jelinek, Voderholzer et al., 2021	Germany	Age between 18 and 80 years; a diagnosis of OCD made by a clinician (e.g., psychiatrist, psychotherapist), completion of the OCI-R, and provision of an email address at t0.	Stereotypical answer patterns in psychopathology ratings	t0: March 23 - May 18, 2020 t1: June 2020	Adult	OCD patients	-	56.3%	OCI-R
Khosravi-ni et al., 2021	Iran	A group of treatment-seeking patients with a principal diagnosis of OCD participated in the current study.	Exclusion criteria: 1) substance abuse, 2) mental disabilities, 3) psychotic disorders, 4) physical (other than COVID-19) or neurological diseases, and 5) the presence of personality disorders.	t0: before the pandemic t1: May 2020 - July 2020 (first wave of SARS-CoV-2)	Adults	OCD patients	100%	30% (previous or current, including CBT)	DOCS, Y-BOCS

Table 1. Continued

Study	Country	Eligibility criteria	Inclusion criteria	Exclusion criteria	Period	Cohort	Participants	Treatment	% of participants with Contamination symptoms	Instrument used to assess OC symptoms
Knowles & Olatunji, 2021	United States	Undergraduate students at a private southeastern university.		-	t0: Mid-January 2020 t1: February 27 - March 26, 2020	Young adults	Undergraduate	-	20.4%	PI-COWCS, OCI-R
Kroon et al., 2022	Australia	Participants had to be parents of children aged four to seventeen years old and living anywhere in Australia and were requested to complete the survey based on one of their children. Participants did not need to have any diagnosis to be eligible to participate.		-	t0: June – September 2020 (during lockdown) t1: November 2020 – January 2021 (post-lockdown)	Children/ Adolescents	Parents of children	-	-	OCI-P
Liao et al., 2021	China	Patients with OCD according to DSM-5 criteria; age between 18 and 60 years old; and education level ≥ 6 years		-	t0: December 1, 2019 – January 1, 2020 t1: February 26 - March 25, 2020 (early COVID-19) t2: February 26 – March 25, 2021	Adults	OCD patients	59.37% 34.38%	-	OCI-R
Loosen et al., 2021	United Kingdom	All subjects were a non-clinical population, over 18, living in the UK and gave informed consent before starting the study.		Missing data or failing at least one of two attention checks (instructed questionnaire answers); self-reported OCD diagnosis.	t0: April 24 – May 7, 2020 (during lockdown) t1: July 15 – August 15, 2020 (lockdown lifting)	Adults	General population	-	-	PI-WSUR

Table 1. Continued

Study	Country	Eligibility criteria	Exclusion criteria	Period	Cohort	Participants	Treatment	% of participants with Contamination symptoms	Instrument used to assess OC symptoms
Prestia et al., 2020	Italy	Inclusion criteria Outpatients with OCD according to DSM-5 criteria attending an Italian OCD clinic during the last six months before the quarantine receiving evidence-based psychiatric care (i.e., psychopharmacological with or without CBT) according to their needs. Patients were on stable pharmacological treatment during the last 6 months before the quarantine with adequate drug.	Exclusion criteria Subjects were excluded if they had (a) concurrent psychotic or bipolar disorders, (b) intellectual disability, (c) neurological or other medical diseases.	t0: January – February 2020 t1: April 16 – April 17, 2020	Adults	OCD patients	Psychiatric 100%	40%	Y-BOCS-SC
Siddiqui et al., 2022	Qatar	Patients with a pre-existing primary diagnosis of OCD with fear of contamination and washing compulsions being major symptom dimensions of OCD, aged 18–65	Inability to consent for participation in the study due to underlying mental or physical health conditions or inability to engage with the interview.	t0: before the pandemic t1: January 2021 (during lockdown)	Adults	OCD patients	100%	100%	Y-BOCS
Tandt et al., 2021	Belgium	(a) diagnosis of OCD, (b) age of patients between 18 and 65 years old, (c) speaking Dutch fluently. Exclusion criteria were: (a) current substance abuse and (b) psychotic symptoms.	-	t0: April 14 – May 15, 2020 t1: June 2020 t2: August 2020 t3: November 2020	Adults	OCD patients	91.8%	89.8% (past or present)	Y-BOCS
Tanir et al., 2020	Turkey	Patients with an OCD diagnosis according to DSM-5 criteria; b) Scores from the Clinical Global Impression (CGI-S) scale and CY-BOCS scores from before the pandemic; c) no diagnoses of autism or schizophrenia spectrum disorders, intellectual disabilities, or substance use disorders; and d) verbal informed consent and assent to participate in the study.	-	t0: September 2019 – March 2020 t1: April 20 – April 30, 2020	Children	OCD patients	44.3%: Only SSRIs 32.8%: SSRIs + aripiprazole or risperidone	1.6%: CBT 9.8% CBT + SSRIs	CY-BOCS

Note. CBT = Cognitive Behavioral Therapy; CY-BOCS = Children's Yale-Brown Obsessive-Compulsive Scale; DOCS = Dimensional Obsessive-Compulsive Scale; DSM-5 = Diagnostic and Statistical Manual of Mental Disorders – 5; OCD = Obsessive Compulsive Disorder; CGI-R = Obsessive-Compulsive Inventory – Revised; PI-COWCS = Padua Inventory – Contamination Obsessions and Washing Compulsions Subscale; PI-WSUR = Padua Inventory – Washington State University Revision; SARS-CoV-2 = Severe Acute Respiratory Syndrome Coronavirus 2; SSRIs = Selective Serotonin Reuptake Inhibitors; Y-BOCS = Yale-Brown Obsessive Compulsive Scale

Table 2. Quality assessment of the including studies according to the criteria of the Newcastle-Ottawa Scale (*n* = 15)

Studies	Selection of subjects				Comparability of subjects				Exposure / Outcome			
	Representativeness of the exposed cohort (OCD symptoms or diagnosis)	Selection of the non exposed cohort	Ascertainment of exposure	Outcome not present at start of study (OCD symptom or diagnosis)	Comparability based on study design or analysis	Assessment of outcome	Length of follow-up	Adequate follow-up	Total scores			
Longitudinal studies												
Alonso et al., 2021	★	No	★	★	★	★	★	★	7			
Cox & Olatunji, 2021	★	★	★	★	No	★	No	No	5			
Grøtthe et al., 2022	★	★	★	★	★	★	★	★	8			
Hezel et al., 2022	★	★	★	★	★★	★	★	★	9			
Jelinek, Göritz et al., 2021	★	★	No	★	★★	No	★	★	7			
Jelinek, Vorderholzer et al., 2021	★	★	No	No	★★	No	★	★	6			
Khrosravani et al., 2021	★	★	No	No	★	No	★	★	5			
Knowles & Olatunji, 2021	★	★	No	★	★★	No	No	★	6			
Kroon et al., 2022	★	★	No	No	★★	No	★	★	6			
Liao et al., 2021	★	★	No	No	★★	No	★	No	5			
Loosen et al., 2020	★	★	No	★	★	No	★	No	5			
Prestia et al., 2020	★	★	★	No	★★	★	★	★	8			
Tandt et al., 2021	★	★	★	★	★★	No	★	★	8			
Tanir et al., 2022	★	★	No	No	★	No	No	★	4			
Siddiqui et al., 2022	★	★	★	No	★	No	No	No	4			

Note. ★ = one point for item; No = criterion not satisfied; OCD = obsessive-compulsive disorder.

demonstrated the highest methodological quality in terms of Comparability and Representativeness of the target sample.

Longitudinal course of obsessive-compulsive symptoms

Trajectories of OC symptoms among patients with OCD

Several studies have explored how the COVID-19 pandemic has affected patients with OCD. According to studies included in this review, the outbreak has had a negative impact on OCD symptoms. To be specific, the studies conducted by Alonso et al. (2021), Khosravani et al. (2021), Liao et al. (2021), and Prestia et al. (2020) all report a statistically significant worsening of OCD symptoms during or after the pandemic. Also, the study of Siddiqui et al. (2022) found an increase in OCD symptoms, but with no significant statistical difference. Contrary to what was expected, Jelinek, Voderholzer et al. (2021) did not observe any significant change in the severity of OCD symptoms during the first few months of the pandemic. Not all patients experienced a worsening in symptoms; some patients (16%) even reported an improvement in their condition (Alonso et al., 2021). Moreover, the studies suggest that various factors, such as pre-pandemic depression (Alonso et al., 2021) or OCD symptom severity at baseline (Liao et al., 2021), contamination/washing symptoms prior to the pandemic (Alonso et al., 2021), anxious-depressive symptoms during the pandemic (Tandt et al., 2021), lower perceived social support (Alonso et al., 2021), COVID-19 stress responses (Khosravani et al., 2021; Tandt et al., 2021) or concerns (Liao et al., 2021), remission status prior to the pandemic (Prestia et al., 2020), living with a relative during quarantine (Prestia et al., 2020), and duration of OCD less than 10 years (Siddiqui et al., 2022), are associated with a more significant worsening of OCD symptoms during the pandemic.

Some studies report the extent to which OCD symptoms have increased before and during the pandemic. Alonso et al. (2021) found a 15.1% increase in Y-BOCS scores, which is considered to be of little clinical relevance since a 25% increase is needed for partial response, according to Mataix-Cols et al. (2016). According to the study, although a considerable number of patients reported experiencing a worsening of their obsessive-compulsive symptoms, around 31% of them showed a clinically significant increase compared to their pre-pandemic symptoms, indicating a shift from moderate to severe levels of OCD severity. According to Prestia et al. (2020), during the pandemic 13% of remitted patients returned to clinically significant levels of OCD. Symptoms increased significantly for all OCD dimensions (Khosravani et al., 2021). Overall, the COVID-19 pandemic increased general OCD severity (Khosravani et al., 2021). Upon further investigation into the follow-up, it was found that the severity of OCD symptoms, which had worsened during the early stages of the pandemic, persisted one year later, together with anxious-depressive symptoms (Liao et al., 2021). According to Tandt et al. (2021) and Hezel et al. (2022), the severity of symptoms reflected the pattern of restriction measures and the number of COVID-19 cases, with a significant improvement in OCD symptoms occurring after the lifting of restrictions in August, and another decrease in November 2020.

In the study of Hezel et al. (2022), OCD patients had significantly higher levels of OCS severity together with lower levels of baseline resilience at every timepoint. While Tandt et al. (2021) found that OCD symptoms further decreased in November 2020 whereas stress, anxiety, and depressive scores worsened again, Hezel et al. (2022) found that overall psychiatric symptoms remained stable between timepoints. Furthermore, in this instance, low resilience moderated the relationship with greater symptom severity variability.

Contamination symptoms before the quarantine were significantly associated with a greater worsening of symptoms (Alonso et al., 2021; Khosravani et al., 2021; Prestia et al., 2020). According to Jelinek, Voderholzer et al. (2021), there was no observed difference in contamination symptoms during the first months of the pandemic, but there is some indication that symptomatology improved among patients without contamination symptoms.

During the pandemic, 45% of patients reported new obsessions and compulsions related to the risk of contamination by SARS-CoV-2, but only 9% made it their main concern. Patients who had contamination/washing symptoms prior to the pandemic were more likely to develop obsessive fears about COVID-19. Specifically, 79% of those who reported this fear as a new symptom already had contamination obsessions and washing compulsions (Alonso et al., 2021).

Trajectories of obsessing-compulsive symptoms among community samples

There have been several studies conducted to comprehend the trajectories of OCS among individuals during the COVID-19 pandemic. The included studies showed a small upsurge in OCS during the coronavirus outbreak (Cox & Olatunji, 2021; Grøtte et al., 2022; Jelinek, Göritz, et al., 2021; Loosen et al., 2020). Symptoms increased significantly over time for the dimensions of washing (Cox & Olatunji, 2021; Jelinek, Göritz, et al., 2021), obsessing, hoarding, and ordering (Jelinek, Göritz, et al., 2021). Also, not all individuals experienced a decline in symptoms, with 6% of the participants reporting an improvement in their condition (Jelinek, Göritz, et al., 2021).

Prior to the pandemic, suffering from insomnia (Cox & Olatunji, 2021; Grøtte et al., 2022), contamination/washing symptoms (Grøtte et al., 2022; Jelinek, Göritz, et al., 2021), anxiety and depression, distress related to COVID-19, having a younger age (Grøtte et al., 2022), presenting higher experiential avoidance (Jelinek, Göritz, et al., 2021), or spending more time on information seeking – which was linked to a later adherence to governmental guidelines – (Loosen et al., 2020) were associated with elevated OCD symptoms during the pandemic.

Contamination-related OCS worsened in the early stages of the pandemic. The proportion of participants exceeding the DOCS-SF cut-off for clinically relevant OCS increased from 2.4% pre-COVID to a percentage between 23.8% and 27.8% in March/April (Grøtte et al., 2022; Jelinek, Göritz, et al., 2021).

For OCS related to contamination, the odds of presenting a continuous course or of recovering were relatively high. On the other hand, OCS unrelated to contamination before the pandemic was linked to increased chances of being part of the continuously symptomatic or delayed onset trajectory group (Jelinek, Göritz, et al., 2021).

Trajectories of OC symptoms among children and undergraduates

In line with Grøtte et al. (2022), OCS related to contamination worsened during the early stages of the pandemic (Knowles & Olatunji, 2021). In fact, a significant proportion of undergraduates, approximately one in five, reported clinical levels of contamination-related OCD symptoms. Furthermore, there was a medium effect size for the increase in washing symptoms from before to during the pandemic (Knowles & Olatunji, 2021).

One study considered parents of children, who reported that their children's OCD symptoms were more severe during the lockdown than after (Kroon et al., 2022). Lastly, Tanir et al. (2020) conducted a study that assessed changes in OC symptoms in a sample of children. During the pandemic, more than half of the children reported an increase in the frequency and severity of their OCD symptoms, mainly contamination obsessions and cleaning/washing compulsions. 36% of them had at least a 30% increase in total CY-BOCS scores during the pandemic, and about 30% of patients who were previously considered to have remitted from OCD symptoms, returned to clinically significant levels during the pandemic. However, 34% of the subjects did not experience any change in symptom severity, and 11% reported a decrease. Factors that significantly affected CY-BOCS scores during the pandemic included talking or searching for information about COVID-19 in the social environment, daily preoccupation with COVID-19, duration of OCD diagnosis, and having a family member diagnosed with COVID-19 (Tanir et al., 2020).

Discussion

The current review summarizes recent studies on the longitudinal course of obsessive-compulsive symptoms during the COVID-19 pandemic. To the best of our knowledge, this is the first systematic review addressing the trajectories of obsessive-compulsive symptoms during the pandemic across different samples (general population, community sample, children, and undergraduates) from different countries. Overall, the studies showed that the pandemic had a negative impact on OCD symptoms, with most participants reporting an increase in symptoms, especially contamination and washing-related symptoms. However, not all individuals experienced a decline in symptoms, and some even reported an improvement (Alonso et al., 2021). Both in OCD patients and in community samples, it appears that the severity of symptoms could reflect the pattern of restrictive measures and the trend of the pandemic (number of COVID-19 cases per day), with some improvements occurring after the lifting of restrictions (Hezel et al., 2022; Tandt et al., 2021).

Trajectories of obsessing-compulsive symptoms among OCD patients

Among patients with OCD, most studies suggest that there was a small to moderate increase in OCD symptoms during or after the pandemic (Alonso et al., 2021; Khosravani et al., 2021; Liao et al., 2021; Prestia et al., 2020). However, worsening of symptoms is not always observed during the first months of the pandemic, (Jelinek, Voderholzer, et al., 2021), and some patients even reported an improvement (Alonso et al., 2021). The percentage of patients showing an increase

in symptoms is around 65% in the study of Alonso (Alonso et al., 2021). This result is consistent with other cross-sectional studies by Jelinek, Moritz, et al. (2021; 72%) and Wheaton et al. (2021; 76%). Studies also report a significant increase in symptom severity, quantifiable by an increase of 3 (Alonso et al., 2021), 5 (Prestia et al., 2020), and 9 (Khosravani et al., 2021) points on the Y-BOCS scale. This data is confirmed by a clinically significant increase in symptoms in about 13-31% of subjects, indicating a shift from moderate to severe levels of OCD severity (Alonso et al., 2021; Prestia et al., 2020). Further investigation found that OCD symptoms worsened during the early pandemic and persisted one year later, along with anxious-depressive symptoms (Liao et al., 2021). This result is in line with the study of Lam et al. (2009), who found that the mental impact of severe acute respiratory syndrome (SARS) lasted for up to four years after the initial outbreak.

While assessing the impact of COVID-19 on OCD symptoms in patients who had received combined exposure and response prevention (ERP) therapy, Carmi et al. (2021) found that 96% of patients did not experience a worsening of OCD symptoms at the six-month follow-up. In the revised studies, most of the studies reported that almost all patients were under medication for OCD but only a few of them were undergoing CBT or ERP – the gold standard psychotherapeutic treatment (National Collaborating Centre for Mental Health, 2006; Zaccari et al., 2021) – with percentages ranging from 1.6 to 89.6%, referring both current or past psychotherapy. It is possible that this could explain why, in the study of Liao et al. (2021), the symptoms persisted for the one-year follow-up. These studies suggest that OCD patients need ongoing support and relapse prevention strategies during stressful times, like the COVID-19 pandemic. Therapists should consider the pandemic's effects on all OCD symptom dimensions and adjust treatment plans accordingly, including reducing COVID-related stress (Khosravani et al., 2021). Online consultations and digital psychiatry or psychotherapy can be effective alternatives. Furthermore, optimism and resilience may help protect against the exacerbation of OCD symptoms during the COVID-19 pandemic (Liao et al., 2021; S. Song et al., 2021). While it's possible that being isolated at home helped some OCD patients avoid triggers, the studies suggest that many were able to adjust to the pandemic's drastic changes. This hints that resilience in dealing with traumatic situations may be more prevalent than previously thought (Bonanno, 2008). Resilience is more common than believed, and mindfulness-based training can increase it (Galante et al., 2018).

During the pandemic, 45% of patients – mostly the ones with washing symptoms before the pandemic – had new obsessions and compulsions related to the risk of contamination by SARS-CoV-2 (Alonso et al., 2021). Jelinek, Voderholzer et al. (2021) show that symptoms of OCD are severe in both patients with contamination-related OCD and those without, in line with other studies associating contamination-related OCD with elevated OCD symptoms during the first months of the pandemic (Alonso et al., 2021; Jelinek, Göritz, et al., 2021; Jelinek, Moritz, et al., 2021; Khosravani et al., 2021; Prestia et al., 2020). Follow-up studies conducted before the outbreak have shown that symptom dimensions seem to be remarkably stable over several years in adults with OCD. Changes are more likely to occur in the aggressive, checking, symmetry and order, and contamination and cleaning dimensions (Mataix-Cols et al., 2002; Rufer et al., 2005), while in

children, changes are more likely in the contamination and cleaning dimensions (Delorme et al., 2006). However, it is possible that the observed changes in these studies could be due to treatment effects, whereas the studies conducted during the pandemic controlled for the treatment variable.

The observed increase in symptoms and severity among individuals with OCD may be attributed to pandemic-induced stress (Khosravani et al., 2021; Liao et al., 2021; Tandt et al., 2021). Excessive consumption of news and negative attitudes toward the future could worsen OCD symptoms by increasing responsibility and checking behaviors and prompting a stress reaction related to danger (Ji et al., 2020; Nissen et al., 2020; Shafraan et al., 2020; Yassa et al., 2020). Even though danger and contamination-related concerns are highly prevalent in anxiety and obsessive-compulsive disorders, the perception of threat and danger does not necessarily indicate a specific obsessional response, but rather a more specific perception of self-related vulnerabilities (Aardema, 2020; Aardema & Wong, 2020). In fact, similar mechanisms may exacerbate OCD symptoms in non-clinical and other clinical populations (M. Song, 2020; Taylor et al., 2020). Among the factors that are most associated with a worsening of OC symptoms, we can also observe factors that represent stressful life events in general and, therefore, act as less specific factors. Studies show that in addition to clinical variables, a more significant worsening of symptoms is associated with factors such as low perceived social support (Alonso et al., 2021) and living with a relative during quarantine (Prestia et al., 2020).

Trajectories of obsessing-compulsive symptoms among community samples

Studies assessing OCS in community samples during the pandemic showed a small increase in OCS during the first weeks of the pandemic (Cox & Olatunji, 2021; Grøtte et al., 2022; Jelinek, Göritz, et al., 2021; Loosen et al., 2020). There are fewer participants (6% vs. 16%) reporting an improvement in symptoms compared to patients with OCD (Jelinek, Göritz, et al., 2021).

Overall, in 2020, about one-third of individuals of all ages achieved scores above the clinical OCS cut-off in one or more of the assessments (Grøtte et al., 2022; Jelinek, Göritz, et al., 2021). This data suggests that there is a higher prevalence of subthreshold obsessive-compulsive symptoms in the general population compared to pre-pandemic data. However, there is a lack of comprehensive assessment of incidence rates of OCD in populations prior to the pandemic (Linde et al., 2022). Specifically, studies show high heterogeneity and specificity, with a European study reporting that 9.7% of the general population experiences these symptoms (Fullana et al., 2010), while a Greek study reports subthreshold symptoms at 2.79% (Skapinakis et al., 2019).

When investigating the change in obsessive-compulsive symptoms during the pandemic, from the introduction of lockdowns to the easing of restrictive measures, Jelinek et al. (2021) found that 66% of participants had an asymptomatic trajectory of OCD symptoms, 18% had a continuously symptomatic trajectory, 10% had a delayed-onset trajectory, and 6% had a recovery trajectory. However, the increase of OCS had a small effect (Cox & Olatunji, 2021; Jelinek, Göritz, et al., 2021). Male gender was associated with an increased probability of both continuous symptomatic

and recovery trajectories, while higher education reduced the odds of a recovery trajectory. Similarly, Loosen et al. (2020) showed a rise in OCS throughout the COVID-19 pandemic, even though the peak of the first pandemic wave had passed. Nevertheless, depressive symptoms decreased and anxiety symptoms remained stable over time (Loosen et al., 2020). This result contradicts the claims of Bueno-Notivol et al. (2021) and Santabárbara et al. (2021), who reported an increase in anxious and depressive symptoms during the pandemic. We will need to wait until December 2020, in the later phase of the pandemic, to observe a clinical reduction in OCS (from 27.8% to 24%), but this is only applicable to symptoms related to contamination (Grøtte et al., 2022). However, individuals with elevated washing/contamination symptoms before the pandemic have a 32% increased likelihood of obtaining increased clinical scores in 2020 (Jelinek, Göritz, et al., 2021). It appears that individuals who had contamination-related OCS in the past were more susceptible to experiencing an initial but short-term OCS response to the pandemic, as indicated by the presence of such odds exclusively in the only recovery trajectory. Although trajectories varied, it appears that experiential avoidance was a significant predictor for negative outcomes (Jelinek, Göritz, et al., 2021).

In the undergraduate sample, obsessive-compulsive washing symptoms were found to have increased compared to before the pandemic. Furthermore, contamination fear was identified as a significant predictor of safety behavior usage in response to COVID-19 (Knowles & Olatunji, 2021). Our initial hypotheses have been confirmed in this population. The observed increase in symptoms is likely due to the pandemic, as longitudinal studies suggest that various dimensions of obsessive-compulsive symptoms remain stable over time in undergraduates (Fullana et al., 2007).

These results were in line with other studies enrolling young people (Cunning & Hodes, 2022) and children (Tanir et al., 2020). While some changes in behavior may be due to public health recommendations, certain safety behaviors, such as seeking reassurance from others and searching for information online, were not advised by officials and may be driven by anxiety, suggesting that current anxiety may prompt individuals to engage in safety behaviors as a way to manage their anxiety (Knowles & Olatunji, 2021).

Limitations

Most studies did not recruit a control group, which led to a lack of a basis for comparison. The absence of a control group may lead to incorrect conclusions and limit external validity. Including a control group in the study design is important to ensure robust results that can be generalized. Moreover, not all studies indicate the percentage of patients or individuals under pharmacological or psychotherapeutic treatment, which is a crucial factor for the improvement of OCD symptoms. This can be a limitation because treatment is primarily responsible for reducing symptoms. Therefore, also the lack of this data in some studies can limit the generalizability of the results. Another limitation concerns the use of self-report tools, particularly in studies investigating OCD symptoms during the pandemic in the general population. The lack of a diagnostic tool prevents establishing whether the increase in symptoms in this population was sufficient to meet the criteria for an OCD diagnosis.

Lastly, because of ongoing social distancing

protocols, data was mostly collected through self-report online-based questionnaires. However, this could introduce a self-selection bias. Additionally, we did not verify whether cultural and educational backgrounds were properly evaluated among studies. It's possible that the presentation of obsessive-compulsive symptoms might be sensitive to particular religious and/or cultural beliefs and practices (American Psychiatric Association, 2013).

Conclusions

The pandemic had a negative impact on OCD symptoms, with most participants reporting an increase in symptoms, especially contamination and washing-related symptoms, which were found to be the most common symptoms both before and during the pandemic. The severity of symptoms was observed to follow the pattern of restriction measures and the number of COVID-19 cases. Although some improvements were seen after the lifting of restrictions, the symptoms persisted in some cases. These results suggest that several factors, including the baseline severity of OCD symptoms, anxious-depressive symptoms during the pandemic, experiential avoidance, stress response to COVID-19, living with a relative during quarantine, and lower perceived social support, may contribute to a more significant deterioration of OCD symptoms during the pandemic. However, not all individuals experienced a decline in symptoms, and some even reported an improvement.

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