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First vs second wave of COVID-19 pandemic in patients with obsessive compulsive disorder: A multicentre report from tertiary clinics in Northern Italy

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ABSTRACT

Introduction: Among patients with mental illness, those with obsessive compulsive disorder (OCD) showed a significant clinical worsening by the COVID-19 pandemic. The effects of the COVID-19 pandemic on OCD have been shown to worsen symptoms severity, with serious clinical consequences. However, the persistence of COVID-19 pandemic in OCD patients has been poorly investigated. The purpose of the present study was to assess the impact of the second wave of the COVID-19 pandemic in a sample of OCD patients and to compare the results with those obtained during the first wave on the same OCD sample.

Methods: 116 OCD outpatients attending three OCD tertiary clinics in Northern Italy and previously included in a report on the impact of COVID-19, were followed-up in order to investigate sociodemographic and clinical features. Appropriate statistical analyses for categorical and continuous variables were conducted.

Results: The 43 OCD patients with a clinical worsening (OW) reported a significant development of new obsessions/compulsions and the recurrence of past OC symptoms, higher rates of psychiatric comorbidities and sleep disturbances compared to patients without symptom worsening. Moreover, an increase in avoidance behaviors, suicidal ideation, Internet checking for reassurance, and job difficulties emerged in OW patients. Also, lower rates of pharmacological stability, and higher rates of therapy adjustment were observed. In terms of sex differences, males showed higher rates of past obsessions occurrence, while females showed a rise in Internet checking behaviors. When comparing OW patients between the first and the second wave, the latter showed significantly higher rates of past obsession occurrence and lower rates of pharmacological stability. Moreover, patients with OW showed a significantly older age during the second wave.

Conclusion: The persistence of the COVID-19 pandemic showed a globally impaired clinical picture in the analyzed OCD sample. A further worsening between the two waves timepoints emerged, mainly involving older patients with OCD. The concordance between our results and those existing in literature highlights the importance of an accurate long-term monitoring of OCD patients in light of COVID-19 pandemic persistence.

1. Introduction

In March 2020, the COVID-19 outbreak was declared a pandemic by the World Health Organization (WHO, 2020). More than one year and

half has now passed since the first cases of SARS-Cov2 were diagnosed in China. Starting from the end of July 2020, after an initial and apparent reduction in contagions, a second wave of infections appeared in the European Union, with variable severity levels in different areas. Indeed,

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after a decrease during summer 2020, the number of affected patients increased again, suggesting the origin of a second outbreak wave (Bontempi, 2021). The second wave of the COVID-19 infection, and the quarantine itself, led the general population to further imbalance, exhausting the energies linked to a first phase of reaction and resilience, with potentially wide-ranging and long lasting negative psychological effects (Brooks et al., 2020). These effects were even more severe and pervasive in people affected by psychiatric disorders (Fiorillo et al., 2020). Some authors assumed that the origin of these effects might be searched in social isolation, worries about spreading the contagion, uncertain information consumed on social networks and in the general perception of risk and concern (Zhang et al., 2021). Moreover, the health emergency reflected its impact on the efficiency of the public Mental Health Departments, as the access to various care services became more difficult, resulting in irregular outpatient visits for clinical assessment and treatment management (Stefana et al., 2020). The second wave has led to further distress and worsening also in patients with obsessive-compulsive disorder (OCD). According to Fineberg and colleagues (Fineberg et al., 2020), among patients with mental illness, those with OCD have been reported as the subjects whose worsening is most affected by the COVID-19 epidemic. Hence, the current worldwide outbreak and the consequent high fear of contamination have represented a precipitating factor for the potential increase of obsessions and compulsions, also due to the reinforcement of common cleansing habits in patients with OCD (Sulaimani and Bagadood, 2020). Indeed, consequently to the high risk of contamination, better hygiene habits have been encouraged by governments and media, generating plausible justifications for intensifying compulsive cleaning rituals, usually considered oversized or irrational, and now legitimate and socially accepted (Ornell et al., 2021). Therefore, it is reasonable to speculate that OCD patients in remission would be at higher risk of relapse, and that patients with subclinical symptoms may manifest stronger symptoms, being consequently diagnosed with this disorder. On the other hand, patients with OCD, who in general have more rigid personality characteristics, may have better adapted to some of the COVID-19 related restrictions in the long-term. Furthermore, for patients with OCD and avoidant features, the presence of restrictions would rather be a form of facilitation for their pathological behaviours.

These hypotheses have been initially supported by recent studies on the impact of COVID-19 on OCD patients, mostly resulting in an exacerbation of symptoms, especially those correlated with contamination/washing and responsibility for harm features (Zaccari et al., 2021; Wheaton et al., 2021; Kaveladze et al., 2021).

The purpose of the present study was to evaluate the impact of the second wave of the COVID-19 pandemic through a brief cross-sectional interview, comparing the results with those obtained during the first wave of the COVID-19 pandemic in the same multicenter sample of OCD outpatients attending three OCD tertiary clinics in Northern Italy. We hypothesized that OCD outpatients may have experienced a further worsening of symptoms related to OCD on the basis of specific socio-demographic and clinical variables.

2. Methods

Patients affected by OCD of either gender and any age, attending three different OCD tertiary clinics based respectively in Milan, Lombardia region (ASST Fatebenefratelli Sacco, Ospedale Sacco-Polo Universitario), in Turin, Piemonte region (AOU San Luigi Gonzaga) and in Trieste, Friuli Venezia Giulia region (Azienda Sanitaria Universitaria Giuliano-Isontina), previously included in a report aimed at describing the impact of the first COVID-19 wave within a sample of Italian patients affected by OCD (Benatti et al., 2020a,b,c), were interviewed in person or by telephone. Data collection took place between January and March 2021, and the interviews referred to the period between November 2020 and January 2021 (Italian second wave of pandemic). Since most of the interviews were conducted by phone due to COVID-19 restrictions,

assessed patients provided oral consent to participate in the study. The psychiatric interviews on the clinical status of each patient were performed by the same psychiatrists who conducted interviews during the first study (Benatti et al., 2020a,b,c), who were familiar with the patients' disease history and agree with the definitions of main variables investigated during the assessment.

Selected analyzed variables included: gender, age, presence and type of psychiatric comorbidity, obsessions and compulsions main phenotypes, OCD worsening (OW - defined as a clinical worsening assessed during the clinical interview and referred to the second wave of pandemic), onset of new obsessions or compulsions, past obsessions or compulsions recurrence (i.e. obsessions/compulsions developed during the second COVID-19 wave and presenting a content already experienced by the patient sometime during the pre-pandemic period), presence of features of inflated responsibility, tic development, pharmacological stability defined as no changes in the therapeutic regimens in the three months preceding the second wave of the pandemics, need for pharmacological adjustment defined as a reported need to change in the therapeutic regimen in the last three months (i.e. for a recently developed sleep disturbance), emergence of suicidal ideation, increased Internet checking for reassurance, increased family accommodation, increased avoidance behaviors, new sleep disturbances onset, working status (i.e. working/smartworking, being smartworking intended as working remotely for the whole work week), and presence of job difficulties. The OCD conditions were assessed analyzing specific features such as new symptoms onset, the need to increase or adjust the medications and referral for a new therapy.

Statistical analyses were performed with Pearson's chi-squared test for categorical variables and ANOVA test for continuous variables in order to compare OCD patients with or without OW. Socio-demographic and clinical features of the OW group were subsequently compared between genders. In addition, paired sample *t*-test and McNemar's test were used to compare present data with those obtained during the first wave of COVID-19 on the same sample (Benatti et al., 2020a,b,c). All analyses were performed using Statistical Package for the Social Sciences (SPSS) 26.0 software for Windows (SPSS Inc, Chicago, IL, USA). Statistical significance was set at $p < 0.05$.

3. Results

The sample included 116 OCD outpatients, distributed as follows: 45 patients from ASST Fatebenefratelli Sacco, Milano (38.8%), 52 patients from AOU San Luigi Gonzaga, Torino (44.8%), 19 patients from Azienda Sanitaria Universitaria Giuliano-Isontina, Trieste (16.4%). Main socio-demographic and clinical variables of the samples are listed in Tables 1 and 2. No significant differences in terms of age, gender, and OCD worsening distribution were found between the three centers, therefore they could be considered comparable.

The whole sample was then divided into two subgroups: patients with vs without a clinical OW. Overall, more than one third of the whole sample reported a clinical OW (37.1% vs 62.9%). The two subgroups showed comparable gender frequencies.

A significantly higher age at the time of the assessment emerged for patients with OW (OW) compared to patients without OW (44.58 ± 13.43 years vs 36.95 ± 12.79 years; $p < 0.005$). No significant differences in terms of obsessive phenotypes emerged between groups, being hygiene/contamination and multiple phenotypes the most frequent in both subgroups. Nevertheless, the development of new obsessions (39.5% vs 4.1%; $p < 0.001$) and the recurrence of past obsessions (60.5% vs 4.1%; $p < 0.001$) were significantly higher in the OW group compared to patients without OW (Fig. 1). The most frequent compulsion phenotypes were washing/cleaning and checking in both subgroups, but no significant differences emerged. However, OW patients showed a significant increase in both new (34.9% vs 1.4%; $p < 0.001$) and past compulsions (51.2% vs 2.7%; $p < 0.001$) compared to patients without OW. Moreover, OW patients experienced an increase in

Table 1
Socio-demographic and clinical variables of OCD patients across centers.

	Ospedale Sacco-Polo Universitario, Milano (Lombardia)	AOU San Luigi Gonzaga, Torino (Piemonte)	ASU GI Trieste (Friuli Venezia Giulia)	Total sample
N (%)	45 (38.8%)	52 (44.8%)	19 (16.4%)	116
Sex (M:F)	23(51.1%); 22(48.9%)	30(57.7%); 22(42.3%)	10 (52.6%); 9(47.4%)	63(54.3%); 53 (45.7%)
Mean Age	40.82 ± 14.11	39.96 ± 13.21	36.79 ± 12.99	39.78 ± 12.99
OCD worsening	20(44%)	16(30.8%)	7(36.8%)	43(37.1%)

Notes: Values for categorical and continuous variables are expressed in percentages and mean ± SD, respectively.

Table 2
Comparison of socio-demographic and clinical variables of OCD patients with vs without clinical worsening during the second wave of COVID-19.

	Patients with OW	Patients without OW
N (%)	43(37.1%)	73(62.9%)
Sex (M:F)	19(44.2%); 24 (55.8%)	44(60.3%); 29 (39.7%)
Mean age (years)	44.58 ± 13.43*	36.95 ± 12.79
Pharmacological Stability	15(34.9%)**	60(82.2%)
Need for Pharmacological Adjustment	32(74.4%)**	7(9.6%)
Psychiatric Comorbidity	32(74.4%)^	39(53.4%)
New obsessions development	17(39.5%)**	3(4.1%)
Past obsessions occurrence	26(60.5%)**	3(4.1%)
New Compulsions development	15(34.9%)**	1(1.4%)
Past Compulsions occurrence	22(51.2%)**	2(2.7%)
Suicidal ideation	5(11.6%)^	2(2.7%)
Internet Checking	23(53.5%)	26(35.6%)
Family Accommodation increase	27(62.8%)**	11(15.1%)
Avoidance behaviors increase	35(81.4%)**	12(16.4%)
Sleep disturbances	26(60.5%)**	11(15.1%)
Working	22(51.2%)	46(63%)
Smartworking	6(14%)*	30(41.1%)
Job difficulties	16(37.2%)*	10(13.7%)

Notes: Values for categorical and continuous variables are expressed in percentages and mean ± SD, respectively. OW: OCD Worsening. Boldface indicates significant differences between subgroups; **p < 0.001 *p < 0.005 ^p < 0.05.

avoidance behaviors (81.4% vs 16.4%; p < 0.001). No significant differences in terms of inflated responsibility emerged. Regarding pharmacological treatment, OW patients showed significantly lower rates of pharmacological stability in the last 3 months (34.9% vs 82.2%; p < 0.001) and they reported higher need for pharmacological therapy

adjustment compared to patients without OW (74.4% vs 9.6%; p < 0.001). Moreover, a significantly higher rate of psychiatric comorbidities emerged in the OW group (74.4% vs 53.4%; p < 0.05), showing significantly higher rates of mood disorders and somatic symptoms (34.9% vs 17.8%; 11.6% vs 0%; p < 0.05, respectively).

OW vs without OW group showed a globally more severe clinical picture; in particular, they showed significantly higher rates of sleep disturbances (60.5% vs 15.1%; p < 0.001) and family accommodation (62.8% vs 15.1%; p < 0.001). Moreover, higher rates of suicidal ideation (11.6% vs 2.3%; p = 0.06) and Internet checking for reassurance (53.5% vs 35.6%; p = 0.06) emerged in the OW group, though not reaching statistical significance.

As regards job status, 58.6% of OW patients were working at the time of the interview with no significant differences when compared to the other group. However, patients with vs without OW reported significantly lower rates of smart working (14% vs 41.1%; p < 0.005), showing higher rates of job difficulties (37.2% vs 13.7%; p < 0.005).

A further analysis was run subdividing the whole sample in two OW subgroups based on gender (55.8% females, mean age 47.17 ± 12.65 years and 44.2% males, mean age 41.32 ± 14.00 years). Comparison of socio-demographic and clinical variables between female and male OW subsamples are provided in Table 3.

Male with OW showed higher rates of past obsessions occurrence (78.9% vs 45.8%; p < 0.05, see Fig. 2) compared to females with OW. Moreover, higher rates of Internet checking for reassurance emerged in females with OW (66.7% vs 36.8%; p = 0.050). No differences were found regarding other clinical features between subgroups.

Finally, a comparison between present data and those obtained during the first wave of the COVID-19 pandemic was conducted. Numerically, over the first wave 44 out of 123 patients (35.8%) showed OW vs 37.1% in the second wave, with no statistically significant difference. A first comparison between patients who maintained OCD

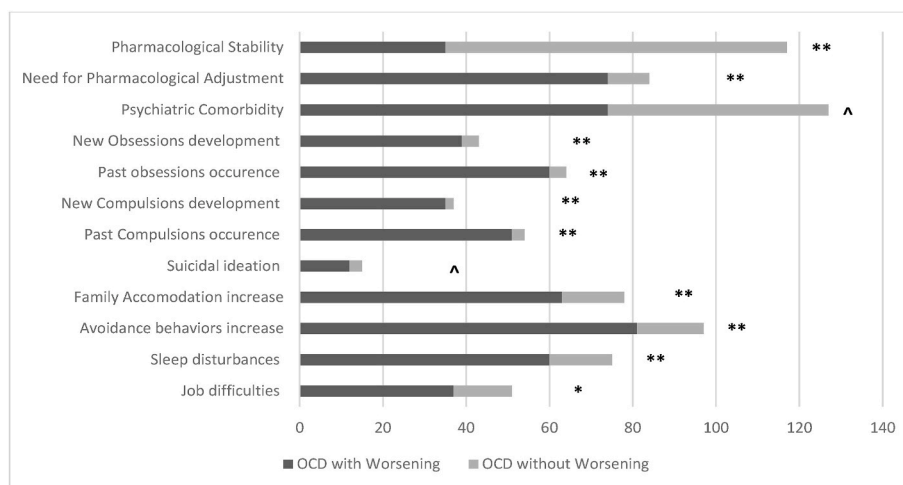


Fig. 1. Comparison of clinical features between OCD patients with vs without clinical worsening.

**p < 0.005 *p < 0.005 ^p < 0.05.

Table 3

Comparison of socio-demographic and clinical variables between male and female OW patients.

	Males	Females
N (%)	19(44.2%)	24(55.8%)
Mean age (years)	41.32 ± 14.00	47.17 ± 12.65
Pharmacological Stability	7(36.8%)	8(33.3%)
Need for Pharmacological Adjustment	15(78.9%)	17(70.8%)
Psychiatric Comorbidity	15(78.9%)	17(70.8%)
New obsessions development	6 (31.6%)	11 (45.8%)
Past obsessions occurrence	15(78.9%)[^]	11(45.8%)
New Compulsions development	5(26.3%)	10(41.7%)
Past Compulsions occurrence	12(63.2%)	10(41.7%)
Suicidal ideation	3(15.8%)	2(8.3%)
Internet Checking	7(36.8%)[^]	16(66.7%)
Family Accommodation increase	13(68.4%)	14(58.3%)
Avoidance behaviors increase	15(78.9%)	20(83.3%)
Sleep disturbances	12(63.2%)	14(58.3%)
Working	11(57.9%)	11(45.8%)
Smartworking	2(10.5%)	4(16.7%)
Job difficulties	7(36.8%)	9(37.5%)

Notes: Values for categorical and continuous variables are expressed in percentages and mean ± SD, respectively. OW: OCD Worsening. Boldface indicates significant differences between subgroups; **p < 0.001 *p < 0.005 [^]p < 0.05.

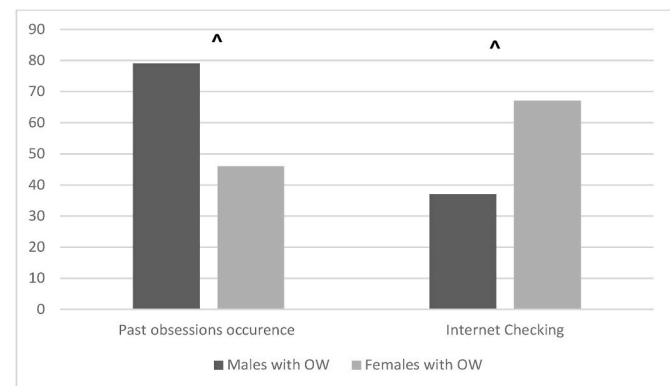


Fig. 2. Comparison of clinical features between male and female OCD patients with clinical worsening.

**p < 0.005 *p < 0.005 [^]p < 0.05.

worsening during both COVID-19 waves was performed, showing no significant differences between groups. A further analysis compared OW patients during the first wave only (OW1) vs patients with a OW during the second wave only (OW2). Several significant differences emerged. Concerning OW2 patients, the sample showed a significantly older age at the time of the assessment (43.21 ± 13.70 vs 34.41 ± 11.44; p < 0.05) compared to OW1 patients. Moreover, significantly higher rates of past obsessions occurrence (73.9% vs 45.8%; p < 0.05) and lower rates of pharmacological stability in the last three months (26.1% vs 75.0%; p < 0.001) emerged in the OW2 group compared to OW1 patients. No other significant differences were found between samples (see Table 4; Fig. 3).

4. Discussion

The purpose of the present study was to assess the clinical status of a multicentric sample of OCD outpatients during the second wave of COVID-19 pandemics, comparing the data obtained with those emerging from the first wave on the same outpatients sample.

To the best of our knowledge, this is the first study on OCD and COVID-19 based on two assessment timepoints examining the first and the second waves of pandemics in the same sample. Moreover, we aimed to compare clinical features of patients with vs without OW for the current COVID-19 s wave along with a comparison with the first COVID-

Table 4

Comparison of patients showing a worsening during the first wave only (OW1) vs patients with a OW during the second wave only (OW2).

	OW1 n = 24	OW2 n = 23
Sex (M:F)	15(62.5.5%); 9 (37.5%)	10(43.5%); 13 (56.5%)
Mean age (years)	34.41 ± 11.44[*]	43.21 ± 13.70
Pharmacological Stability	18(75%)**	6(26.1%)
Need for Pharmacological Adjustment	16(66.7%)	18(78.3%)
Psychiatric Comorbidity	12(50%)	15(65.2%)
New obsessions development	8(33.3%)	7(30.4%)
Past obsessions occurrence	11(45.8%)[^]	17(73.9%)
New Compulsions development	17(29.2%)	16(30.4%)
Past Compulsions occurrence	14(41.7%)	8(65.2%)
Suicidal ideation	2(8.3%)	1(4.3%)
Internet Checking	11(45.8%)	13(56.5%)
Family Accommodation increase	19(79.2%)	14(60.9%)
Avoidance behaviors increase	14(58.3%)	17(73.9%)
Sleep disturbances	14(58.3%)	15(65.2%)
Working	8(33.3%)	13(56.5%)
Job difficulties	7(29.2%)	8(34.8%)

Notes: Values for categorical and continuous variables are expressed in percentages and mean ± SD, respectively. OW1: OCD worsening during first wave only; OW2: OCD worsening during second wave only. Boldface indicates significant differences between subgroups. **p < 0.001 *p < 0.005 [^]p < 0.05.

19 wave.

The first relevant result showed a OW incidence of more than one third for the whole sample. According to these findings, several studies on COVID-19 have reported a relapse of OCD symptoms, highlighting the importance of careful monitoring of these patients, in order to prevent OW. Wheaton and colleagues investigated through an online survey how COVID-19 affected the OCD community, recruiting from OCD-specific forums and websites, and finding a self-reported clinical worsening in 76.2% of respondents (Wheaton et al., 2021). Our sample showed a lower worsening rate, respectively 35.8% in the first pandemic wave and 37.1% in the second wave; the different setting and recruitment methods may explain the differences with the study of Wheaton and colleagues.

When the whole sample was divided into two subgroups (patients with vs without OW), several significant differences emerged in terms of clinical features. OW patients exhibited higher rates of new obsessions and/or compulsions or recurrence of past obsessions and/or compulsions when compared to the subgroup without OW. The most frequent obsessive phenotypes were hygiene/contamination and multiple phenotypes in both subgroups. Regarding compulsions, the most frequent phenotypes were washing/cleaning and multiple phenotypes, without significant differences between those two subgroups. A possible explanation for the increase in obsessions and compulsions may lie on the increased cleaning and hygiene recommendations (Fineberg et al., 2020). A recent research conducted on both healthy controls and OCD patients identified contamination and washing symptoms, together with pre-pandemic depression and higher scores of Yale-Brown Obsessive and Compulsive Scale (Y-BOCS), as predictors of increased risk of OW (Alonso et al., 2021).

Patients with OW showed significantly increased avoidance behaviors, family accommodation, job difficulties, sleep disturbances, and psychiatric comorbidities than patients without OW. Previously, the increase in family accommodation has been directly correlated with OCD severity and higher functional impairment (Albert et al., 2017). Hence, this result may be attributed both to the increased OCD severity in OW group and the globally worsened clinical picture in our sample.

The same clinical features could have affected patients' professional life. In fact, worsened patients reported greater frequency of job difficulties and lower rates of smart working. According to previous studies, OCD showed a high impact on patients' quality of life and work efficiency (Bobes et al., 2001; Hollander et al., 2010). The further

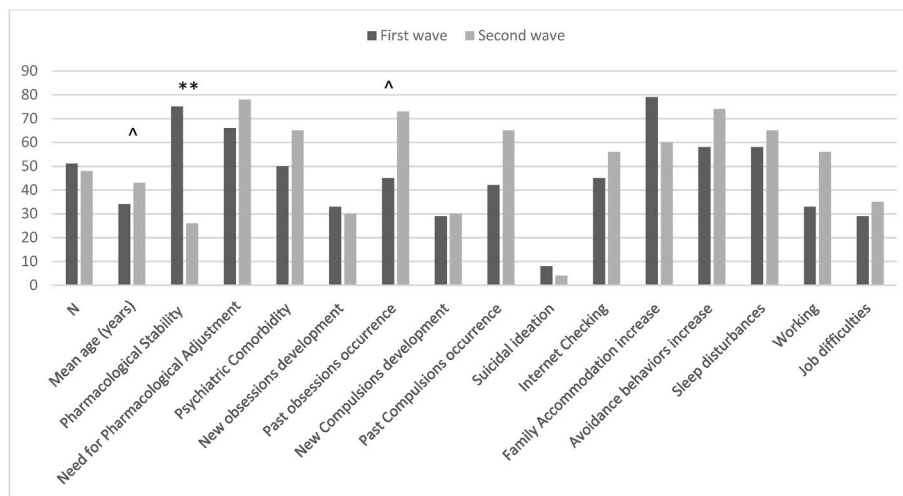


Fig. 3. Comparison of OW patients between first and second waves of COVID-19. ** $p < 0.005$ * $p < 0.005$ ^ $p < 0.05$.

worsening of job difficulties during COVID-19 may be due to the potential risk of contamination in the workplace perceived by OCD patients or to the fear of contagion on the way to reach the workplace or in sharing spaces with colleagues.

As regards sleep disturbances, the current pandemic has been linked to worsened sleep patterns both in the general population and in patients affected by psychiatric diseases. The main features related to a globally impaired sleep quality were severity of change in routines, family stress and depressive symptoms (Petrov et al., 2021). Increased smoking habits during the COVID-19 isolation and quarantine have also been linked to poor sleep quality, female sex and mental health issues (Badellino et al., 2020). In this respect a previous report by the ICOS group highlighted increasing smoking habits in a large OCD sample compared to previous study, mainly affecting female subjects (Dell'Osso et al., 2014). Indeed, we did not investigate directly smoking routines in our sample, but their potential role in worsened sleep quality could be hypothesized.

OW patients in the second wave showed also higher rates of psychiatric comorbidities, mainly represented by mood disorders and somatic symptoms. Current literature agrees upon the major role played by depressive symptoms as one of the most common mental health diseases related to the current pandemic, both in psychiatric patients and in the general population (Hao et al., 2020; Shah et al., 2021). As regards the higher prevalence of somatic symptoms in the OW sample, this phenomenon could be directly linked to the higher rates of contamination and checking obsessions.

A higher increase in suicidal ideation and Internet checking for reassurance was observed in patients with OW, despite not reaching a statistical significance. Suicidal ideation and attempts are not infrequent in patients with OCD and Obsessive-Compulsive Related Disorders (Benatti et al., 2020a,b,c; Benatti et al., 2020; Pellegrini et al., 2020, 2021). The increase in suicidal ideation in the OW subgroup could be the result of the loneliness and socio-relational isolation imposed by the lockdown (Banerjee, 2020). Moreover, both responsibility for harm or unacceptable obsessive thoughts and fear or stress related to COVID-19 may have influenced suicidal ideation (Khosravani et al., 2021). Indeed, there is evidence that patients with predominant contamination obsessions and compulsive cleaning, as in our sample, exhibited higher rates of suicidal ideation than patients presenting with other predominant obsessive-compulsive themes (Chaudhary et al., 2016). Several other risk factors might be associated with the increased risk for suicidality including female sex, comorbid depression, and personality disorders (Breet et al., 2019). Finally, Alonso and co-authors observed that OCD patients were more likely to develop suicidal ideation than healthy

controls during the COVID-19 era (Alonso et al., 2021).

Regarding excessive Internet checking of news and information related to COVID-19, a relationship between this behavior and concerns of responsibility for infecting others has been recently demonstrated (Shafraan et al., 2020). Higher levels of anxiety associated with a pattern of excessive or repetitive searching, might characterize a specific behaviour named Cyberchondria (CYB). In this regard, a recent study by Vismara et al. showed higher Cyberchondria Severity Scale (CSS) total scores in patients with OCD or anxiety disorders, compared to healthy controls. Higher CSS scores in OCD patients might be a consequence of somatic obsessions and checking compulsions, even though this cannot be the only determinant (Vismara et al., 2021).

Lastly, patients with OW had less pharmacological stability and were more susceptible to the need of therapy adjustment compared to patients without OW. These results may be related *in primis* to a worsened OCD clinical picture and, secondly, to increased comorbidity rates and sleep disturbances. A lower compliance to pharmacological prescriptions may have also played a role. In this perspective, further assessment on patients' treatment adherence, focusing also on correct dosage intake, should be performed during follow-up visits.

When the OW subgroups were further divided into two subgroups based on gender, significant differences were observed. Male patients showed higher rates of past obsessions recurrence, with violence/harm and multiple phenotypes being the most common. On the other hand, females with OW were more likely to show washing/contamination phenotypes. Furthermore, females were significantly more prone to Internet checking for reassurance than males. Previous research revealed an association between contamination and washing symptoms and cyberchondria. According to the prevalence of hygiene/contamination phenotype in females and the physical focus of certain OCD symptoms, cyberchondria could be related to OCD (Norr et al., 2015).

When the data obtained on the same sample during the second and first wave were compared, some of the results were superimposable. First, the incidence of OW was similar between the two assessment timepoints. Both during the first and the second waves of pandemic, avoidance behaviors, family accommodation, job difficulties, sleep disturbances, and psychiatric comorbidities were higher in patients with OW. Moreover, the increase in suicidal ideation and Internet checking for reassurance was also comparable in the two assessments: in both cases there was an increase in these behaviors, despite not reaching a statistical significance.

Nonetheless, some other results were significantly different between second and first waves. Against expectations, considering the results emerged during the first wave, the rates of incidence of past obsessions

and/or compulsions in patients with OW were higher during the second wave and the rates of pharmacological stability were lower, assuming a further worsening between the two assessment timepoints. More specifically, OW2 patients showed higher rates of past obsessions and lower rates of pharmacological stability compared to OW1 patients. These results could be linked to a global energy exhaustion after a first phase of reaction and resilience and a consequent lower control on obsessions, leading to a scarce pharmacological stability (Brooks et al., 2020). On the contrary, a lowered pharmacological stability due to a worse treatment adherence could have played a primary role during the second wave, leading to an impaired clinical picture.

Unlike what emerged during the first wave, patients with OW showed an older age when compared with patients without OW and this result was confirmed comparing OW2 with OW1 patients. To the best of our knowledge, literature currently lacks similar COVID-19 waves comparison data. In our opinion, this result might be explained considering that young patients have easier access to health care services, especially when these are delivered through new contexts (i.e. telemedicine, online prescriptions). Moreover, access to health care services in older people may have been limited by general advice regarding interpersonal distances and avoidance of crowded places, particularly recommended for the elderly.

The aforementioned results should be interpreted in light of the following limitations: first, the limited sample size and the tertiary setting. Second, the study was based on clinical interviews, without specific psychometric assessment and a pre-pandemic baseline comparator on patients' relapse/recurrence data. Moreover, OCD severity and other variables were obtained retrospectively, being susceptible to recall bias. It has to be mentioned that the statistical analyses were unadjusted for multiple testing, raising a potential multiplicity problem. However, the false discovery proportion was partially limited by p-values <0.005 for most of the analyses. Lastly, in the comparison between genders, the survey did not capture non-binary genders and we did not account that transgender individuals may have chosen a male or female gender response that is the opposite of their birth-assigned sex. Further research might benefit from a wider sample size and specific psychometric measures.

CRedit author statement

Beatrice Benatti: conceptualization, formal analysis, writing original draft, reviewing, editing. Umberto Albert: conceptualization, reviewing, supervision. Giuseppe Maina: conceptualization, reviewing, supervision. Laura Celebre: data curation, writing original draft. Nicolaja Gironi: formal analysis, writing original draft, reviewing, editing. Stefano Bramante: data curation, writing original draft. Sylvia Rigardetto: data curation, writing original draft. Caterina Viganò: conceptualization, reviewing, supervision. Bernardo Dell'Osso: conceptualization, reviewing, editing, supervision.

Declaration of competing interest

Authors have no conflicts of interest to declare in relation to the content of the present article.

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