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REVIEW ARTICLE

# Exploring the clinical features of postpartum obsessive-compulsive disorder- a systematic review

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**Abstract**
*Background and objectives:* The postpartum period appears to be a vulnerable period for the development of obsessive-compulsive disorder in parents; yet it is often overlooked. This work aims to synthesize clinical data available on Postpartum Obsessive-Compulsive Disorder (PP-OCD) and to highlight its psychopathological significance and implications in clinical practice using a systematic approach.
*Methods:* We conducted a systematic research according to PRISMA guidelines in three databases — MEDLINE, Scopus and Web of Science. The references obtained were then screened and scanned for eligibility by two investigators. Risk of bias was assessed for each study with NIH tools.
*Results:* The found prevalence of postpartum OCD ranged from 2.43 %-9 % among women and 1,7 % among men. Other epidemiological and clinical data were reviewed including particular symptomatology, characterized by a swift onset of primarily aggressive and contamination obsessions, as well as situational avoidance.
*Conclusion:* It is a clinical entity frequently underdiagnosed, which perinatal health practitioners should be familiar with, as it can interfere with parent-infant bonding if left untreated. Mothers with an history of depression, anxiety, insomnia, obsessive compulsive, and avoidant personality disorder or presenting inappropriate interpretation of infant related intrusive thoughts are particularly at risk of developing OCD in the postpartum period. These mothers should be informed about the nature of their infant centered obsessions and could be a target of prevention programs.


## Introduction

Postpartum period has been a topic of significant research in the past decades concerning its vulnerability and increased risk of developing psychiatric disorders such as postpartum depression and postpartum psychosis.[1-3] On the other end,

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postpartum anxiety disorders, and obsessive-compulsive disorder (OCD), are often overlooked and neglected in clinical practice,[4,5] despite recent research describing postpartum as a vulnerable period for the development of OCD symptoms.[6-9] To be sure, several studies have demonstrated how reproductive cycle events could be a significant factor in the development or worsening of OCD symptoms. Patients who experienced OCD onset or exacerbation in the postpartum period also reported more frequently premenstrual OCD worsening.[10-12]

Obsessive-compulsive disorder (OCD) is a common psychiatric illness with an estimated worldwide lifetime prevalence of 1.3 %[13] and is defined by the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) as the existence of obsessions, compulsions, or both, that are time consuming, cause a significant amount of distress, or undermine social, occupational, or other critical areas of functioning.[14]

While DSM-5 acknowledges in the text that "onset or exacerbation of OCD, as well as symptoms that can interfere with the mother—infant relationship (for example, aggressive obsessions leading to avoidance of the infant) have been reported in the postpartum period", the use of the 'with peripartum onset' specifier is restricted to characterize episodes of major depressive disorder and bipolar disorder for now.

It has been suggested that, not only is the postpartum period a period of increased risk for the development of OCD, but that postpartum OCD (PP-OCD) presents distinct clinical symptomatology characterized by unwanted thoughts of infant harm, with several reports discussing the potential of establishing postpartum OCD as a specifier.[4,15-17]

Identifying the presence of clinically significant obsessive-compulsive symptoms is especially important, as it often goes undiagnosed or misdiagnosed, either due to lack of awareness and routine screening and/or due to feelings of shame or guilt experienced by the parent.

Untreated OCD in a caregiver can have complex and harmful implications on the family`s physical and mental well being[11,15], as it can significantly affect the caregiver quality of life and the provision of care, interfering with mother-infant bonding.[4,18,19] To be sure, obsessions and compulsions experienced are frequently time-consuming and interfere with caregiving responsibilities, as described in a case series of 7 women experiencing PP-OCD[20], in which 71 % of the sample reported dysfunctional mother-child behavior with cases of avoidance and also overinvolvement from the mothers. Avoidance of the infant can occur when parents are apprehensive of acting upon thoughts of hurting their infants.[21,22] These aggressive obsessions are naturally very distressing to parents, who often experience shame and fear regarding the meaning of their intrusive thoughts. Misdiagnosing postpartum OCD may lead clinicians to pursue inappropriate interventions that do not effectively address the underlying problem as conducting inappropriately detailed risk assessments and referring the case to protective agencies, resulting in the delayed access to more accurate treatment and extending the parent's suffering, while also inadvertently fostering the parent`s most terrible concerns regarding the significance of their intrusive thoughts.[5,23]

The primary goal of this review is to summarize clinical evidence available on postpartum OCD, to discuss its epidemiology, etiology, clinical features. comorbidities and course in both female and male patients, and hopefully aid perinatal health practitioners in the recognition of this misunderstood clinical entity. It also aims to discuss consequences of mis- or underdiagnosis and briefly explain possible treatment options.

## Methods

This systematic review was conducted following the PRISMA statement[24] guidelines.

### Research

The data in this study were retrieved from three databases — MEDLINE, Scopus and Web of Science. The date of the last search was 08—09—2022. The query used in all databases was "postpartum AND Obsessive Compulsive Disorder" No filters or limits were used.

### Eligibility criteria and study selection

The references obtained were firstly screened independently by two investigators (IF+MB) based on their title and abstract. Narrative reviews, case reports, observational studies, and systematic reviews with or without meta-analysis were eligible for screening if the title or abstract mentioned a) postpartum obsessive-compulsive disorder or b) obsessive-compulsive symptomatology with onset in the postpartum period. All these records were screened regardless of publication date. Additional references were obtained by scrutinizing the bibliography of relevant articles.

The present review included publications selected based on the following criteria:[1] journal articles or book chapters published in English;[2] presence of OCD or OCD symptomatology, established by means of a diagnostic interview, with or without co-occurring mental disorders, but exclusive of co-occurring schizophrenia or other psychotic disorders;[3] reporting data on the epidemiological, etiological, pathophysiological, clinical or prognostic aspects of PP-OCD. Articles were excluded for the following reasons:[1] absence of OCD or OCS or a lack of clarity about the diagnosis of OCD;[2] failure to specify whether obsessions and compulsions had onset in the postpartum period. Dilemmas about the selection were resolved in consultation with another author (RM) who also checked the criteria for selection.

### Data collection process and items

Data were extracted using a standardized data extraction form, and information was collected regarding the authors and publication year, country, sample size, study population (and findings about the type and frequency of obsessions and compulsions.

### Quality of included studies

Regarding quality of the included studies, risk of bias was assessed independently by both investigators for each study at study level using the Quality Assessment Tools from the National Institutes of Health for observational cohort and cross-sectional studies[25], case-control studies[26], systematic

reviews and meta-analyses[27] and case series[28] (four tools). The NHI NHLBI tools are 8 to 14 items in length, each item being proposed as a question, and the possible answers being yes, no, or other (cannot determine, not applicable, or not reported). The NHI NHLBI tools provides with instructions to help authors score accurately. According to the guidelines provided by the NHI NHLBI tools, writers will evaluate the data after scoring to determine if a study may be graded as "good," "fair," or "poor" overall.

Risk of bias of narrative reviews and case reports was not assessed.

## Results

The database search yielded 608 references — 121 in MEDLINE, 242 in Scopus and 238 in Web of Science. 220 were duplicated and were removed. 5 articles identified by citation search were also included. 393 were screened of which 340 were excluded. The remaining 53 were sought for retrieval and 51 were assessed for eligibility. 36 were eligible and included. The PRISMA flow-chart of this process is represented in Fig. 1.

### Study characteristics

7 narrative reviews, 8 case reports/case series, 19 observational studies and 2 systematic reviews were included.

Of the observational studies, 11 had a prospective design, 6 had a cross-sectional design and 2 were case-control studies.

14 of the observational studies included postpartum parents without preexisting OCD diagnosis and mainly aimed to investigate the frequency, course, predictive factors, and phenomenology of OC symptoms experienced.

The other 5 observational studies include patients with preexistent OCD, all of whom were outpatients, and these mainly focus on finding possible associations between postpartum and OCD onset and if there was a pattern of symptomatology among OCD patients with post-partum onset compared to the NPP-OCD. When accessing the patients, those assigned to the postpartum onset group reported an age-at-onset of OCD that was equivalent to or within a year of the age at delivery.

One case-control study focused on finding possible differences in maternal/infant outcomes and exposure to postpartum events, between patients with OCD and those without OCD.

The other case-control study compared symptomatology and characteristics between patients with NPP-OCD (non-postpartum OCD) and PP-OCD.

Consecutive sampling was used for patients with obsessive-compulsive disorder (OCD) and consecutive or matched sampling was used for the control groups.

Sample sizes across the observational studies ranged from 24 to 726. Nine studies were conducted in the USA (1 of which also are also conducted in the Netherlands), two in Spain, two in Canada and the remaining articles were published by authors from Norway, Brazil, Italy, Turkey and India.

Thirteen of the observational studies solely feature female participants, 5 studies include both female and male parents and one study focuses only on male participants.

Case reports/case series have sample sizes ranging from 1 to 15 patients and were all conducted in the USA with the exception of two. All but one include solely female patients.

The Structured Clinical Interview for DSM-III/IV/V Axis I Disorders Patient Edition (SCID-I/P) was used for OCD diagnosis in 7 of the 19 observational articles included and the Mini-International Neuropsychiatric Interview for DSM-IV/V was used for OCD diagnosis in 7 articles. Yale-Brown Obsessive Compulsive Scale (Y-BOCS) was used to access symptoms severity in 13 of 19 articles. Dimensional Obsessive-Compulsive Scale (DOCS) and PTBC (Parental Thoughts and Behaviors Checklist) were also used to assess obsessions and compulsions severity. Other scales and scores were used depending on the variable studied in each article.

Table 1 lists the included narrative reviews and their most relevant characteristics.

Table 2 lists the case reports/case series and their most relevant characteristics.

Table 3 lists the included observational studies, their most relevant characteristics, and findings. Table 3 is divided in two parts, the first including observational studies with non-clinical samples (3.1) and second including observational studies with samples of OCD patients (3.2)

Table 4 lists the included systematic reviews and their most relevant characteristics and findings. Of the two systematic reviews, one has meta-analysis.

Table 5 illustrates the quality assessment of included articles by NIH quality assessment tools

## Discussion

### Epidemiology

Understanding whether the postpartum time is a high-risk phase for the presentation of OCD depends in part on having reliable estimates of the prevalence of OCD in the general population.

According to a recent meta-analysis with 34 studies, OCD has an estimated 1.3 % lifetime prevalence worldwide, with women being 1.6 times more likely to experience it than men (1.5 % lifetime prevalence compared to 1 % in men).[13] OCD may be more prevalent among males in childhood, but throughout adolescence and adulthood, is more prevalent in females,[53] likely due to the effect of reproductive hormones and associated major reproductive events in the onset or exacerbation of OCD symptoms.[10]

Retrospective assessments of child-bearing female OCD patients seen in a clinical setting revealed that the postpartum period was associated with an onset of OCD between 4.7—20 %.[11,12,49,51]

These studies rely on retrospective recall, which inevitably limits the findings, since patients frequently struggle to precisely remember the events or symptoms that led up to their onset, increasing the probably of recall bias.

Therefore, prospective research is required to better understand the prevalence of OCD during postpartum period as well as to pinpoint specific characteristics of women who may be more prone to develop this illness.

According to a large Canadian prospective study in a nonclinical sample (*N* = 763), the average prenatal and postpartum prevalence estimates were 2.9 % and 7.0 %,

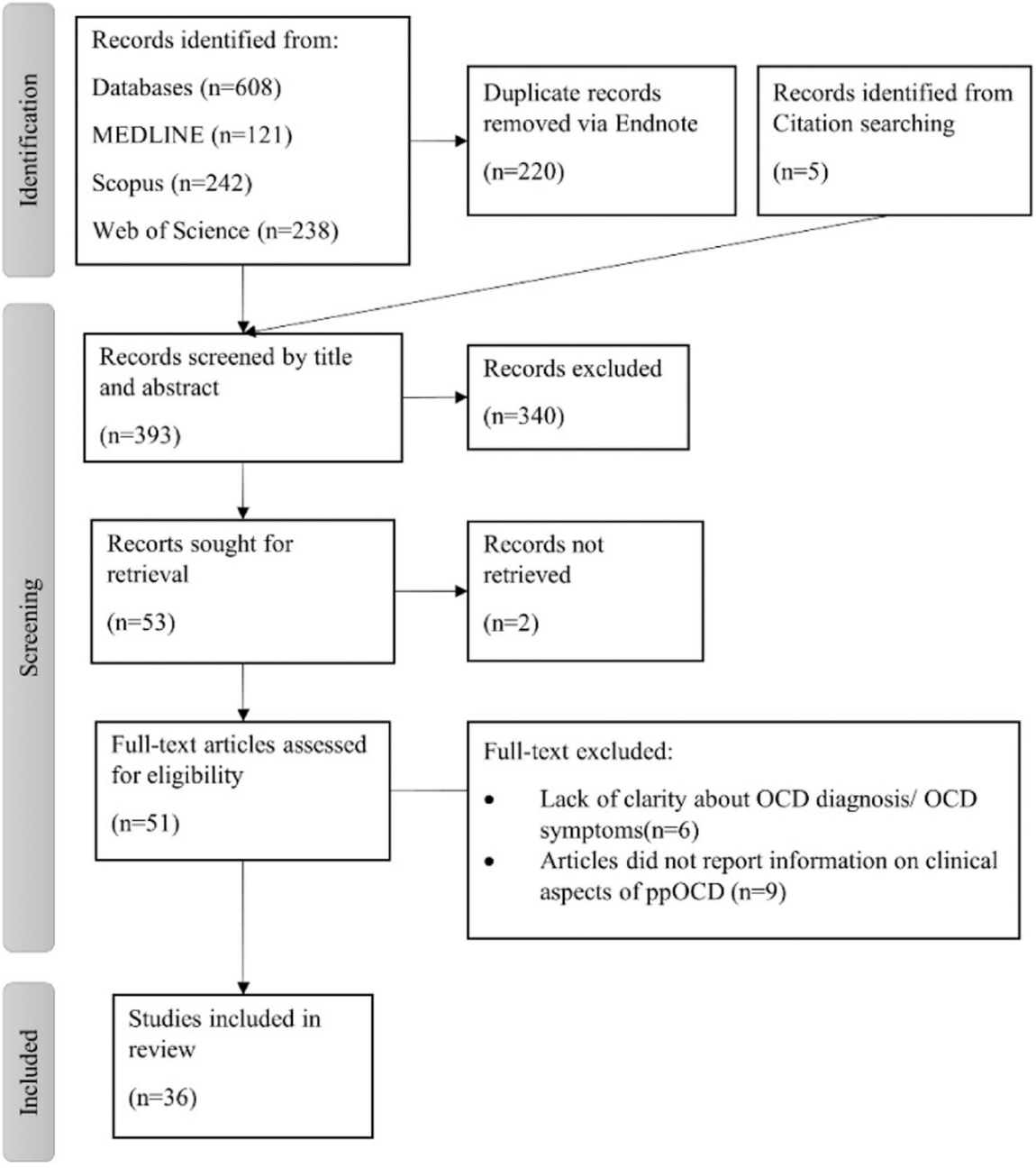


**Fig. 1** PRISMA flowchart: data collection and selection of studies.

respectively[17], with a gradual rise during pregnancy and early postpartum, reaching a peak at approximately 8 weeks postpartum (8.7 %) and then gradually declining afterwards. By 6 months postpartum, the estimated cumulative incidence of new OCD diagnoses was 9 %. According to the authors, the high prevalence and incidence found, were partly due to a more thorough diagnostic interview employed which included perinatal specific questions and the modifications in the diagnostic criteria from the DSM-IV to the DSM-V.

Similar results were found in 461 mothers in the USA, where 11 % of the women in this study screened positive for OCD symptoms at 2 weeks postpartum[6] as indicated by the Yale Brown Obsessive-Compulsive Scale (Y-BOCS), and in another large prospective study in Brasil, in 400 postpartum mothers assessed between 2 and 26 weeks, 9 % of the these screened positive for OCD, although only 2.3 % reported postpartum onset.[48] In a prospective Turkish study with a sample of 302 postpartum women, the incidence found was 4 % at 6 weeks postpartum.[46]

The different time periods and methodology, as well as study samples that might not be representative of all postpartum women, probably account for the inconsistent findings throughout these studies.

One meta-analysis of 7 studies including 2006 postpartum participants found the prevalence rates in the general population, during pregnancy and postpartum as 1.08 % 2.07 % and 2.43 % (95 % CI 1.46 %- 4.00 %) respectively. In this study,

**Table 1** Narrative reviews characteristics.

| Reference | Study type | Main findings and conclusions |
|---|---|---|
| Brandes et al. (2004)[29] | Narrative review | Characterizes the differences between postpartum onset OCD and postpartum depression and postpartum psychosis. |
| Fairbrother et al. (2007)[30] | Narrative review | Outlines features of early parenthood that might increase vulnerability to PP-OCD |
| McGuinness et al. (2011)[15] | Narrative review | Presents PP-OCD as a distinctive clinical picture with specific course and symptomatology |
| Sharma et al. (2015)[31] | Narrative review | Concludes that both clinicians and patients are generally unaware of the connection between childbirth and OCD, and the condition may be easily underdiagnosed or mistakenly identified as major depressive disorder |
| Sharma et al. (2019)[32] | Narrative review | The author proposes that sleep deprivation may be a significant factor in the development of PP-OCD. |
| Sharma et al. (2021)[4] | Narrative review | Proposes the application of the peripartum onset specifier to increase awareness of the disorder and its detection in the perinatal period |
| Speisman et al. (2011)[33] | Narrative review | Highlights that PP-OCD usually has a rapid onset, and the symptom content is generally focused on harming the infant. |

the risk analysis revealed women who are pregnant or recently gave birth are 1.5—2 times more likely than the general population to develop OCD.[52]

Research around this topic has focused mostly on mothers, with most observational studies including solely samples of childbearing females. However, given that circumstantial factors can play a big role in PP-OCD as we will shortly explain, it is not surprising that partners of childbearing women (e.g. the child's father) could also experience these symptoms. In this regard, we will elaborate on the prevalence of OC symptoms and PP-OCD in the male population, as well as its predictive factors in a separate chapter.

## Clinical aspects and phenomenology

### Differentiation between PP-OCD and NPP-OCD (nonpostpartum OCD)

In order to support the claim that PP-OCD is a unique subtype, it is necessary to illustrate the different features that distinguish PP-OCD from NPP-OCD.

Swift onset is one of the proposed characteristics of PP-OCD, which is frequently contrasted with the typical onset, which tends to be more gradual. In a prospective Turkish study analyzing 12 mothers with PP-OCD[46], OCD symptoms started for 58%[7] of the women within the first two weeks, and for 42%[5] of the women between weeks 2 and 4, corroborating the idea of rapid onset. Seemingly, in a prospective Canadian study assessing 763 postpartum women from late pregnancy until 21 weeks postpartum, OCD point prevalence achieve a peak at close to 9 % at approximately 8 weeks postpartum.[17]

In terms of severity of symptoms, women with PP-OCD experienced significantly less severe symptoms (23.58 vs 27.96; $p$ = 0.013) as measured by the Y-BOCS compared to the NPP-OCD control group, according to a prospective study.[46] These findings were partly attributed to the fact that the OCD group without postpartum onset consisted of patients who sought psychiatric care, thus were more likely to experience more severe symptoms compared to those found in a community population. In another study there were no significant difference in severity of OCS between patients with and without postpartum onset who were admitted to a psychiatric clinic.[50]

Another notable point regarding the clinical features revolves around the content of the obsessions and compulsions.

Several studies have reported the most prevalent obsessions in PP-OCD to be contamination and aggression/harming,[11,49,48,50,47] although other types were documented like need for symmetry/exactness.[51]

In fact, Uguz et al.[46] found that aggressive symptoms were much more common in PP-OCD patients (33.3 %) than in controls (6.1 %), indicating that PP-OCD patients had a higher propensity for aggressive obsessions than NPP-OCD patients ($p$ = 0.039).

This was further supported by a meta-analysis[16] with 206 PP-OCD patients, in which women with PP-OCD reported considerably higher frequencies of aggressive obsessions (60 %) compared to NPP-OCD patients.

Looking more closely at the content of the aggressive obsessions, there is an emphasis on the fear of hurting the baby with women often reporting intrusive images of suffocation, dropping and throwing the infant.[48,46,39]

Similarly, some contamination obsessions are focused on the baby (e.g., microorganisms, chemicals or dirt contaminations via her hand or the baby's bottles or foods).[10,48]

Although OC symptoms centering the infant are common in the postpartum period, measures to evaluate the frequency and severity of such symptoms are lacking. The Perinatal Obsessive Compulsive Scale (POCS)[54] is a tool developed and validated in women with perinatal OCD and provides detailed information regarding symptoms and individual patterns experienced by each woman, enabling destigmatization and allowing personalized treatment.

Another relevant characteristic found among PP-OCD mothers was the compulsions employed, with the most prevalent being checking and washing/cleaning,[48,46,47,38] along with a need for self-reassurance and to seek reassurance from others,[48,46,50,54,55] as well as avoidance from various situations or objects alluding to intrusions about hurting the baby.[18,54,36]

**Table 2** Case reports/ case series characteristics.

| Reference | Study type | Country | N of participants | Scores used | Main findings and conclusions |
|---|---|---|---|---|---|
| Abramowitz et al. (2001)[21] | Case series | USA | 4 PP-OCD (fathers) | SCID-I | The quick onset and nature of the obsessions and compulsions found in fathers are strikingly comparable to those described in investigations of female postpartum OCD. Each patient reacted favorably to cognitive-behavioral therapy using exposure techniques. |
| Arnold et al. (1999)[20] | Case series | USA | 7 PP-OCD | SCID-I YBOCS | All subjects reported having aggressive obsessions concerning their children. 5 of the women described problematic mother-child behavior and none acted on their obsessions to hurt their children. |
| Challacombe et al. (2011)[34] | Case series | UK | 6 PP-OCD | SCID-I YBOCS | Describes 6 cases of mothers with PP-OCD effectively treated with cognitive-behavior therapy intensively delivered over the course of two weeks |
| Christian et al. (2009)[22] | Case report | USA | 1 PP-OCD | SCID-I | Describes a case of a women presenting with aggressive obsessions of drowning and strangling her 5-month-old son, who responded favorably to CBT employing exposure and ritual prevention. |
| Hertzberg et al. (1997)[35] | Case report | USA | 1 PP-OCD | SCID | Describes a case of recurrent PP-OCD, raising issues about long-term management of patients who have previously manifested OCS symptoms in the postpartum. |
| Hudak et al. (2012)[18] | Case report | USA | 1 PP-OCD | SCID-I | Concludes that women are very reluctant to describe their intrusive thoughts, and this may result in suboptimal treatment. There is no increased risk of violent harm to infants in women with PP-OCD. |
| Sichel et al. (1993)[36] | Case series | USA | 15 PP-OCD | SCID | Notes that patients were found to have a particular set of symptoms including incapacitating intrusive obsessional thoughts about hurting their infants. Secondary depression was frequently observed. |
| Uguz et al. (2008)[37] | Case series | Turkey | 11 PP-OCD | SCID-I YBOCS | Implies that PPOCD, if left untreated, typically persists during 1 year, developing a chronic course. |

SCID-I/CV Structured Clinical Interview for DSM-IV | | Y-BOCS Yale—Brown Obsessive Compulsive Scale | SCID Structured Clinical Interview for DSM-III-R Disorders.

To sum up, PP-OCD is characterized by various infant-focused obsessions, in particular aggressive and contamination obsessions, as well as avoidance of obsessional cues, in addition to reassurance-based tactics, checking, and washing/cleaning compulsions.

### Differentiation between clinical PP-OCD and normal intrusive thoughts

The clinical differentiation between postpartum OCD and normal intrusive thoughts is nuclear in the approach of postpartum OCD.

Many new parents experience unwanted mental intrusions, which is not always indicative of postpartum OCD. In fact, the vast majority of parents, (up to 90 %) have disturbing intrusive thoughts about their infant.[39,38]

Furthermore between 13 and 36 % of new parents experience unwelcome, intrusive thoughts of harming their newborn,[39,38,43], with a surge in frequency throughout the first few weeks.[56] Intrusions about contamination, accidents and loss of baby were also very prevalent in new parents.[48,39]

Given the high prevalence of subthreshold obsessive-compulsive symptoms at this time, clinicians must be careful not to over pathologize these symptoms in parents.[7,57]

By evaluating the level of associated suffering and/or functional impairment across professional, social, and family domains with a few questions, it is possible to identify whether these intrusive thoughts are significant enough to

**Table 3.1** Observational studies characteristics (Non clinical samples).

| Reference | Study Type | Setting | Country | N of participants | Assessment time | Scores used | Main findings and conclusions |
|---|---|---|---|---|---|---|---|
| Abramowitz et al. *(2006)*[38] | Prospective | Non clinical sample | USA | 85 first time parents (42 men and 43 women) | Late pregnancy and 3 months postpartum | MINI YBOCS PTBC | - 89.4 % reported that they had experienced distressing intrusive thoughts and 84.7 % reported the use of neutralizing strategies<br>-After, controlling for baseline psychopathology, higher levels of obsessive beliefs in pregnancy, predicted more severe obsessions and compulsions in parents at 3 months postpartum |
| Abramowitz et al. *(2007)*[39] | Prospective | Non clinical sample | USA | 76 first time parents (39 women and 37 men) | Third trimester pregnancy and 4 months postpartum | MINI YBOCS PTBC | -Indicates that the association between pre-childbirth obsessive beliefs and late postpartum (12 weeks) OC symptoms was mediated by the propensity to misinterpret the significance of unwanted intrusive infant-related thoughts early in the postpartum period (3—4 weeks).<br>-Nearly all participants reported intrusions concerning suffocation (87 %) and accidents (90 %). 43 % reported contaminations intrusions and 36 % reported intrusions regarding loss of baby |
| Chaudron et al. *(2010)*[40] | Prospective | Non clinical sample | USA | 24 women | 3° Trimester and 1 month postpartum | SCID-I YBOCS OCI-R | —29 % of those who completed the diagnostic interview in the third trimester met the criteria for OCD and at 1 month postpartum, 12.5 % had new OCS (Y-BOCS≥8).<br>-OCS increased in intensity postpartum but did not change in character |
| Coelho et al. (2014)[41] | Prospective | Non clinical sample | Brazil | 726 pp fathers | 3°trimester and 1—2 months pp | MINI | -The prevalence of postpartum onset OCD was 1.7 %. There was a strong correlation with bipolar-sprectrum episodes.<br>-OCD in fathers was highly correlated with OCD in mothers. |
| Fairbrother et al. *(2018)*[42] | Prospective | Non clinical sample | Canada | 100 pp women | 3°Trimester; 4 weeks; 3months | OBQ-44 PPII BDI-II MAF | -Behavioural responses to early postpartum thoughts predict perceived interference with parenting from intentional harm thoughts to infant.<br>-At 4 weeks, poor sleep predicted more OC symptoms, while fatigue predicted more OC symptoms at 12 weeks. |
| Fairbrother et al. *(2021)*[17] | Prospective | Non clinical sample | Canada | 763 women | 3rd Trimester; 9 weeks PP; 21weeks PP | SCID-V | -Prenatal and postpartum average prevalence estimates were 2.9 % and 7.0 %, respectively.<br>-Point prevalence gradually increased over the course of pregnancy and the early postpartum, attaining a peak of close to 9 % at approximately 8 weeks postpartum, with a gradual decline thereafter.<br>-The cumulative incidence of new OCD diagnoses was estimated at 9 % by 6 months postpartum. |

**Table 3.1** (*Continued*)

| Reference | Study Type | Setting | Country | N of participants | Assessment time | Scores used | Main findings and conclusions |
|---|---|---|---|---|---|---|---|
| Gutiérrez-Zotes et al. *(2013)*[43] | Prospective | Non clinical sample | Spain | 137 women | 2/3 days pp and 2°—8 wks pp | Y-BOCS EPQ-R | —13 % reported thoughts of infant harm during the postpartum period.<br>- In healthy women without psychiatric history, psychoticism is a predictor of postpartum thoughts of harming their infants. |
| Miller et al. (2013)[6] | Prospective | Nonclinical sample | USA | 461 postpartum women | 2—3 weeks and 6 months | YBOCS PHQ-9 STAI | —11 % screened positive for OCD using YBOCS (score ≥8) at 2 weeks postpartum. At 6 months postpartum almost half of those women had persistent symptoms. Of these, 27.5 % had a comorbid anxiety disorder and 70.6 % had a comorbid depressive disorder<br>-Concomitant positive screens for anxiety and depression were predictive factors for the development of OCD symptoms. |
| Miller et al. *(2015)*[7] | Prospective (Secundary analyses) | Non clinical sample | USA | 461 postpartum women | 2—3 weeks and 6 months | YBOCS PHQ-9 STAI | - 37.5 % reported experiencing subclinical obsessions or compulsions. This subclinical OCD was associated with an increased rate of depression (24 %) and anxiety (8 %) |
| Ojalehto et al. *(2021)*[44] | Prospective | Non clinical sample | USA | 64 parents (33 mothers and 31 fathers) | 2/3 trimester and 1,3 and 6 m pp | PTBC YBOCS DOCS AAQ-II | -In the early postpartum, experiential avoidance and a preexisting propensity to misinterpret intrusive thoughts were predictors of infant-related OCS. |
| Osnes et al. *(2020)*[45] | Prospective | Non clinical sample | Norway | 530 women | 17weeks pregnant 8 weeks pp | MINI BIS | -Participants with mid-pregnancy insomnia had significantly higher levels of OCD symptoms than participants with normal sleep<br>- This study suggests that screening for insomnia during pregnancy could be an efficient strategy for detecting women at risk of developing OCS |
| Uguz et al. *(2007)*[46] | Case-control | Non clinical sample | Turkey | 302 pp women (12PP-OCD) and 33 with NPP-OCD | 1° day and 6 weeks postpartum | SCID-I YBOCS | -The incidence of PP-OCD was 4 % at 6 weeks postnatally, with 75 % being primiparous women, with onset in the first 2 weeks found in 58.3 % of the patients<br>-The most common obsessions in PP-OCD were contamination (75 %), aggressive (33.3 %), and symmetry/exactness (33.3 %), and the most common compulsions were cleaning/ washing (66.7 %) and checking (58.3 %). The patients with PP-OCD had significantly more frequent aggressive obsessions ($p = 0.039$) and less severe OCS ($p = 0.013$) than NPP-OCD patients<br>-The predictors of PP-OCD were avoidant ($p = 0.000$) and obsessive-compulsive ($p = 0.004$) personality disorders. |

**Table 3.1** (*Continued*)

| Reference | Study Type | Setting | Country | N of participants | Assessment time | Scores used | Main findings and conclusions |
|---|---|---|---|---|---|---|---|
| Wenzel et al. *(2001)*[47] | Cross-sectional | Non clinical samples | USA | 588 women | 4 to 6 months pp | SCID-I | -In this sample of 588 reporting depressive symptons,14.3 % had subsyndromal symptoms of OCD and 3.9 % met DSM-IV criteria for OCD. Among the 349 women who met criteria for MDD, 5.4 % also met criteria for comorbid OCD<br>-The most common content areas of OCD were obsessions about imminent disaster (22.6 %), compulsive cleaning behavior (20.2 %), and compulsive checking behavior (20.2 %). |
| Zambaldi et al. *(2009)*[48] | Cross-sectional | Non clinical sample | Brazil | 400 postpartum women | 2—26 weeks pp | MINI YBOCS SCID | - 63.5 % reported some OCS: obsessions (53.8 %) and compulsions (42.3 %)<br>—9 % of the sample met the diagnostic criteria for OCD but only 2.3 % reported postpartum onset.<br>- OCD was more prevalent in mothers who were multiparous, had a personal history of a prior psychiatric disorder, somatic disease, or obstetric complication, and there were no significant differences in terms of age, marital status, level of education, or employment status.<br>-The most common obsessions were aggressive and contamination, and compulsions for washing/cleaning and checking.<br>- 38.9 % of women with OCD have a comorbid depressive episode. |

MINI Mini-International Neuropsychiatric Interview (DSM-IV/V) | Y-BOCS Yale—Brown Obsessive Compulsive Scale | | SCID-I/CV Structured Clinical Interview for DSM-IV | PTBC Parental. Thoughts and Behaviors Checklist | OCI-R The Obsessive-Compulsive Inventory-Revised | OBQ-44 Obsessional Beliefs Questionnaire | PPII | BDI-II Beck Depression Inventory-II | MAF Multidimensional Assessment of Fatigue Scale.

PTBC Parental Thoughts and Behaviors Checklist | Y-BOCS Yale—Brown Obsessive Compulsive Scale | SCID-I/CV Structured Clinical Interview for DSM-IV | PHQ-9 The Patient Health Questionnaire | | STAI The State-Trait Anxiety Inventory Scale | DOCS Dimensional obsessive-compulsive scale | AAQ-II Acceptance and action Questionnaire-II | SCID-V The Structured Clinical Interview for DSM-V.

MINI Mini-International Neuropsychiatric Interview (DSM-IV/V) | Y-BOCS Yale—Brown Obsessive Compulsive Scale | | SCID-I/CV Structured Clinical Interview for DSM-IV | BIS Bergen Insomnia Scale | SCID Structured Clinical Interview for DSM-III-R Disorders.

**Table 3.2** Observational studies characteristics (clinical samples-OCD patients).

| Reference | Study Type | Setting | Country | N of participants | Scores used | Main findings and conclusions |
|---|---|---|---|---|---|---|
| Forray et al. *(2010)*[11] | Cross-sectional | Clinical sample-outpatient | USA | 126 OCD women | SCID-I Y-BOCS | -Among the women that had been pregnant, 32.1 % (*N* = 25) had OCD onset in the perinatal period 15.4 % in pregnancy, 15.4 % at postpartum, and 1.3 % following miscarriage.<br>-The perinatal-related OCD group was more likely to report contamination obsessions than the NPP-OCD group |
| Guglielmi et al. (2014)[12] | Cross-sectional | Clinical sample: outpatient and inpatients | USA Netherlands | 542 OCD women | MINI SADS-LA | -This OCD sample include 352 American women and 190 Dutch women<br>-OCD onset occurred within 12 months after menarche in 13.0 %, during pregnancy in 5.1 %, at postpartum in 4.7 %, and at menopause in 3.7 %.<br>-Reproductive cycle events are periods of increased risk for onset and exacerbation of OCD in women |
| Labad et al. *(2010)*[49] | Cross-sectional | Outpatients | Spain | 94 female OCD patients | SCID YBOCS | -The prevalence of postpartum OCD was notably high, 20 % of 35 patients with children.<br>-Patients with contamination/cleaning symptoms were the most likely to report a perinatal onset of OCD (OR=9.3; $p = 0.048$) |
| Maina et al. *(1999)*[50] | Case-control | Outpatients-consecutive patients | Italy | 68 OCD (male=35, female=33) 68 healthy controls | SCID YBOCS | - OCD female individuals had higher rates of exposure to postpartum events and higher rates of obstetric complications compared to healthy peers<br>- Subjects with PP-OCD onset (24 %) had significantly higher rates of aggressive obsessions compared to patients with OCD without postpartum onset<br>-OCD male subjects did not show an association between a specific event and the onset of the disorder. |
| Paul et al. *(2020)*[51] | Cross-sectional | Outpatients | India | 150 OCD patients (58 male and 92 female) | MINI YBOCS | -Postpartum onset and worsening of OCD were reported in 14% and 11 % of women respectively.<br>-Symmetry obsessions and ordering compulsions were more common in women with post-partum onset of OCD than those without.<br>- 7% of male patients reported having OCD onset in the post-partum of their child |

MINI Mini-International Neuropsychiatric Interview (DSM-IV/V) | Y-BOCS Yale—Brown Obsessive Compulsive Scale | SCID Structured Clinical Interview for DSM-III-R Disorders | SCID-I/CV Structured Clinical Interview for DSM-IV | SADS-LA Schedule for Affective Disorders and Schizophrenia—Lifetime version modified for the study of anxiety disorders |.

**Table 4** Systematic reviews characteristics.

| Reference | Study Type | Main conclusions |
|---|---|---|
| Russel et al. *(2013)*[52] | Systematic review with meta-analysis | −17 studies were included, 7 of which focused on postpartum samples. The total number of postpartum participants was 2006. -According to the risk analysis, women who are pregnant or recently gave birth have a 1.5−2 times higher risk of developing OCD, with a mean prevalence in the general population of 1.08 %, followed by pregnant women (2.07 %) and postpartum women (2.43 %) |
| Starcevic et al. *(2021)*[16] | Systematic review with meta-analysis | - 14 studies were included, 10 of which focused on postpartum samples. The total number of PP-OCD patients was 206. -In contrast to NPP-OCD patients, checking was the compulsion that PP-OCD patients engaged in the most frequently (55 %) followed by washing/cleaning (50 %), with significantly higher frequencies of aggressive obsessions (60 %) and considerably lower frequency of obsessions with contamination (57.8 %), symmetry or exactness (21.1 %), and saving/hoarding (1.4%) |

cause concern. Mothers with obsessive-compulsive symptoms, for instance, could avoid touching or changing their infant out of concern for hurting or molesting him/her, or they might do repetitive checking procedures that are significantly time-consuming.[54,38,58]

Reassurance should be given regarding symptoms not interfering significantly with a woman's life since most postpartum intrusive thoughts and compulsions do not indicate OCD diagnosis.

### Consequences of misdiagnosis

In a study investigating perinatal health practitioners' recognition and management of, postpartum obsessive-compulsive symptoms (OCS), Mulcahy et al.[5] found that almost 70 % of the 94 participants did not correctly identify OCS as the main presenting problem. The most frequent incorrect response was "psychotic symptoms" ($n$ = 20), which was followed by "depressive symptoms" ($n$ = 11).

Misdiagnosis could result in ineffective, inappropriate or harmful treatment. Moreover, carrying out excessively thorough risk assessments, psychiatric admissions, or even taking action to remove the infant from the parent's care unintentionally serves to confirm the parent's worst concerns about the meaning of their intrusive thoughts and further disrupts crucial parent-infant bonding.[23,59,60]

## Comorbidities

Psychiatric comorbidity appears to be quite common in postpartum OCD. In fact, according to different studies comorbid depression occurs in 38.9−70.6 % of women diagnosed with PP-OCD.[6,48,40] Seemingly, anxiety disorder is also seen in 27.5 % of PP-OCD women.[6]

These numbers are similar to the rates of comorbid depression (40.8 %) and comorbid anxiety (32.7 %) seen in adults with NPP-OCD.[61]

When compared to women who did not report having any obsessions or compulsions, subclinical OCD is also linked to a higher risk of depression (24 %) and anxiety (8 %). This suggests that women who have obsessions and compulsions, even at a subclinical level, should be tested because they are considerably more likely to have concomitant postpartum depression.

Comorbid depression manifested concurrently with or within two to three weeks of the onset of OCD, in two case series.[20,36]

## Risk factors and predictors

Although the exact origin of postpartum OCD is unknown, several biological, environmental, and psychological factors have been identified as possible association factors. Among the proposed factors, changing levels of gonadal steroids and oxytocin have been implicated,[11,12,62] along with dysfunctional interpretation of normal intrusive thoughts and strong sense of responsibility and uncertainty inherent to new parenthood[39,38,42] have been identified as likely factors at play.

Primiparity has been recognized as a potential element, as suggested by a prospective study showing a significantly higher incidence of OCD in primiparous women compared to multiparous ones (6.57% vs 1.81 %)[46] and different case series.[50,36]

The first few weeks of parenthood, namely the first 4 weeks after childbirth appear to be the most significant risk phase in the postpartum stage for the formation of OCD according to different publications.[17,46,36]

Pre-existing depression,[10,42] anxiety,[6,48] insomnia,[32,42,45] and personality disorders[46] such as obsessive compulsive ($p$ = 0.004) or avoidant ($p$ = 0.000) personality disorder have also been identified as risk factors.

There were no significant differences[46] between women with and without PP-OCD regarding age, marital status, level of education/ employment status, planned or unplanned pregnancy, gender of baby, term and type of delivery, history of abortion, presence or absence of breastfeeding and cigarette smoking.

When it comes to the role of pregnancy and birth complications as a risk factors, some studies suggest a higher frequency of obstetric complications among OCD patients compared to healthy counterparts,[48,50] although these articles do not evaluate these factors explicitly with regards to postpartum onset OCD.

**Table 5** Quality assessment of included articles by NIH quality assessment tool.

| NIH | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Observational | | | | | | | | | | | | | | | |
| **Abramowitz et al. (2006)**[38] | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes | NR | Yes | Yes | Good |
| **Abramowitz et al. (2007)**[39] | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes | NR | Yes | Yes | Good |
| **Chaudron et al. (2010)**[40] | Yes | Yes | No | Yes | No | NA | Yes | NA | Yes | NA | Yes | NA | No | No | Fair |
| **Coelho et al. (2014)**[41] | Yes | Yes | Yes | Yes | No | NA | Yes | Yes | Yes | NA | Yes | NA | Yes | Yes | Good |
| **Fairbrother et al. (2018)**[42] | Yes | Yes | NR | Yes | No | Yes | Yes | Yes | Yes | No | Yes | NR | Yes | Yes | Good |
| **Fairbrother et al. (2021)**[17] | Yes | Yes | Yes | Yes | No | NA | Yes | NA | Yes | NA | Yes | NA | No | Yes | Good |
| **Gutiérrez-Zotes et al. (2013)**[43] | Yes | Yes | NR | Yes | No | NA | Yes | NA | Yes | NA | Yes | NR | Yes | Yes | Good |
| **Miller et al. (2013)**[6] | Yes | Yes | Yes | Yes | No | NA | Yes | NA | Yes | NA | Yes | NR | No | Yes | Good |
| **Miller et al. (2015)**[7] | Yes | Yes | Yes | Yes | No | NA | Yes | NA | Yes | NA | Yes | NR | No | Yes | Good |
| **Ojalehto et al. (2021)**[44] | Yes | Yes | NR | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Good |
| **Osnes et al. (2020)**[45] | Yes | Yes | No | Yes | No | Yes | Yes | Yes | Yes | No | Yes | NR | Yes | Yes | Good |
| **Uguz et al. (2007)**[46] | Yes | Yes | Yes | Yes | No | NA | Yes | Yes | Yes | NA | Yes | NR | No | Yes | Good |
| **Wenzel et al. (2001)**[47] | yes | Yes | Yes | Yes | No | NA | Yes | NA | Yes | NA | No | NA | NA | No | Good |
| **Zambaldi et al. (2009)**[48] | Yes | Yes | Yes | Yes | No | NA | Yes | NA | Yes | NA | Yes | NA | NA | No | Good |
| **Forray et al. (2010)**[11] | Yes | Yes | Yes | Yes | No | NA | Yes | NA | Yes | NA | Yes | NA | NA | Yes | Good |
| **Guglielmi et al. (2014)**[12] | Yes | Yes | No | Yes | No | NA | Yes | NA | Yes | NA | Yes | NA | NA | Yes | Good |
| **Labad et al. (2010)**[49] | Yes | Yes | Yes | Yes | No | NA | Yes | NA | Yes | NA | Yes | NA | NA | No | Good |
| **Maina et al. (1999)**[50] | Yes | Yes | No | Yes | Yes | Yes | Yes | No | No | Yes | Yes | Yes | Yes | – | Fair |
| **Paul et al. (2020)**[51] | Yes | Yes | Yes | Yes | No | NA | Yes | NA | Yes | NA | Yes | NA | NA | No | Good |
| Systematic reviews | | | | | | | | | | | | | | | |
| **Russel et al. (2013)**[52] | Yes | Yes | Yes | No | No | Yes | Yes | Yes | – | – | – | – | – | – | Good |
| **Starcevic et al. (2021)**[16] | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | – | – | – | – | – | – | Good |
| Case Series | | | | | | | | | | | | | | | |
| **Abramowitz et al. (2001)**[21] | Yes | Yes | No | Yes | NA | Yes | Yes | NA | Yes | – | – | – | – | – | Good |
| **Arnold et al. (1999)**[20] | Yes | Yes | Yes | Yes | Yes | Yes | Yes | NA | Yes | – | – | – | – | – | Good |
| **Challacombe et al. (2011)**[34] | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | – | – | – | – | – | Good |
| **Sichel et al. (1993)**[36] | Yes | Yes | NR | Yes | NA | Yes | Yes | NA | Yes | – | – | – | – | – | Good |
| **Uguz et al. (2008)**[37] | Yes | Yes | NR | Yes | NA | Yes | Yes | NA | Yes | – | – | – | – | – | Good |

Other reports have found no link between obstetric complications or variables and PP-OCD.[10,46]

Further research is needed to clarify the possible link between pregnancy and obstetrical complications and variables and the establishment of postpartum OCD.

## Postpartum OCD in fathers

In regards to the prevalence of PP-OCD in fathers, different retrospective reports have offered conflicting evidence, with one small study noting a lack of association between specific event and disorder onset,[50] and another bigger study indicating the occurrence of postpartum event at onset in 7 % of the male sample.[51]

In fact, according to some observational studies, the proportion of men suffering from intrusions is not significantly different from women (88,1 % vs 90,7 % respectively), with no significant difference in content. Likewise, the use of neutralizing strategies was similar between mothers and fathers (59,5 % vs 76,7 %).[39,38] In a different prospective study mothers and fathers did not differ significantly in the their YBOCS scores throughout their follow-up assessments.[44]

In a Brazilian prospective study[41] comprising 726 father evaluated 1 to 2 months postpartum, 1,7 % had postpartum onset OCD, with a strong correlation between PP-OCD in fathers and bipolar mixed episodes and unipolar depressive episodes. Interestingly, OCD in fathers was found to be highly correlated with OCD in mothers, suggesting the need to evaluate fathers for this disorder when their female partners develop PP-OCD.

To sum up, distressing intrusions regarding their infant is strikingly common in both mothers and fathers, with a similarity in content and frequency. Postpartum onset OCD diagnosis appears to be more prevalent compared to the lifetime prevalence in males (1,7 % vs 1 %), although with a lower prevalence compared to female PP-OCD.

## Course of PP-OCD and clinical outcomes (management and impairments)

If left untreated, as with OCD in general, the majority of women with PP-OCD still experience symptoms at six months of follow-up, suggesting a chronic course, according to the scant information available on the subject.[6,63,37] However, in one prospective study, the point prevalence gradually decreased after achieving a peak at approximately 8 weeks, indicating that not all new moms who initially satisfy the criteria for OCD will go on to have a persistent condition.[17]

Regarding treatment of postpartum OCD, cognitive-behavioral therapy is a commonly used and empirically validated first line treatment for mild to moderate OCD in general, and while there is insufficient data on the response of postpartum OCD parents, some case series have described sustained improvement of OCS and parenting in general.[21,22,34]

If pharmacotherapy is chosen, sertraline and paroxetine are the recommended first-line drugs due to their effectiveness and safety profile in breastfeeding mothers,[64] while citalopram and fluoxetine should be avoided.[65]

Data on the effectiveness of SSRIs in the treatment of postpartum OCD are scarce and conflicting, with reports of 27—80 % response rate of SSRI use in monotherapy.[36,66] According to a systematic review, roughly 40 % of OCD patients do not respond to an SSRI.[67]

Regarding parent-child relationship impairments, case series have described frequent disruption in parent-child relationship, particularly due to avoidance from being in the child's presence.[20,21,36]

An Israeli population-based study focusing on a specific subtype of PP-OCD namely parent— child relationship obsessive-compulsive disorder found a link between the manifestation of these symptoms at 4 months and infant avoidance of social engagement with mother at 10-months.[19]

Another study found no correlation between postpartum obsessive-compulsive symptoms in parents and early child development. This result may have been due to the low symptom severity in their sample, which suggests that the mediating effects are only detectable at a higher level of severity of symptons.[68]

We hope this study might aid perinatal clinicians in the identification and management of this clinical entity.

## Strengths, limitations, and future directions

In this review, we addressed an underrecognized and understudied phenomenon using a systematic approach.

Our findings have important clinical implications and contribute to the literature on OCD.

First, postpartum women and men are at greater risk of experiencing OCD, particularly first-time parents in the first 4 weeks after childbirth,[17,46] with symptomatology characterized by various infant-focused obsessions, particularly aggressive obsessions and may use different coping mechanisms such as situational avoidance and reassurance-based tactics. Second, infant focused obsessions and the resulting coping strategies employed may interfere with parent-child bonding.[4,19] Third, a relevant area for future research is the installation of prevention programs that target parents at risk such as having a history of depression, anxiety, insomnia, obsessive compulsive and avoidant personality disorder and dysfunctional interpretation of normal intrusive thoughts. In one randomized controlled trial,[69] vulnerable women with risk factors for PP-OCD underwent 6-week cognitive-behavioral prevention program and had significantly lower OCS compared to the control group.

This systematic review has several limitations that reflect the limitations of the gathered research. First, there is not a standardized assessment of OCS and OCD diagnosis, resulting in significant methodological heterogeneity. Consistent reporting of obsessions and compulsions would be beneficial for future studies in this field. This would encourage adequate comparisons of the research' findings. Second, two reports included featured samples who were specific at-risk population for the development of postpartum OCS and thus, were not conducted specifically to assess PP-OCD in a community sample representative of all childbearing women. There is also a significant lack of research on PP-OCD in males, which should prompt further studies comprising more inclusive samples, of both female and male participants as well as homosexual couples which are often underrepresented.

Another limitation in the present study was our inability to obtain unpublished manuscripts on this topic, reflecting a possible publication bias. The prospects of a substantial number of

unreported prevalence studies occurring, however, is limited considering the pressing need for research in this field.

Future research in this area would benefit from observational studies comparing PP- and NPP- OCD detailing the difference in mean age, duration of illness, dimensionality of YBOCS, different treatment responses and outcomes. Additionally, there is lack of observational studies focusing on the impact of PP-OCD on parent-infant bond and functional status of the mother/father.

## Conclusion

Findings of these study suggest that PP-OCD differs from NPP-OCD as it has a significantly higher prevalence in both females (2.43 %−9 %)(17,33,34) and males (1,7 %),[41] a swift onset usually within the first 8 weeks after childbirth, symptomatology characterized by various infant-focused obsessions, particularly aggressive and contamination obsessions, checking, and washing/cleaning compulsions as well as coping mechanisms such as situational avoidance and reassurance-based tactics. Among risk factors, dysfunctional interpretation of normal intrusive thoughts, pre-existing depression, anxiety, insomnia and avoidant or obsessive-compulsive personality disorders have been identified as likely factors at play. Furthermore, PP-OCD causes significant patient distress, negatively affects the infant-parent relationship and it frequently goes under or misdiagnosed due to lack of awareness and routine screening as well as concealment by the parents who frequently experience guilt or shame. For these reasons, it is a clinical entity with which perinatal health practitioners should be familiarized.

## Ethical considerations

None.

## Conflict of interest

None.

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