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Cognitive behavior therapy for obsessive compulsive disorder in youth: a narrative review

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ABSTRACT

This narrative review is organized around the primary symptoms of obsessive compulsive disorder (OCD) including physical and cognitive symptoms and the effectiveness of cognitive behavior therapy (CBT) in reducing these symptoms in youth with an OCD diagnosis. These are followed by sections on the comorbidities of OCD including anxiety and depression, the effective delivery of CBT via both internet and in-person, the greater effectiveness of CBT versus pharmacotherapy, the use of alternative therapies and the negative effects of COVID-19 on both OCD and CBT. The review concludes with limitations of the literature and suggested future directions

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Obsessive compulsive disorder

Obsessive compulsive disorder (OCD) is a prevalent, chronic condition characterized by the presence of obsessions and/or compulsions (Stein et al, 2021). The obsessions are typically repetitive, persistent thoughts or images that are intrusive and are frequently associated with anxiety and/or depression. The compulsions include repetitive behaviors that can follow the obsessions, although some have suggested that compulsions are primary and that obsessions are rationalizations for the compulsive behaviors. The obsessions are typically concerns about contamination followed by cleaning, worries about harm followed by checking and/or concerns about symmetry followed by ordering (Stein et al, 2019).

OCD frequently emerges early in childhood, is more common in females, and occurs across socioeconomic classes as well as across countries at a prevalence of approximately 3% (Stein et al, 2019). Data from several studies suggest that pre-adolescent onset OCD is less severe and more likely to result in remission than adult onset (Geller et al, 2021. Some studies suggest that OCD symptoms can persist for decades, although others have suggested that remissions can occur. Comorbid conditions have been noted in 90 percent of those with OCD including anxiety disorders, mood disorders impulse-control disorders and substance use disorders. The highest impairment ratings have been noted for relationships and social functioning, although other problems have been noted including sleep problems (Miniksar et al, 2021) and olfactory dysfunction (Bora et al, 2020). Despite these problems, only a minority of severe cases (31%) have received treatment for OCD.

Although the etiology of OCD is unknown, a study on magnetic resonance spectroscopy has suggested dominance of excitatory versus inhibitory factors in brain circuits during goal-directed behaviors (Ivarsson et al, 2021). OCD clusters in families and twin studies have demonstrated that it is a heritable, polygenic disorder that shares genetic risk with comorbid anorexia nervosa and Tourette syndrome (Mahjani et al, 2021).

Cognitive behavior therapy

Cognitive behavior therapy (CBT) is the most frequently used, evidence-based therapy for OCD. It is based on the metacognitions of OCD including an overestimation of threats and excessive concerns about controlling one's thoughts. Meta-analyses have documented significant improvement of OCD symptoms in youth following CBT (Uhre et al, 2020).

Exposure and response prevention (ERP) is a specific component of CBT that is effective including gradual and prolonged exposure to fear-provoking stimuli accompanied by instructions to avoid compulsive behavior (Rector et al, 2019). This practice is combined with a discussion of dysfunctional beliefs and feared consequences. CBT has been offered on an individual basis as well as in group therapy delivered in person or by Internet-based protocols accompanied by homework exercises (Schroder et al, 2020).

Meta-analyses of randomized controlled trials suggest that CBT's effect sizes are larger than those for pharmacotherapy (Richter et al, 2018). Although most of the pharmacological research has involved serotonergic medications (SSRIs), some have assessed glutamatergic medications such as ketamine. Problems with pharmacotherapy have included non-compliance and side effects (Richter et al, 2018).

Neuromodulation techniques have included transcranial direct current stimulation and repetitive transcranial magnetic stimulation (Kahn et al, 2021). These treatments are typically reserved for those who have not responded to CBT or SSRIs, and typically 30 to 50% of those patients have responded positively. Those with intractable OCD have been given ablative neurosurgery that targets different brain structures. Alternative therapies have included exercise, yoga and acupuncture. The COVID-19 pandemic has not only

exacerbated the symptoms of OCD but has also attenuated the effects of CBT (Sulaimani et al, 2020).

Purpose of this narrative review

This narrative review involved a search on PubMed and PsycINFO for empirical studies on CBT and OCD that were published during the last five years. The terms cognitive behavior therapy (CBT), obsessive compulsive disorder (OCD) and youth/adolescents/children were entered into the advanced search which yielded 135 papers. Inclusion criteria were peer-reviewed studies that had CBT and OCD in the title and that were focused on youth. Exclusion criteria were case reports, non-English papers and research that was focused on other conditions that were treated by CBT. Following these criteria, 32 papers were selected for this review. The review is organized around the primary symptoms of OCD including physical and cognitive symptoms. These are followed by sections on the effects of cognitive behavior therapy on OCD, on comorbidities of OCD including anxiety and depression, on different types of delivery of cognitive behavior therapy including in person and via Internet and on COVID-19 effects on OCD and CBT. And the review concludes with limitations of the literature and suggested future directions.

Cognitive behavior therapy effects on OCD

Several empirical studies have been conducted on CBT effects on OCD. In one study on 58 children and adolescents, measures taken at baseline, the midpoint and at the end of CBT suggested a decrease in dysfunctional beliefs and in the severity of OCD, with severity predicting the decrease in dysfunctional beliefs (Wolters et al, 2019). It is not clear whether the decreased symptoms occurred first followed by the decrease in dysfunctional beliefs or the reverse. In a systematic review and meta-analysis on nine trials (N= 645), those with OCD as compared to controls experienced a decrease in severity of CBT symptoms and an increase in functioning following different protocols (Uhre et al, 2020). A similar decrease in OCD severity was noted for the group receiving SSRIs. It is not clear how the lumping of different protocols could meet the criterion for meta-analysis in this study.

Typically, CBT has been comprised of exposure and response prevention especially for harm-related OCD (Schneider et al, 2020). This protocol is notably safe so it's not clear why the paper was entitled “Serious negative consequences of ERP”. ERP has been particularly effective when combined with cognitive therapy which is not surprising because ERP combined with other therapies such as pharmacotherapy has also been more effective than ERP alone (Rector et al,2019). A meta-analysis on attrition from ERP suggested that it was as low as 10% while attrition from pharmaceuticals was significantly greater at 17% (Johnco et al, 2020). The attrition for ERP was said to be logistical, although it could also have related to fear since exposure and response prevention can be a threatening protocol.

Table 1. Cognitive behavior therapy effects (and 1st authors).

Effects	First authors
Decreased severity symptoms	Wolters, Uhre
Decreased dysfunctional beliefs	Wolters
Decreased symptoms with ERP and cognitive therapy	Schneider
Decreased symptoms with ERP and pharmaceuticals	Rector
Decreased attrition	Johnco

Table 2. Cognitive behavior therapy versus pharmacotherapy (and first authors).

Effect	First author
CBT greater effect then pharmacotherapy	Richter
Decreased children's Y-BOCS scores	Tao
CBT added benefits to pharmacotherapy	Kotopati

Table 3. Cognitive behavioral therapy effects on comorbidities (and first authors)

Effect	First author
CBT decreased OCD and depression	Wheaton
Decreased anxiety and depression	Rozenman
Decreased anxiety, depression, OCD and PTSD	Wergeland

Table 4. Internet CBT versus in person effects (and first authors).

Effect	First author
No difference Y- BOCS scores	Aspvall
Decreased Y-BOCS scores, increased self-esteem	Schroder
Decreased Y-BOCS scores	Hoppen

Table 5. Effective alternative therapies (and first authors).

Therapies	First authors
Low-intensity CBT	Lovell
Short ERP protocol	www.ccbt.co.uk
Mindfulness based CBT	Kulz
Vitamin therapy (B12 & D)	Esnafoglu
Exercise, yoga, acupuncture	Stein
Magnetic seizure therapy	Tang
Deep transcranial therapy	McCathern, Kahn

Table 6. Negative effects of COVID-19 (and 1st authors).

Effect	First authors
Decreased OCD symptoms	Storch
Decreased ERP progress	Storch
Decreased COVID Stress Syndrome	Wugianhui

Cognitive behavior therapy versus pharmacotherapy

In a review of the literature, cognitive behavior therapy was notably more effective than pharmacotherapy, although not all of the included studies were randomized controlled trials comparing those two types of therapy (Richter et al, 2018). CBT had lower relapse rates on long term follow-up. SSRIs required a greater dose, had a longer response lag and lower response rates. In a network meta-analysis on 18 studies (N=1353), a significant decrease was noted in the Children's Yale-Brown Obsessive Compulsive Symptoms Scale (Y-BOCS) scores (Tao et al, 2022). These results would seem tenuous given that they were based on 12 different kinds of treatment. Pharmacotherapy and CBT were more effective than pharmacotherapy alone. As in many other studies, two treatments are typically more effective than one treatment given alone. Of the pharmaceuticals, escatalopram was said to be more effective than fluvoxamine, paroxetine and sertraline. Without random assignment, the

conclusion about the relative efficacy of these drugs is arbitrary.

In contrast, a recent meta-analysis suggested that there was no additional benefit of combining SSRIs with cognitive behavior therapy over cognitive behavior therapy alone, but cognitive behavior therapy added significant benefits to SSRI monotherapy (Kotopati et al, 2019). In this case, fluoxetine and sertraline were superior to fluvoxamine.

Cognitive behavior therapy effects on comorbidities of OCD

Two of the most common comorbidity conditions of OCD are anxiety and depression. CBT has been used to treat OCD with co-occurring depression (Wheaton et al, 2019). Depression has been noted to interfere with adherence to the homework of CBT and in that case cognitive therapy and behavioral activation have been added to CBT for the depressive component. However, those with depression may be too lethargic to complete homework. In a study on 137 youth, decreases were noted in anxiety and depression in a linear fashion following 12 sessions of manualized CBT (Rozenman et al, 2019). But these decreases were not linked to a decrease in OCD. In a very extensive review of 58 studies, large effects were noted for CBT for several internalizing disorders including anxiety, depression, OCD and PTSD. (Wergeland et al, 2021). At the end of the studies, the remission rates ranged from 51 to 77% and at follow-up, the range was 53 to 83% with only 12% attrition. It would be interesting to know the relative effectiveness of CBT for each of these disorders.

CBT delivered via Internet is the same as in-person CBT

In a randomized clinical trial, 152 Swedish children were randomly assigned to an internet versus an in-person CBT group to receive 16 weeks of therapy (Aspvall et al, 2021). Based on the Children's Yale -Brown Obsessive Compulsive Symptoms Scale scores, no differences were noted in symptoms at six months following the beginning of this study. Similarly, in a guided Internet based CBT on a sample of 128 youth, Y-BOCS scores decreased and self-esteem increased 8 weeks later (Schroder et al, 2020). In a review of 18 studies (N=1707), a technology delivered CBT group versus passive control groups had lower scores on the Y-BOCS, the Dimensional Obsessive Compulsive Scale and the Obsessive Compulsive Inventory (Hoppen et al, 2021).

Alternative therapies

Alternative therapies are recommended when individuals have shown resistance to CBT. One of the alternative therapies is low-intensity CBT (Lovell et al, 2017). This protocol involves reading a book "Obsessive compulsive disorder: a self – health book" by Lovell et al (2017). The second protocol involves nine steps focused on exposure and response prevention using a secure login to a website called "OCD fighter"which can be found at www.ccbt.co.uk. This protocol is practiced six times over a 12-week period.

When residual symptoms are noted after CBT, individuals are sometimes referred to Mindfulness–Based Cognitive Therapy. In one study on this alternative therapy, there was a reduction of the Y-BOCS scores in a sample of 125 youth (Kulz et al, 2019). It's not clear from this paper whether there were also residual symptoms following this therapy.

Vitamin therapy has also been recommended inasmuch as some vitamin deficiencies have been noted in individuals with OCD. These include lower levels of vitamin B12 and vitamin D and higher levels of homocysteine in those with OCD compared to those in a control group (Esnafoglu et al, 2017).

Other alternative therapies have included exercise, yoga and acupuncture (Stein et al, 2021). These may be effective for the resulting increase in serotonin levels which, in turn, would be associated with decreased depression (Field, 2020). These therapies may also be effective for enhancing attentiveness that accompanies increased vagal activity related to the stimulation

of pressure receptors as the skin is moved during these therapies (Field,2020).

Magnetic Seizure Therapy has also been used but was not considered effective in at least one study (Tang et al, 2021). For a therapy to be considered effective, there needs to be a 30% reduction in the Y-BOCS scores, and remission would be considered a score of less than eight on that scale.

Deep transcranial therapy has been used in several studies and is reviewed as being effective for treatment resistant OCD (McCathern et al, 2020). In one study on deep brain stimulation, for example, improvement was noted on depression, anxiety and quality of life scores (Kahn et al,2021). However, only five subjects were included in that study, suggesting that it was under-powered.

COVID-19 has exacerbated OCD effects and attenuated CBT effects

In a study entitled “the impact of COVID-19 on ERP”, symptoms worsened in 38% of the sample (Storch et al, 2021). ERP progress was significantly attenuated at a more than expected rate. The question arises as to the number of therapy sessions that were missed that in turn contributed to the worsening of symptoms. In a paper entitled “the implications of COVID”, several studies were reviewed that highlighted the exacerbation of symptoms during COVID. In that review of 15 studies, OCD was exacerbated in all of them (Wugianhui et al, 2021). Effects on OCD were labeled the COVID Stress Syndrome described as being anxious and frightened about potentially being contaminated. It would seem that the possibility of contagion might also be a source of anxiety and fear.

Limitations of this literature

Several limitations can be noted for this literature. These include limitations related to recruitment, protocols, measures and therapy. With regard to recruitment, the samples are largely derived from online surveys whose respondents have tended to be white, middle-class women, especially when children are the subjects of the research. Parents are often the responders for the children and typically have to give permission for their adolescents to participate in the research. Given that, the survey material may be biased towards parent responses and especially those of mothers. An ethnic bias is also typical of survey research. Thus, the samples that are recruited have gender and racial biases and likely also socioeconomic bias. The samples might also be skewed towards severe OCD given that those parents are more concerned and determined to participate in treatment research. They might also be simply more aware of the OCD behaviors in their children.

As already mentioned, most of this literature is based on surveys. And they constitute the database for the reviews and meta-analyses. Observational and laboratory paradigms are needed to advance knowledge on the syndrome. Physiological and biochemical data may contribute not only to diagnosing OCD but also to exploring underlying mechanisms, as currently very little is known about the etiology of OCD. The genetic studies have identified heritability as an underlying factor. But only some 38% of the variance has been explained by heritability, leaving at least 62% for other potential underlying mechanisms.

The measures that comprise the survey material have been limited to OCD scales, primarily the Y-BOCS. That measure was developed for adult respondents and has been modified for children and adolescents with OCD, a measure that is seemingly relatively abstract without specifically focusing on symptoms. Other measures have been developed but are less widely used and have not been psychometrically documented. Measures of the comorbidities of OCD have been more extensively studied including measures for depression, anxiety and PTSD. Although anorexia has also been considered as a common comorbidity, that diagnosis is not standardized. Reviews and meta-analyses that are meant to yield more conclusive data are

often based on studies that are highly variable on the measures used.

The therapy protocols are also diverse and not well specified. It is not clear the degree to which CBT protocols are focused on ERP or cognitive therapy. The sequencing of the therapy types is not specified, suggesting that many of the CBT trials have been individually tailored. The homework which is a hallmark of CBT has also not been specified. Some have described ERP as a fearful process of trying to prevent compulsive behavior. But OCD is characterized by fear of the obsessions that lead to the compulsions. Therapy that is focused on eliminating compulsions without eliminating obsessions is questionable. Without a way to quantify the relative damage from obsessions versus compulsions, it would be difficult to design the primary focus of a treatment protocol. Several authors have suggested that resistance to CBT relates to the fear of ERP which by definition is designed for patients to re-experience the fearful obsessions in order to block the compulsions. Qualitative studies may contribute to this literature as a way of designing assessments that are focused on not only symptoms but thoughts and other sources of obsessions. Nonetheless, these recent data continue to highlight the effectiveness of cognitive behavior therapy for obsessive compulsive disorder in youth.

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