Obsessive Compulsive Disorder and Anxiety Disorders in Children and Adolescents

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Anxiety disorders are the most common form of psychopathology found in children and adolescents,¹ and they impart significant functional impairment. In recent decades, substantial progress has been made developing effective methods to assess and intervene with anxious youths, yet many afflicted individuals are never identified, or receive suboptimal forms of treatment.² In this brief review, we aim to summarize the current clinical understanding of pediatric anxiety disorders, including an overview of epidemiological findings, factors involved in risk and resilience, prognostic guidelines, and current findings regarding the assessment and treatment of these conditions. Given space limitations, we will focus on the most common anxiety disorders included in the fifth edition of the Diagnostic and Statistical Manual (DSM-5),³ including generalized anxiety disorder (GAD), social anxiety disorder (SAD), separation anxiety disorder, specific phobia, panic disorder, agoraphobia, and posttraumatic stress disorder (PTSD). We also include obsessive-compulsive disorder (OCD) in this review, though in DSM-5 it is no longer grouped with the traditional anxiety disorders (it is now included in the chapter “Obsessive Compulsive and Related Disorders”). We made this inclusion given that, phenomenologically, OCD is a disorder characterized by significant anxiety, and the empirically-supported treatments for OCD overlap considerably with traditional anxiety disorders.

Prevalence

Determining the prevalence of anxiety disorders among young children is challenging, given that anxiety is often studied more broadly as a component of inhibited temperament in this age group without consideration of diagnostic thresholds. Nonetheless, the few studies of children between ages 2-8 suggest a prevalence of roughly 10% for all anxiety disorders, excluding OCD and PTSD, with an increase to around 12% in elementary school-aged children.⁴ Specific phobias are the most common diagnosis in this age group (6.7%), followed by separation anxiety disorder (3.9%), SAD (2.2%), and GAD (1.7%).⁵ In school-aged youths, the prevalence of OCD is believed to be around 2%-3%, with 2 peaks of incidence: the first in pre-adolescent children, and the second in young adults (ie, early twenties).⁶ In adolescence, the overall rates of anxiety disorders remain similar (roughly 11%), with an increase in rates of panic disorder, which rarely occurs before mid-adolescence.⁷ Rates of PTSD among adolescents have been estimated at 3.7% for males, and 6.3% for females,⁸ though a significant additional portion of youth experience trauma-related impairment without meeting criteria for PTSD.⁹ Overall, anxiety disorders appear to have an earlier onset than other forms of mental illness.

Several reports have suggested that females are at higher risk for developing anxiety disorders, with significant sex differences in overall rates of anxiety disorders emerging by age 6.¹⁰ Yet follow-up studies seem to indicate that sex differences in rates of individual diagnoses tend to be relatively small. One report indicated higher rates of separation anxiety disorder among females during childhood, with higher rates of SAD and GAD among females during adolescence.¹¹ Interestingly, in pediatric OCD, there is a male preponderance (3:2).⁵
Risk Factors

Risk for developing a childhood or adolescent-onset anxiety disorder seems to be largely determined by interactions between biology and environment. Initial studies indicated higher rates of anxiety disorders among the children of parents with anxiety disorders.\textsuperscript{12,13} Numerous family factors appear to increase the risk for developing anxiety disorders, including insecure attachment\textsuperscript{19} and overprotective or highly critical parenting styles.\textsuperscript{11} A combination of twin, adoption, and molecular genetic studies has highlighted roles for particular genetic polymorphisms (eg, 5-HTT) and negative life events (eg, low familial support). One study reported that the heritability estimate (ie, the proportion of risk for a particular condition that can be accounted for by genetic factors alone) for separation anxiety disorder was 73%, while for SAD it was 60%.\textsuperscript{15} OCD has a strong genetic basis as well, with first-degree relatives of pediatric OCD patients having a 24%-26% morbid risk.\textsuperscript{16} Another study exploring gene-environment interactions found that genes appeared to sensitize teens to the anxiety-producing effects of negative life events.\textsuperscript{17} Among youths, a number of factors appear to increase risk for developing PTSD following a trauma, including previous trauma, preexisting psychiatric disorder, female gender, parental psychopathology, and lack of social support.\textsuperscript{21}

Prevention

Given the prevalence and lasting impact of childhood anxiety disorders,\textsuperscript{18-20} prevention and early intervention efforts are warranted. Prevention programs are categorized as universal, selected, or indicated.\textsuperscript{21} Universal programs are targeted at an entire population, regardless of risk status; selective intervention programs are targeted at those who have been identified as being at risk, but do not yet have any signs of a disorder; and indicated intervention programs are targeted at those who are already presenting with subclinical symptoms, yet do not meet criteria for a disorder. In a meta-analytic review, indicated and selective anxiety prevention programs had stronger effect sizes than universal programs.\textsuperscript{22} Therefore, community screening efforts may be worthwhile to identify those at risk using reliable anxiety screening instruments (described subsequently) or teacher nomination.\textsuperscript{23}

Empirically-supported and modifiable risk factors for the development of anxiety disorders (inhibited temperament, parental anxiety, negative cognitive content, stressful life events, and response to stress) have guided the development of promising preventive programs. Recent meta-analyses support the efficacy of such programs (with effect sizes ranging from small to large), which primarily utilize components of Cognitive Behavioral Therapy (CBT), the treatment of choice for child and adolescent anxiety disorders.\textsuperscript{24}

Group interventions at school or other community settings improve access to care and may decrease stigmatization. The FRIENDS program, a universal program delivered in the school setting, has shown promising results,\textsuperscript{25} and is currently used in multiple countries with materials translated in multiple languages (http://www.pathwaysstoresilence.org/our-patron/). A selective program designed for the parents of preschool-aged children with inhibited temperament (measured by inhibited and withdrawn behaviors) also showed lasting benefits into adolescence.\textsuperscript{26} This program included psychoeducation about internalizing disorders, a focus on reducing parental overprotection and fostering greater child independence, systematic techniques to encourage in vivo exposure for the child, and encouragement to continue these techniques, especially during high risk times in the future, such as the start of each school year.

Another selective prevention program, The Child Anxiety Prevention Study, enrolled children and their parents with a diagnosed anxiety disorder in an 8-week CBT intervention and compared them to a waitlist. This program included parent-only and parent/child sessions focused on anxiety management/social engagement, cognitive restructuring, problem-solving skills, contingency management, and communication skills. At the 1-year follow up, 30% of those children in the waitlist group had developed an anxiety disorder compared to 0% in the active treatment group.\textsuperscript{27} Programs that include or consist primarily of teaching parents how to manage anxiety in themselves and their children also appear to reduce future risk for youths.\textsuperscript{24}

In addition, evidence that attention bias toward threatening stimuli may be causally related to anxiety symptoms\textsuperscript{28} supports possible prevention efforts using computerized attention retraining/dot-probe tasks. Other automated and computerized interven-
tions showed promise, with 60% of anxiety programs yielding successful outcomes.29

With regards to PTSD, community-based screening should be conducted with children after events with the potential to traumatize witnesses. This screening should be done no sooner than 4 weeks after the event based on prior findings that roughly only 30% of those with symptoms immediately following a traumatic event will continue to have symptoms 1 month post-event.30 Group interventions have been shown to be effective, such as Trauma-Focused CBT and the UCLA Trauma and Grief Component Therapy.31 Universal programs that foster general resiliency in youth are being tested internationally to provide protection for children from adverse affects of traumatic events.32

Comorbidity

Anxiety disorders show high rates of concurrent and longitudinal comorbidity33 with each other. In addition, youths with anxiety disorders were more than 27 times more likely to have a concurrent depressive disorder, and more than 3 times more likely to have attention-deficit hyperactivity disorder (ADHD) than those without an anxiety disorder diagnosis.34 Early onset OCD is associated with risk for ADHD, separation anxiety disorder, specific phobias, and agoraphobia.6

Prognosis

The limited number of long-term longitudinal studies that have assessed anxiety suggest that these are persistent disorders that follow an intermittent course (ie, waxing and waning).35,36 Indeed, studies of inhibited temperament indicate that reactivity to novelty in infancy predicts later development of SAD in adolescence.37 Early anxiety disorders serve as risk factors for the development of other illnesses, particularly depression38 and substance use disorders.39 Other longitudinal studies have shown that adolescent anxiety disorders also predict subsequent suicidal behavior, educational underachievement, and early parenthood.39 Over time, childhood-onset OCD often becomes subthreshold or remits altogether, though worse outcomes are predicted by earlier age of onset, increased duration of OCD, inpatient treatment, and the presence of specific symptom subtypes (eg, religious obsessions).40 Longitudinal studies of PTSD show that many children show a gradual decrease in symptoms over time, without treatment. However a significant number of youths show chronic PTSD symptoms over many years.41

Assessment

When assessing for anxiety in childhood, it needs to be considered that having some anxiety can be a normal part of life and a youth’s progression through developmental stages. To determine if anxiety in a youth meets criteria for an anxiety disorder, providers should consider the intensity, duration, and associated functional impairment of the symptoms. Providers also need to consider the socio-emotional developmental stage of the child, and what type and intensity of anxiety would be normative for that developmental stage. They should also screen for other psychiatric conditions, medical conditions, stressors, or traumas that might account for the anxiety symptoms.42 It is important to consider that youth can present with several comorbid anxiety disorders, and that youth might also present with anxiety disorders comorbid with other psychiatric disorders, such as depression or ADHD.42

Brief anxiety screens provide a useful tool for identifying youth who require a more thorough evaluation and possible anxiety-focused treatment. There are numerous, brief self-report measures to assess pediatric anxiety; however, the Multidimensional Anxiety Scale for Children (MASC) and the Screen for Child Anxiety and Related Emotional Disorders (SCARED) appear to have the strongest psychometric properties, and are the most widely used.43,44 The SCARED also has a parallel parent-report form that may be useful. (Note: A more thorough discussion of the many screening instruments is beyond the scope of this article, but for an authoritative review, see Silverman & Ollendick, 2005.) Generally speaking, it is important to use information from a range of informants (self-report, caregiver-report, and teacher-report), and to be sure that measures used with children are developmentally appropriate in their wording. Research suggests that, with very young children, play, drawings, and observation can be useful for assessment, particularly when combined with parent-report and teacher-report measures. It is believed that children are well able to report about their internal state in regards to
anxiety, and caregivers and teachers may not be as aware of the child’s internal state, but are able to report functional impairment that might be present and not reported by the youth.45

A variety of structured diagnostic interviews that can be used include the Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent Versions (ADIS), Child and Adolescent Psychiatric Assessment, Diagnostic Interview for Children and Adolescents, the NIMH Diagnostic Interview Schedule for Children Version IV, and the Schedule for Affective Disorders and Schizophrenia for School-Age Children. Of these, the ADIS is most recommended because it has been the most widely used, and has been shown to be valid and reliable in diagnosing anxiety disorders.44

Psychotherapy Approaches

Cognitive behavioral therapy (CBT) has long been considered an effective treatment for pediatric anxiety disorders. CBT for anxiety targets the cultivation of specific coping skills, including relaxation, cognitive restructuring, and reducing avoidance of anxiety-provoking situations through graduated exposures with response prevention (ERP). Several treatment manuals have been constructed incorporating these techniques, and have demonstrated effectiveness across the range of anxiety disorders.46,47 In manualized treatments for pediatric OCD, ERP represents the primary focus with less emphasis on cognitive restructuring.48 Trauma-focused CBT (TF-CBT) supplements elements of traditional CBT for anxiety with narrative exposure work and cognitive processing of the trauma, typically in conjoint parent-child sessions.31

The definitive study examining the effectiveness of CBT for pediatric anxiety disorders is the Child-Adolescent Anxiety Multimodal Study (CAMS), a multi-site randomized controlled trial comparing 12 weeks of individual CBT, sertraline, CBT + sertraline, and placebo in the treatment of SAD, GAD, and separation anxiety disorder for youths between 7-17 years of age. Overall, 59.7% of participants in the CBT group qualified as remitted, versus 54.9% in the sertraline group, 80.7% in the combined treatment group, and 23.7% in the placebo group.49 A similar multi-site randomized controlled study was performed for pediatric OCD, called the Pediatric OCD Treatment Study (POTS), comparing 12 weeks of CBT, sertraline, CBT + sertraline, and placebo. Rates of clinical remission were 39.3% for CBT, 21.4% for sertraline, 59.7% for combined treatment, and 3.6% for placebo. Authors recommended CBT alone or CBT + sertraline as front-line approaches for pediatric OCD.50 The largest randomized trial of TF-CBT found that in a sample of sexually-traumatized youth, 12 weeks of TF-CBT was superior to supportive psychotherapy, producing significant improvement in PTSD symptoms, depression, behavior problems, and shame-related attributions.31 These improvements were largely preserved at 1-year follow up.51

There is now robust evidence suggesting that the effectiveness of CBT is long-lasting. One follow-up study assessed participants between 16-26 years of age, 8 to 13 years after they had been treated for anxiety disorders using CBT. Over 95% remained in remission from their original target disorder, and the authors also reported low rates of new anxiety disorders.52 Other follow-up studies (5 to 8 years post treatment) have found similar preservation of gains from CBT treatment of anxiety in children.48,50,52 Importantly, although tightly-controlled (often university-based) efficacy trials have repeatedly shown strong effects of CBT for pediatric anxiety, several community effectiveness trials have often produced equivocal results between CBT and treatment as usual.54-56 These findings are difficult to interpret, given that there is often “bleeding” of CBT-style interventions into standard community treatments, and they suggest the need for additional dismantling studies to identify critical mediators and moderators of successful treatment. It should be noted that CBT interventions for pediatric anxiety have been implemented in a wide range of formats, from individual to group therapy, and with and without parents and other family members. While strong arguments have been made about the superiority of one format versus another, findings have not consistently found any advantages.57 More recently, the Coping Cat manualized CBT intervention for pediatric anxiety was translated into a computerized format. In a randomized clinical trial, it proved equally effective to the traditional in-person individual therapy format.58 Due to potential cost efficiency and dissemination advantages, computerized interventions for pediatric anxiety are being studied closely.

Pharmacotherapy Approaches

Most data suggest that the first line for the treatment of the majority of anxiety disorders in children and
adolescents is psychotherapy. However, for moderate to severe cases of anxiety, medications are indicated as a part of treatment. Studies demonstrate that medications indicated for anxiety, including selective serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants (TCAs), buspirone, and benzodiazepines, are safe, tolerated, and efficacious in the child and adolescent population. Currently fluoxetine, sertraline, fluvoxamine, and clomipramine are the only FDA-approved medications for treating anxiety disorders (all having an indication for OCD only) in children aged 6 years and older. Additionally, the SSRIs have a black box warning for potential development of suicidal ideation in the pediatric population. However, these data come from the study of medications in relation to depression, not anxiety, which has called into question the risk of developing suicidal ideation on these medications when treating anxiety.

The aforementioned CAMS study shed new insight into the use of psychotherapy and SSRIs in the treatment of anxiety in the pediatric population. This study employed flexible dosing of sertraline starting at 25 mg that could be adjusted up to 200 mg, with a mean dose of 133.7 mg (range 25-200 mg) in the combination group and 146 mg (range 25-200 mg) in the sertraline alone group. There were minimal to no adverse effects of sertraline noted during the study. Overall, CAMS showed not only that combination therapy is superior to CBT or SSRI alone, but also that CBT or SSRI alone can be effective and tolerated as well for the treatment of SAD, GAD, and separation anxiety disorder.

The aforementioned POTS study produced similar results with respect to SSRI treatment of pediatric OCD. POTS also used a flexible dosing schedule for sertraline, starting at 25 mg, which could be adjusted up to 200 mg. The median doses of sertraline were 150 mg in the combination group, and 200 mg in the sertraline alone group. Again, this study found the combination therapy superior to CBT alone, which was superior to sertraline alone. As in CAMS, sertraline was highly tolerated with no switches into mania or increased suicidality in the study groups, and only 2 participants withdrew from the study due to adverse effects. POTS found that combination CBT and SSRI treatment led to better remission in OCD than either modality alone, with CBT alone outperforming medication alone.

Other randomized controlled trials of SSRIs for anxiety in the pediatric population have generally reported positive results. A meta-analysis of pediatric anxiety psychopharmacology trials showed that 59% responded on SSRI treatment compared to 31% on placebo, with no indication of differences in efficacy among the SSRIs (yet authors noted the lack of head-to-head trials). Most of the evidence for SSRIs is strongest in regards to the treatment of OCD. The same meta-analysis showed evidence that fluoxetine and paroxetine could improve functioning with short-term use, but no evidence that fluoxetine could prevent relapse with long-term use. The review also noted a large portion of study participants leaving SSRI studies for reported adverse effects, especially at higher doses of the SSRIs, leading the authors to recommend using lower doses of these medications and titrating up as tolerated. Evidence for SSRIs in the treatment of pediatric PTSD is more limited, and 2 randomized trials in this population found limited support for their efficacy. The American Academy of Child and Adolescent Psychiatry’s (AACAP) Practice Parameter on the treatment of pediatric anxiety recommends choosing an SSRI based on the side effect profile, duration of action, and positive response to a particular SSRI in a first-degree relative.

Industry-sponsored placebo-controlled trials provide some initial evidence for the effectiveness of the serotonin norepinephrine reuptake inhibitor (SNRI) venlafaxine in treating both SAD and GAD among children and adolescents. For pediatric anxiety, the Cochrane review noted no differences in the tolerability of venlafaxine compared to the SSRIs. However, one trial did report a difference in subject heights after treatment of those in the venlafaxine arm versus the placebo arm. TCAs are less used in clinical practice since the advent of the SSRIs, yet there is some evidence behind them in the treatment of pediatric anxiety disorders. TCAs are no longer routinely used due to the need for cardiac monitoring, multiple side effects, and medical risk with overdose. Imipramine has equivocal data in regards to separation anxiety and school phobia. Clomipramine, on the other hand, has strong data in regards to the treatment of pediatric OCD. Despite some good evidence, TCAs are still considered second-line for pediatric OCD due to similar response rates to the SSRIs that have more favorable side effect profiles.
Buspirone is a serotonin 5-HT 1A partial agonist FDA-approved for anxiety in adults, yet it has minimal data to support its use in pediatric anxiety. Similarly, multiple studies indicate that benzodiazepines are equivalent to placebo in the pediatric population. Due to a lack of efficacy evidence and severe side effects, it is recommended that benzodiazepines not be used with children and adolescents, or at best reserved for severe cases and used as acute treatment.

Recommendations for Practice

Evidence suggests that pediatric anxiety disorders are impairing, and often persist and potentially contribute to the development of other psychiatric problems throughout development. Systematic screening for pediatric anxiety disorders using one or more of the aforementioned validated screening instruments is critical, and should be integrated into the intake procedures in all pediatric and child psychiatric clinics.

References

50. The Pediatric OCD Treatment Study (POTS) Team. Cognitive-behavior therapy, sertraline, and their combination for children and adolescents.


