Anxiety disorders in children and adolescents: Epidemiology, pathogenesis, clinical manifestations, and course

AUTHORS: Shannon Bennett, PhD, John T Walkup, MD
SECTION EDITOR: David Brent, MD
DEPUTY EDITOR: Michael Friedman, MD

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INTRODUCTION

Worries and fears are a natural and adaptive part of childhood development and important for good coping and survival. Symptoms meet the criteria for a clinical anxiety disorder when the concerns are unexpected given the child's developmental level, persistent in the face of reassurance and support, and thus considered excessive, causing notable distress or impairment in day-to-day life.

Anxiety disorders are the most common childhood-onset psychiatric disorders. Anxiety disorders in children (up to 12 years old) and adolescents (13 to 18 years old) are associated with educational underachievement and co-occurring psychiatric conditions, as well as functional impairments that can extend into adulthood.

This topic describes the epidemiology, pathogenesis, clinical manifestations, and course of anxiety disorders in children and adolescents. Assessment and diagnosis of anxiety disorders in children and adolescents are discussed separately. Pharmacotherapy and psychotherapy for anxiety disorders in children and adolescents are also discussed separately. (See "Anxiety disorders in children and adolescents: Assessment and diagnosis" and "Pharmacotherapy for anxiety disorders in children and adolescents" and "Psychotherapy for anxiety disorders in children and adolescents".)

CLASSIFICATION

The American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) includes seven anxiety disorders seen in children [1]. The diagnosis of these disorders in children is discussed below; their epidemiology, pathogenesis, clinical manifestations, course and diagnosis in adults are described separately. (See "Anxiety disorders in children and adolescents: Assessment and diagnosis", section on 'Screening and assessment'.)

- Generalized anxiety disorder (see 'Generalized anxiety disorder' below and "Generalized anxiety disorder in adults: Epidemiology, pathogenesis, clinical manifestations, course, assessment, and diagnosis")
- Social anxiety disorder (see 'Social anxiety disorder' below and "Social anxiety disorder in adults: Epidemiology, clinical features, assessment, and diagnosis")
- Panic disorder with or without agoraphobia (see 'Panic disorder' below and "Panic disorder in adults: Epidemiology, clinical manifestations, and diagnosis")
- Agoraphobia without a history of panic disorder (see "Agoraphobia in adults: Epidemiology, pathogenesis, clinical manifestations, course, and diagnosis")
- Specific phobia (see 'Specific phobias' below and "Specific phobia in adults: Epidemiology, clinical manifestations, course, and diagnosis")
- Separation anxiety disorder (see 'Separation anxiety disorder' below)
- Selective mutism (see 'Selective mutism' below)

Obsessive-compulsive disorder, acute stress disorder, and posttraumatic stress disorder, which were classified as anxiety disorders in DSM-IV, were moved to separate diagnostic categories in DSM-5 [1]. (See "Obsessive-compulsive disorder in children and adolescents: Epidemiology, pathogenesis, clinical manifestations, course, assessment, and diagnosis" and "Posttraumatic stress disorder in children and adolescents: Epidemiology, clinical features, assessment, and diagnosis".)

EPIDEMIOLOGY

Anxiety disorders are the most common psychiatric disorders with onset in childhood, with prevalence estimates ranging from 10 to 30 percent [2-4]:

- In two national surveys of 10,148 adolescents aged 13 to 17 years and parents of 2734 children age 4 to 16 years in the United States, the 12-month prevalence of anxiety disorders in adolescence was estimated to be 25 percent and 32 percent, respectively [2,4]. Point prevalence estimates from four United States epidemiological studies are shown in a table (table 1).

- Research and clinical evidence suggest that rates of anxiety increased in children and adolescents during the coronavirus disease 2019 (COVID-19) pandemic. In a meta-analysis of 29 studies including 80,879 participants pooled prevalence estimates of clinical elevated anxiety symptoms were 20.5 percent (95% CI 17.2-24.4) [5].

- An epidemiologic survey of 3615 adolescents (age 10 to 18) in Austria found that anxiety disorders were the most prevalent conditions in the sample (15.6 percent) [6]. Prevalence rates for individual anxiety disorders in children and adolescents are as follows:

Generalized anxiety disorder — The prevalence of generalized anxiety disorder (GAD) in a study of 1015 United States preadolescents (ie, 9 to 13 year olds) was 1.7 percent. Females had a higher rate of GAD (2.4 percent) than males (1 percent) [7].

Social anxiety disorder — A study of a nationally representative sample of 10,148 adolescents in the United States found a lifetime prevalence of social anxiety disorder (SAD) of 15.5 percent among females and 11.1 percent among males [4].

Panic disorder — Though panic disorder was once thought to occur only among adults, more recent evidence suggests that children experience panic disorder [8,9]. The prevalence of the disorder in a community sample of 1035 adolescents in Bremen, Germany was 1 percent [10]; females were more likely to have experienced the disorder than males [11].

Agoraphobia — Agoraphobia in the absence of panic has been the subject of controversy, especially in children and adolescence. More recent evidence suggests that agoraphobia (without panic disorder) is a clinically significant condition in adolescence and young adults [12]. Estimates of the prevalence of agoraphobia suggest that the disorder is rare (1 percent or lower) in childhood, but reaches 3 to 4 percent in adolescence.

Specific phobias — The one-month and 12-month prevalence rates of specific phobia in adolescents were estimated to be 9.5 percent and 15.8 percent, respectively [4].

Separation anxiety disorder — In a nationally representative study of 9282 adults age 18 and older, the lifetime prevalence of separation anxiety disorder was estimated to be approximately 4 percent over the course of development [13].

Selective mutism — Selective mutism is a relatively uncommon disorder with an estimated six-month prevalence of 0.7 percent among a small, school-based sample [14].

Associated behaviors — School refusal behavior is a fairly common behavioral manifestation of anxiety disorders in children, occurring most frequently with separation anxiety disorder, and additionally with panic disorder, disruptive behavior disorders, and depression [15,16]. The rate of school refusal behavior was estimated at approximately 1 percent of school-aged children and 5 percent of clinically referred youth [17].

Longitudinal data of anxiety prevalence in 1420 participants in North Carolina, United States, showed a U-shaped pattern from childhood to adulthood. This curve was the product of high levels of separation anxiety in childhood and panic disorder, agoraphobia, and GAD in adults [18].

Comorbidity — Limited research suggests that children with an anxiety disorder have an increased likelihood of being diagnosed with a second anxiety disorder or multiple disorders [19]. A study of 488 anxious children age 7 to 17 years, enrolled in a clinical trial, found that SAD, GAD, and separation anxiety disorder co-occurred in nearly 60 percent of patients [20]. Studies have found GAD and social phobia to be most strongly linked to depression among the other anxiety disorders in childhood [21].

Anxiety disorders have been found to frequently co-occur with psychiatric disorders in childhood other than anxiety disorders, particularly attention deficit hyperactivity disorder [22], oppositional defiant disorder, language disorders, learning disabilities, and depressive disorders in adolescence [23].

- (See "Attention deficit hyperactivity disorder in children and adolescents: Clinical features and diagnosis".)
- (See "Obsessive-compulsive disorder in children and adolescents: Epidemiology, pathogenesis, clinical manifestations, course, assessment, and diagnosis".)
- (See "Pediatric unipolar depression: Epidemiology, clinical features, assessment, and diagnosis".)
- (See "Specific learning disorders in children: Clinical features".)

PATHOGENESIS

The pathogenesis of anxiety disorders in children is not known. Their development appears to be determined by complex interactions among biological, psychological, and social/environmental factors [24,25].

Developmental factors — Viewing the progression of anxiety throughout the lifespan, a developmental perspective, contributes to an understanding of the pathogenesis of anxiety disorders. Infants who display apprehensive, hesitant, or distressed reactions to novelty are more likely to avoid novel stimuli as toddlers [26]. These toddlers have been described as "behaviorally inhibited", which is believed to be a fairly stable temperament with physiological correlates, such as increased salivary cortisol levels and muscle tension, greater pupil dilation, and elevated urinary catecholamine levels [27].

Toddlers identified as behaviorally inhibited are at greater risk for developing clinical anxiety disorders in childhood [28-30]. A study of 91 children showed that social anxiety disorder (SAD), but not other anxiety disorders, in adolescence was predicted by behavioral inhibition at preschool age. Nearly 37 percent of behaviorally inhibited preschool age children had SAD at age 15, compared with 15 percent of nonbehaviorally inhibited children [30]. Children with anxiety disorders are more likely to have persistent anxiety disorders into adulthood.

Cognitive and learning factors — Anxiety disorders have been conceptualized on the basis of learning theory and fear conditioning. Individuals with anxiety disorders have difficulty distinguishing between contexts and cues that signal safety and those that represent threat (conditioning). It is also difficult for them to learn to ignore these associations when they are no longer applicable (extinction).

Research suggests that individuals with anxiety disorders have an attention bias toward threat-related stimuli, as well as cognitive distortions consistent with their anxiety [31]. This bias includes hypervigilance for potentially threatening stimuli, overinterpretation of neutral stimuli as potentially threatening, and increased attention toward potentially threatening stimuli. Error-related negativity may be another cognitive marker of anxiety in youth. A review of 22 studies of error-related negativity in youth found that error-related negativity is enhanced in clinical anxious youth across development (age 6 to 18), and that error-related negativity can predict the development of anxiety across different developmental periods [32].

Anxious cognitive patterns can present early in development, as demonstrated by a study of 135 adolescents with social phobia reporting more negative and threat-bias thoughts than their peers without social anxiety [33]. Threat bias in cognitive processing of information may represent one of the strongest, most consistently demonstrated correlates of individual differences in anxiety. A study comparing cognitive processes in 60 youth (age 8 to 12 years)

with generalized anxiety disorder (GAD), SAD, or no anxiety disorder found no differences between youth with GAD or SAD in worry, intolerance of uncertainty, negative beliefs about worry, or negative problem orientation; however, both groups scored higher in these domains than youth with no anxiety disorder. The GAD group also scored higher than the no anxiety group on cognitive avoidance [34].

Neurobiological factors — Animal and human studies have found the cortico-amygdala circuitry to have an important role in fear learning. Amygdala engagement has been demonstrated immediately following the pairing of an aversive unconditioned stimulus with a conditioned stimulus, and the later presentation of the conditioned stimulus [35]. The hippocampus and the prefrontal cortex (PFC) have been implicated in context-dependent learning when conditioned stimulus/unconditioned stimulus pairings are tied to spatial (hippocampus) or temporal (PFC) frameworks [36]. A small study of 14 anxious adolescents and 19 healthy adolescents found that sleep amount differentially impacted the fear processing neural circuitry in response to negatively valenced faces between these two groups. The study found a positive correlation between sleep amount with blood-oxygen-level dependent activation in the dorsal anterior cingulate cortex and the hippocampus in anxious adolescents, and a negative correlation in the healthy adolescents [37].

An imbalance in the amygdala-vPFC network, specifically elevated amygdala activity and decreased vmPFC activity, may be a neurobiological hallmark of anxiety disorders in that it is correlated with impaired extinction learning [38]. Studies have suggested that adolescence is a period of maximum imbalance between these two brain regions developmentally; this may be related to the emergence of functionally impairing anxiety disorders during the pubertal years. The role of reward circuitry in the development and/or maintenance of anxiety in adolescence is also an area of emerging investigation [39].

Studies combining neuroimaging and genomics have suggested linkages between functional gene variants and brain information processing. Neuroimaging and genetic analysis has found variants of the serotonin transporter gene (5-HTT) and the catechol-O-methyltransferase to have genetic effects on the brain's response to stressful or anxiety provoking stimuli [40]. As an example, the low-expressing allele of the 5-HTT promoter polymorphism (HTTLPR) has been found to be associated with greater amygdala response to stress and anxiety. In a study of 34 patients with social anxiety and 28 healthy controls, greater activation of the insula, but not the amygdala, was observed in response to fearful faces in socially anxious patients with the short allele 5-HTTLPR genotype [41].

Genetic factors — Studies suggest that children of parents with an anxiety disorder are at an increased risk of developing an anxiety disorder themselves [42-44]. Twin studies have

demonstrated significant familial aggregation among GAD, panic disorder, phobias, and obsessive-compulsive disorder. Most estimates of anxiety trait heritability in children are around 30 percent [45], though as high as 50 to 60 percent in some studies [46]. These findings suggest that genetic factors play a large role in the development of these disorders relative to environmental factors [47]. A meta-analysis of 13 cohorts (42,585 subjects) with social anxiety showed that genetic and nonshared environmental factors explain most of the variance for SAD and social anxiety symptoms across age groups. Adult cohorts showed a higher contribution of nonshared environment and half the genetic contribution compared with younger patients [48].

Some research suggests that the contribution of genetics to the development of anxiety disorders may change over the course of an individual's development. Supporting a dynamic contribution of genetics, a study of 2508 twins suggested an effect of some genes that are "turned on" in adolescence and others that are diminished throughout development. The overall variance accounted for by genetic contributions decreased from 72 percent at age 8 and 9 to 12 percent at age 19 and 20 [49].

It is unlikely that a single gene associated with one specific pathophysiological function is responsible for anxiety [50]. Family and genetic studies suggest some people may have a genetic vulnerability to develop anxiety disorders generally. Genome Wide Association Studies have begun to look for specific candidate genes associated with anxiety disorders; however, these studies result in a large number of candidate genes with relatively small odds ratios or lack of statistical significance in genotype/phenotype associations, possibly due to the cumulative effect of many genes on the vulnerability for anxiety disorders [46,51,52]. Genetic findings associated with anxiety disorders or anxiety-like behavior include a gene that promotes a corticotropin releasing hormone [53] and a single nucleotide polymorphism in the brain-derived neurotrophic factor gene [54].

Social and environmental factors — Environmental and social factors play an important role in shaping anxiety-driven behavior. This can include specific and nonspecific influences. At the core of anxiety is often a nonspecific, marked sense of uncontrollability when individuals are faced with certain tasks or challenges that may be in some way threatening [55]. Individuals with a subclinical level of anxiety seem to manifest an "illusion of control," in which response deficiencies are attributed to passing external causes or trivial, temporary internal states [56]. Several animal studies suggest that the predictability and controllability of important events, such as the acquisition of food and escape from pain, play a central role in the development of anxiety and depression [57-60]. Specific environmental influences also play a role in the development of anxiety disorders, and may help to shape the specific worries or feared stimuli and situations. As an example, a child's scary encounter with a dog may result in an ongoing

phobia of dogs. Data from a study of 385 monozygotic and 486 dizygotic same-sex twin families assessed the children of twins and found evidence of a significant direct environmental transmission of anxiety from parent to child using structural equation modeling. There was no evidence of direct genetic transmission [61].

Parenting styles appear to be critical environmental factors in the development of children's anxiety [62]. Anxious, overprotective, or overly critical parenting behaviors can contribute to the development of pathological anxiety in children. When parents or caregivers are insensitive to their child's expressive, exploratory, and independent behaviors, the child is at risk of developing inhibition and a sense of uncontrollability over their world, which may contribute to anxiety. Overprotective parenting styles that focus too strongly on reinforcing the dangers of the outside world can lead to the development of anxiety in children. Anxious, overprotective parents or caregivers are less likely to encourage and support their child's brave and exploratory behaviors, thus potentially reinforcing or maintaining anxious and avoidance behavior. A prospective, longitudinal study of 1015 adolescents (age 14 to 17 at baseline) and their mothers, assessed annually for 10 years, demonstrated that low individual autonomy of the child in the mother-child relationship increased the risk for anxiety disorders in the child [63]. Children learn specific, important psychological information from observation and experience. Parents' or caregiver's modeling of anxious behaviors can result in similar anxious behaviors in kids. As an example, in a study of 129 youth and their parents, children responded with more anxiety to scripts in which their parents acted anxious than to scripts in which their parent acted confident [64]. Parents' ability to regulate their own emotional reactivity, particularly reactions to their child's experience of fear, was found to be a link between parent and child anxiety, such that in a study of 75 school-age children and their parents, only when parents reported high reactivity to their child's fear was there a significant association between parent anxiety and children's self-reported and physiologic reactivity. Children's physiologic reactivity served as an indirect effect in the link between parents' and child's anxiety symptoms, only for parents who reported high level of reactivity to child fear [65]. Another study asked 45 mothers of youth age three to eight to listen to a recording of a distressed, anxious child pleading for help from a parent. The study found that higher maternal negative affect and using multiple emotion regulation strategies in a short time during the recording were associated with higher reports of child anxiety. Sequential modeling showed that maternal anxiety predicted ineffective maternal emotion regulation during the recording, which in turn predicted greater maternal accommodation, which predicted higher child anxiety [66].

Child maltreatment, such as abusive or neglectful parenting behaviors, have been found to be linked to anxiety disorders, particularly to social anxiety disorder in childhood [67] and adulthood [68].

Children learn anxious and fearful responding from their environment in at least three ways:

- Direct negative experiences (eg, being bitten by a dog leads to a fear of dogs)
- False alarms (eg, perceiving a situation negatively, such as school performance, without direct evidence supporting this belief)
- Vicariously (eg, witnessing or being told something is dangerous)

Children who observe their parent modeling fearful responses to a stimulus (eg, spiders) are more likely to respond in a similar way. Children also learn to cope with anxiety through avoidance after observing that parental anxiety is reduced by their own avoidant behaviors, or by experiencing a decrease in their own discomfort as a result of avoidance (ie, negative reinforcement) [69].

CLINICAL MANIFESTATIONS

Children can present with a variety of symptoms or behaviors that may signify an anxiety disorder. They, their parents or caregiver, or teachers may report:

- Avoidance – Academic and social activities may be avoided, such as school, parties, camp, sleepovers, or talking to safe strangers.
- Somatic symptoms – As examples, headaches, dizziness, problems swallowing, worry about choking, gagging or vomiting, chest pain, shortness of breath, stomach aches, bowel and bladder urgency, numbness and tingling in fingers or toes due to hyperventilation or dramatic presentations of pain.
- Sleep problems – Difficulty falling asleep or waking up in the middle of the night.
- Excessive need for reassurance – The child may seek excessive or repetitive reassurance prompted by bedtime, storms, school time, or more generally related to fears of bad things happening.
- Poor school performance – As examples, demonstrating inattention in class or having difficulty completing tests within the allotted time.
- Explosiveness and oppositional behavior – Such outbursts (catastrophic reactions) may be triggered by an anxiety-provoking stimulus without possibility of avoiding, for example, at home or school. A study of 663 treatment seeking youth with anxiety disorders found a

robust presence of irritability across all anxiety disorders, gender, and age, even when controlling for comorbid depressive disorders and oppositional defiant disorder [70].

- Eating problems – Eating insufficiently due to fear of the process of eating or swallowing or overeating to cope with anxiety. Research suggests a significant proportion of children, children with selective eating or weight concerns, report anxious behavior [71].

- Suicidal thoughts or behavior – Many studies suggest anxious youth may report suicidal thoughts or behavior in the absence of depression [72-74]. These studies suggest that between 22 and 58 percent of anxious youth report suicidal ideation [72-74]. Other studies have found that suicidal ideation or behavior in anxious youth is association with hopelessness and comorbid depression [75]. A study of 100 youth (age 7 to 13) receiving cognitive-behavioral therapy for anxiety found that 24 percent of the sample endorsed suicidal thoughts or behavior at the baseline assessment, and 13 percent reported suicidal ideation during treatment. Depressive symptoms significantly predicted suicidal thoughts and behaviors in this sample [76].

Anxiety disorders are triggered affective illnesses. While anxiety symptoms may not be persistent, the propensity for anxiety to be triggered is often persistent, resulting in symptoms occurring in some settings and situations and not others. Individual anxiety disorders can be distinguished by the nature of the stimuli that trigger anxiety, the cognitions experienced, and/or the resulting behaviors, as described below:

Generalized anxiety disorder — A child presenting with generalized anxiety disorder (GAD) will typically present with inability to tolerate uncertainty resulting in a host of worries that they find difficult to stop or control. Many children with GAD discuss preoccupation with academic performance. The preoccupations often manifest in perfectionism and an “all or nothing” cognitive bias, wherein they perceive that they must perform perfectly or they are no good. These children and adolescents tend to focus on mistakes they have made, rather than successes. Other children with GAD discuss a number of personal safety or health concerns, triggered by world events and relating to themselves and their loved ones. They may have difficulty sleeping due to worry about someone breaking into their home, or report a preoccupation with contracting a feared disease. Their inability to deal with normal levels of uncertainty results in a broad range of symptoms across multiple settings.

Social anxiety disorder — Social anxiety disorder (SAD) is often observable on presentation because the child may be shy, withdrawn or self-conscious during the assessment interview, exhibiting poor eye contact or providing limited answers to questions until they have had time to warm up. Children and adolescents with SAD will often describe a fear of saying or doing the

wrong thing, being laughed at, or being embarrassed, resulting in avoidance of social and performance situations. Their worries focus more on what others think of them, rather than on their own perceptions of their performance. Over the long term, children with early onset social anxiety may have reduced language or social functioning due to lack of developmentally appropriate experience base.

Panic disorder — Youth with panic disorder will describe experiencing panic attacks "out of the blue" (15 to 20 minutes of acute symptoms with rapid onset and slower resolution) as the primary presenting problem, and a fear of having another attack which is contributing to distress, avoidance, and/or impairment. The cognitions they describe often focus on the uncomfortable physical symptoms and fears of what these symptoms might signify (eg, "I feel like I'm having a heart attack; I feel like I'm going crazy; I worry that I will lose control and something bad will happen"). Often the sense of uncontrollability revolves around not knowing when an attack may occur. Youth will often report avoiding a variety of different settings or situations for fear of triggering a panic attack.

Agoraphobia — Agoraphobia is marked by pronounced fear in particular environments or situations, such as large open spaces (parking lots, bridges), crowded places (shopping malls, theater, ballpark), small enclosed areas (elevator), public transportation (planes, trains, cars), or generally being outside of the home, especially alone. The focus of the fear, and subsequent avoidance, of these places or situations is related to thoughts of being unable to escape or cope with physical symptoms (such a panic) or other debilitating or potentially humiliating symptoms. Youth with agoraphobia will avoid developmentally important situations, such as school or common social experiences like entering an elevator with other people due to this fear, or will require the presence of a "safe" person, such as a parent or close friend, to participate.

Specific phobias — Children and adolescents will often describe a number of different phobias, particularly when asked. Only some that they describe result in functional impairment. As an example, a child who is fearful of dogs may report a wish to avoid the park or the home of friends with dogs, which becomes socially interfering. Caregivers may describe that the child runs to the other side of the road when a dog is approaching, which presents a safety concern. Many children display some anxiety during thunderstorms, but a child with a specific phobia of storms may describe a marked preoccupation with the weather and avoid going outside when it is raining. In contrast to adult diagnostic criteria, it is not necessary for children to judge their fear or phobia as excessive or unreasonable to diagnose a specific phobia [77]. Specific phobia is often comorbid with another anxiety disorder (eg, fear of the dark and separation anxiety).

Separation anxiety disorder — Separation anxiety disorder is often observable when the child presents for an initial assessment. The child may have trouble separating from their parent to participate in their portion of the interview. Parents or caregivers may also display anxiety about being separated from their child. When separated, the child may frequently wish to check in with the parent, or vice-versa, increasing the time needed to complete the assessment. The child will typically report worries about something bad happening when they are separated from their caregivers. Parents or caregivers will often describe difficulty getting the child to sleep on their own. Families may report that the child often sleeps with their parents or requires a parent to lay down with them to fall asleep. As children grow older, parents or caregivers will complain of excessive "homesickness" as their child may avoid playdates at other children's homes, sleepovers, or overnight camps.

Selective mutism — A diagnosis of selective mutism is readily observable if the child refuses or is reluctant to speak in the assessment setting. Caregivers report that the child readily talks at home, and/or around select family or friends, but does not speak in school or other settings.

COURSE

Research studies suggest a developmental progression of anxiety disorders in childhood and adolescence.

- Selective mutism typically develops prior to age 5, with age of onset ranging from 2 to 4 years of age [78].
- The age of onset for separation anxiety and specific phobias is approximately 7 years of age [79].
- School refusal has a bimodal age of onset between the age of 5 to 6 and 10 to 11 years [80].
- Generalized anxiety disorder (GAD) typically presents in school age years, with an typical age of onset around seven years.
- Social anxiety disorder (SAD) is most common in early adolescences even though social inhibition can occur early in development [79].
- Panic disorder has a typical age of onset in later adolescence [81].

Early onset anxiety disorders are often chronic when left untreated, although the nature of the symptoms may change across child and adolescent development. Childhood anxiety disorders

are associated with educational underachievement [82], increased risk for depression [83], substance use disorder [84] and suicide [85], as well as other significant functional impairments that can extend into adulthood [86,87]. In a cross-sectional study of 488 youth with SAD, child and parent reports of impairment in social, academic, and general functioning increased with child age, even when controlling for severity of social anxiety [88], potentially suggesting that as a child ages their avoidance may increase and parental support or involvement may decrease, leading to greater impairment in day-to-day life.

The course of anxiety symptoms severity may follow a steady, increasing, decreasing, or fluctuating course throughout child and adolescent development. As an example, in a longitudinal study of 242 participants (mean age 13.52) of a baseline sample of 1514 participants (mean age 10.23) who were followed up over three years, 56 percent of participants showed elevated scores on the Screen for Child Anxiety Related Disorders at one-year follow-up and 32 percent of respondents had elevated Screen for Child Anxiety Related Disorders scores at three-year follow-up. Eight percent showed fluctuating symptom course, and 55 percent of participants showed high scores for any anxiety subtype over three years, with GAD and SAD being the most prevalent and persistent [89]. Gender may play a role in the course of anxiety disorder symptoms. For example, a latent growth curve modeling study of 1000 youth (57 percent female) assessed annually over two years found a slight linear decrease in GAD, panic disorder, and SAD symptoms for females, while males demonstrated a stable course [90].

A history of an anxiety disorder in adolescence/childhood confers an approximate two- to threefold increased risk of having an anxiety disorder or depressive disorder in adulthood [83]. Further longitudinal studies are needed to clearly explicate the implications of specific childhood anxiety disorders on adult anxiety disorders; however, evidence suggest that the presence of an anxiety disorder in childhood, and particularly in adolescence, is a strong predictor of an anxiety disorder diagnosis in adulthood [83,91]. As an example, a recent meta-analysis found five studies that suggested that a childhood diagnosis of separation anxiety disorder increases the risk for future anxiety later in life. Several studies have suggested a link between early separation anxiety and panic disorder later in life [92].

Childhood anxiety disorders are generally believed to have a good prognosis with evidence-based psychotherapy and/or medication treatment [20]; however, data supporting this are limited [93]. A further complication is that many children with anxiety disorders do not receive treatment meeting evidence-based standards [94].

A four-year follow-up study of child/adolescent patients treated for an anxiety disorder in a clinical trial suggested a less favorable prognosis for childhood anxiety disorders [95]. The study followed 319 youth originally with separation, SAD, and/or GAD who were randomly assigned to

receive 12 weeks of a selective serotonin reuptake inhibitor, cognitive-behavioral therapy, their combination, or pill placebo.

After four years, 21.7 percent of patients were in stable remission (ie, the absence of all DSM-IV-TR anxiety disorders at annual assessments during the follow-up period). Forty-eight percent were classified as “relapsers” (ie, free of anxiety disorders at one annual assessment and met criteria for a disorder at another annual assessment). Thirty percent were chronically ill (ie, met criteria for one or more anxiety disorders at each annual visit). The initially assigned treatment was not associated with the likelihood of remission during follow-up. Acute treatment responders were less likely to be chronically ill during follow-up.

SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See "Society guideline links: Anxiety and trauma-related disorders in children".)

SUMMARY

- Worries and fears are a natural and adaptive part of childhood development and important for good coping and survival. Symptoms meet the criteria for a clinical anxiety disorder when the concerns are unexpected given the child’s developmental level, persistent in the face of reassurance and support, and thus considered excessive, causing notable distress or impairment in day-to-day life. (See 'Introduction' above.)
- Anxiety disorders are the most common psychiatric disorders with onset in childhood, with prevalence estimates ranging from 10 to 20 percent. (See 'Epidemiology' above.)
- Anxiety disorders in children and adolescents have been found to frequently co-occur with other anxiety disorders as well as attention deficit/hyperactivity disorder, oppositional defiant disorder, language disorders, learning disabilities, and depressive disorders. (See 'Comorbidity' above.)
- The development of childhood anxiety disorders is determined by complex interactions among biological, psychological, and social/environmental factors. (See 'Pathogenesis' above.)

- Anxiety symptoms may be pervasive, but they may alternatively occur in some settings and situations and not others. Individual anxiety disorders are distinguished by the nature of the stimuli that trigger anxiety, and in some disorders, the cognitions experienced and/or the resulting behaviors. (See 'Clinical manifestations' above.)

- Childhood anxiety disorders are associated with educational underachievement, increased risk for depression, substance use disorder, and suicide, as well as other significant functional impairments that can extend into adulthood. (See 'Course' above.)

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