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Abstract

Objective: Evaluate best practice in managing anxiety in the pediatric population, including both school age children and adolescents. This literature review compared pharmacological treatment and cognitive behavioral therapy (CBT)'s effectiveness on the management of anxiety within the pediatric population. *Background*: Up to 25% of children in the United States are affected by a mental health disorder, anxiety being the most prevalent. Childhood anxiety can have a distressing impact on social, family, and academic functioning. If persisting into adulthood it increases the risk of developing other co-occurring mental health conditions, substance abuse issues, and contributes to impaired employment retention and socioeconomic burden. Addressing anxiety early has shown to have a lasting positive effect that carries forward into adulthood. *Method*: Five databases were selected to yield the highest levels of evidence. Key words from the clinical question were searched which generated the most prevalent hits. Sixty-five studies were identified, 16 were duplicates. Of the 49 studies reviewed, 22 met the inclusion criteria. A literature review of the 22 studies was conducted and synthesized. *Results*: The combination of CBT and pharmacotherapy are far superior for pediatric anxiety than either treatment alone. Individually, CBT is more effective than pharmacotherapy with a longer lasting benefit and should be offered to all children with anxiety. Children with severe anxiety should utilize both CBT and pharmacotherapy as together they improve the likelihood of response and remission.

Keywords: pediatrics, paediatrics, children, child, adolescents, youth, best practice, evidence based, assessment, screening, treatment, anxiety, anxiety disorder, mindfulness, CBT, cognitive behavioral therapy, outcome, non-pharmacological interventions, pharmacological

Childhood Anxiety: Cognitive Behavioral Therapy and/or Pharmacological Treatment

The transition through childhood and into adulthood could be argued as one of the most vulnerable life experiences. Many healthcare providers now acknowledge the impact childhood experiences have on adulthood and realize the importance of facilitating this transition. After all, children are the future. Transitions of childhood have been well studied, developmental and functional stages well defined. There is a growing body of literature evaluating how childhood exposures impact lifelong outcomes and health in adulthood. Healthcare providers now know long-term eating behaviors are learned as a toddler; thus, it is critical to establish good eating habits at this age otherwise poor habits may lead to lifelong ramifications (Burns et al., 2017). Spanking is taught to have no place in the area of discipline due to the knowledge that children who receive spanking or physical force as a form of discipline are at much higher risk of developing physical force as a means to express anger and deal with conflict (Richardson, 2020). Providers also now have a greater understanding regarding the significance of adverse childhood events (ACEs). There are long-term associations between ACEs and adulthood health risks behaviors, health status, disease, and death (Felitti et al., 1998). Early adversity has a long-lasting impact as an adult and has the potential to influence many domains including injury, mental health, maternal health, infectious disease, chronic disease, risk behaviors, and life opportunities (Centers for Disease Control and Prevention [CDC], 2019). These examples emphasize that much of what occurs during childhood translates to who these individuals become as adults. One common co-occurrence in childhood and adulthood is the prevalence of anxiety. Adult psychosocial disorders can often be linked to childhood anxiety that persisted into adulthood. Childhood anxiety has been found to

predispose individuals to various health conditions and negatively impact functioning, making it an important consideration when caring for children and adolescents.

Many factors contribute to the risk and onset of anxiety in childhood. There are, likewise, many issues childhood anxiety predisposes someone to developing as an adult. There are, however, effective ways of managing childhood anxiety to minimize the life lasting effect it may have. The treatment of childhood anxiety should be a shared decision between providers, patients, and parents. Everyone involved in decision-making should be well informed about the options available as well as their effectiveness and long-term outcomes on the diagnosis of anxiety.

Background

Common childhood anxiety disorders include social anxiety, generalized anxiety, obsessive-compulsive disorder (OCD), and separation anxiety (Burns et al., 2017). Roughly 20-25% of children in the United States are affected by mental health or psychosocial problems (Burns et al, 2017; Wehry et al., 2015). Among mental health problems, anxiety is easily the most prevalent diagnosis (Adler Nevo et al., 2014; Crawford et al., 2013). More recent literature suggests a growing prevalence of childhood anxiety, reaching as high as 32% in the United States (Ege & Reinholdt-Dunne, 2016). It should be emphasized that although anxiety in childhood is labeled as a common condition, this does not translate as normal. There is a distinction to be made between the symptoms of anxiety, normally experienced by everyone at some point in their lives, and a persistent maladaptive behavior that classifies a diagnosis of anxiety. A formal anxiety diagnosis is not a normal developmental experience.

Misunderstanding this difference between normal anxiety symptoms and abnormal anxiety manifestation contributes to the underdiagnosing of childhood anxiety. It is disappointing that only 22% of adolescents who meet diagnostic criteria are diagnosed and treated by their primary care provider (Burns et al., 2017). This emphasizes a need for improvement in recognizing and managing anxiety.

Nonetheless, it is relatively easy to understand how children fly under the radar of being diagnosed. Anxiety is often an internal process that may not be an obvious problem to those around the child, including parents, let alone a provider who sees them far less often (Boorady, 2020). Children with anxiety may portray symptoms in a wide variety of ways. Often, they are labeled as inattentive or easily distracted. They may be fidgety or have behavioral outbursts. Sleep is a necessity for brain development and function (Burns et al., 2017), anxiety however, disrupts sleep and is known to contribute to sleep disorders. The disruption it causes in sleep may in part contribute to how anxiety is manifested clinically by the child. At the very least, the disturbance of sleep negatively impacts their anxiety symptoms. Additionally, children with anxiety commonly have a host of physical problems or complaints such as headaches, and stomachaches (Boorady, 2020). Though one exact cause of anxiety is unknown, it is likely multifactorial. The phrase 'the apple doesn't fall far from the tree' is often referenced when comparing children to their parents. It is notable that children learn from their parents and children of anxious parents are at a much higher risk of developing an anxiety disorder themselves (Cartwright-Hatton et al., 2018). Anxiety may likely occur due to risk factors including genetics, a temperamental disposition such as shyness, social and/or environmental exposures, or life circumstances (Burns et al., 2017).

Untreated childhood anxiety can be very disabling and lead to chronic anxiety in adulthood. Childhood anxiety is known to negatively impact social and family functioning (Crawford et al., 2013). It additionally is the leading reason for school refusal, thus negatively impacting academics (Burns et al., 2017). Separation anxiety is a risk factor for panic attacks and disorders which can be very debilitating (Burns et al., 2017). Sustained anxiety into adulthood is concerning as it predisposes an individual to developing diverse psychiatric mood disorders and substance abuse disorders or dependence (Crawford et al., 2013). It is significant that approximately 32% of children with anxiety will carry this diagnosis forward with them into their adult years, making them susceptible to these co-occurring conditions (Burns & Thiessen, 2014). Furthermore, sustained anxiety in adulthood is responsible for poor employment retention and outcomes (Adler Nevo et al., 2014). Anxiety not only causes individual distress and life-altering challenges, but it becomes an economic burden to society as well (Adler Nevo et al., 2014). Given anxiety disorders are among the most prevalent conditions affecting children and the distress it can cause on an individual and society, accurately diagnosing and treating anxiety should hold high importance in the minds of providers. Most cases of childhood anxiety are diagnosed before 12 years of age (Burns et al., 2017), 50% of cases occurring by six years of age (Ege & Reinholdt-Dunne, 2016). This early onset emphasizes the necessity for early screening and intervention to minimize risk of untreated or long-term effects of anxiety. Treatment of anxiety may include pharmacological therapies including selective serotonin reuptake inhibitors (SSRIs), serotonin-norepinephrine reuptake inhibitors (SNRIs), and tricyclic antidepressants (TCAs). An underappreciated, yet effective, treatment includes CBT.

Of the treatment approaches available, CBT and SSRIs are viewed as the first line treatment options for childhood anxiety (De Souza et al., 2013). CBT has been one of the most extensively studied forms of psychotherapy (Butler et al., 2006). Regardless of it being proven to be an effective alternative modality in anxiety management, it remains underutilized compared to pharmacological interventions. CBT works by targeting and modifying cognitive dysfunction through psychotherapy using cognitive and behavioral techniques (Ege & Reinholdt-Dunne, 2016). It has been found to be effective in the management of several psychiatric disorders and has a lasting effect beyond the cessation of treatment (Butler et al., 2006). CBT is most commonly administered through in-person therapy guided sessions. There are growing opportunities for CBT to be administered in a variety of settings including therapist guided parent-delivered sessions, school based, and computer or internet delivered. CBT is often delivered over a course of several weeks and is viewed as short-term therapy. Therapy sessions may range from 5-20 sessions depending on an individual's need (Mayo, n.d.). Cost of CBT is often an initial concern. Although the cost of CBT varies, it has been found to be significantly lower than treatment as usual with pharmacotherapy (Dickerson et al., 2018).

The goal of this literature review was to evaluate the best approach to managing childhood anxiety, specifically looking at pharmacological treatment verses CBT and if one modality is superior to the other or if a combined approach is most efficacious. The clinical question is: *in school aged children (5-12 years old) and adolescents (12-18 years old) how does the efficacy of CBT compare to pharmacological treatments in the management of anxiety?* This literature review also looked to answer an additional clinical question, including: *What is the most effective tool in screening for childhood anxiety?* Recurring themes found in the literature

were also reviewed in the synthesis. The results of this literature review are intended to inform

providers of the best management approach for childhood anxiety and how to best carry out

the recommended treatment. It is clinically significant to adequately treat childhood anxiety

considering the prevalence of which anxiety is seen and therein reduce the risk untreated

anxiety poses to this population as adults. More attention needs to be drawn to mental health

in general, but particularly in the childhood population if providers are to make a lasting

difference for the future.

Methods

In descending order, the best levels of evidence to evaluate an intervention question

include systemic review/meta-analysis, randomized controlled trials (RCTs), non-RCTs, cohort

studies or case-control studies, meta-syntheses of qualitative or descriptive studies, qualitative

or descriptive single studies, and expert opinion (Melnyk & Fineout-Overholt, 2015). The

databases identified for this literature review were aimed at collecting the highest level of

evidence. Then, a broad database abstraction was done evaluating the hit results of the key

terms derived from the PICO question. Based on the hit results, a literature review was

conducted to screen for inclusion and exclusion criteria prior to synthesizing data.

Databases

The databases searched included Cochrane, CENTRAL, MEDLINE, CINAHL, and PsycINFO.

Cochrane Database of Systemic Reviews is the gold standard database and should be among

the first searched for intervention questions (Melnyk & Fineout-Overholt, 2015). Cochrane is

where systemic reviews can be found in answering intervention questions. This is a smaller

database given it contains systemic reviews which are fewer and farther between. Another

database that was searched included the CENTRAL database, which serves as the most

comprehensive source of controlled trials. MEDLINE was a utilized database because it is the

largest searchable database covering medicine and health. CINAHL database was used as it

contains many subject areas, one being alternative/complimentary medicine which was an

important component of the clinical question. Lastly, PsycINFO was another database explored

given the mental health aspect of the clinical question. Refer to Table 1 in the appendix to

visualize the databases used along with the corresponding restrictors, expanders, dates, and

general subjects covered in the literature search.

Search Strategy

Each database was searched using the following key words, which were variations of the

original clinical question, including; pediatrics, paediatrics, children, child, adolescents, youth,

best practice, evidence based, assessment, screening, treatment, anxiety, anxiety disorder,

mindfulness, CBT, cognitive behavioral therapy, outcome, non-pharmacological interventions,

pharmacological. After the initial key word search, a correlating search strategy was applied.

This strategy included a cross search, looking at the variations of the key terms and cross

searching those results with each aspect of the PICO question. Lastly, a bibliography review was

done on the studies that passed inclusion criteria. This process can be visualized in Table 2 of

the appendix which shows the key words searched and the number of hits for the

corresponding databases. Table 2 also demonstrates in bold the groups of articles reviewed for

inclusion or exclusion.

Studies that evaluated CBT for anxiety as well as pharmacological treatment for anxiety were included in this review. Inclusion criteria was also dependent on age, including neurotypical pediatrics between 5-18 years old. Studies pertaining to early childhood or adults outside the stated pediatric range of interest were excluded. Studies evaluating the therapies for conditions other than anxiety or studies evaluating these therapies for anxiety in the setting of another disorder, i.e., autism, PTSD, were excluded. This literature review looked to evaluate the effectiveness of CBT in comparison to pharmacological management of anxiety in the neurotypical pediatric population without other confounding factors. The exclusion criteria focused this review to yield the best results of treatment for anxiety disorders in pediatrics. In total, 65 studies were identified, 16 were duplicates, leaving 49 articles. Of the 49 articles that were reviewed, 22 met the inclusion criteria. Refer to Table 3 in the appendix for the studies included or excluded along with the rationale.

The literature review process was conducted on all the included articles based on the method and inclusion/exclusion criteria. Table 4 summarizes the key aspects of the literature that were included and reviewed. Table 4 was developed prior the synthesis of data as a means data abstraction and organization.

Methodological Strength

This literature review yielded quality evidence for the intervention question. Using the Hierarchy of Evidence (Melnyk & Fineout-Overholt, 2015), sixteen of the 22 articles (72%) were Level III evidence or higher, with the majority being Level II with RCTs accounting for 10 articles. One article met Level I evidence criteria as a systematic review. The second major grouping

being Level III which included five articles. The remaining five articles were Level IV evidence or lower.

Literature Review

Study Characteristics

All studies evaluated the pediatric population, and the majority of studies evaluated both school-age children and adolescents between 7-18 years of age. The youngest age included in any of the studies was five years. Four studies looked specifically at school-age children (5-12 years). Four separate studies specifically looked at adolescents (10-17 years). The studies differed in the types of anxiety that were included, and this is acceptable due to the knowledge that often different anxiety types co-occur. The anxiety types found in the literature included various combinations of generalized anxiety, social anxiety, social phobia, and separation anxiety.

As for the interventions, CBT and pharmacological treatment were the focus of interest. The studies evaluating CBT administered between 12-18, 60-minute sessions of CBT. The majority of studies developed their CBT protocol from *The Coping Cat* program. The original Coping Cat program involved 14 sessions over 12 weeks. Two were parent only and the remainder child sessions. The sessions included developing skills and training in anxiety management. This was followed by practice with anxiety provoking situations that were tailored to the participants needs and anxieties (Gonzalez et al., 2015). For those studies that evaluated pharmacotherapy, they almost exclusively utilized sertraline and had eight sessions for medication management and systematic adjustment in dosing. The tools most utilized by

the studies to obtain baseline assessment and post treatment outcomes were the Pediatric

Anxiety Rating Scale (PARS) and the Screen for Child Anxiety Related Disorders (SCARED)

anxiety screeners. PARS was used more than SCARED, seven studies to four respectively.

CBT vs Pharmacotherapy Research Synthesis

CBT and SSRIs are known as the first line treatment options in the management of

childhood anxiety. Within recent years research has expanded, evaluating their effectiveness,

trying to identify the superior treatment options, and long-term outcomes. Although there is no

agreement on which individual treatment (CBT or SSRI) is more effective, the consensus of the

literature is that CBT and pharmacotherapy together are far superior than either alone (Beidas

et al., 2014; Burns & Thiessen, 2014; Walkup et al., 2008). Together, CBT and sertraline have

response rates of 80% or higher (Beidas et al., 2014; Walkup et al., 2008). Given the high

likelihood for success, it could be argued that combination therapy should be offered to all

youth with anxiety disorders. The treatment approach could, however, be broken down based

on the severity of the child's anxiety. For children presenting with mild anxiety, all three

therapies (combination or either CBT or SSRIs alone) are reasonable, producing favorable

outcomes. Remission rates for combination therapy, sertraline alone, or CBT alone in mild

anxiety can reach as high as 80% (Beidas et al., 2014). Untreated anxiety that progresses to

moderate or severe anxiety decreases the responsiveness of therapy across the board. A 2014

study found that for severe anxiety the response and resolution of their anxiety diagnosis

varied between treatment groups, 62% responded to combination therapy, 49% responded to

CBT alone, and only 27% responded to sertraline alone (Beidas et al., 2014). Additionally, higher

levels of anxiety are associated with poorer long-term outcomes (Gibby, Casline, & Ginsburg,

2017). The reduced response rate and potential for poorer long-term outcome highlights the importance of early diagnosis and intervention to promote the best likelihood for success and remission of anxiety. If a patient is presenting with severe anxiety, providers should encourage combination therapy to increase the likelihood of response and improve outcomes (Beidas et al., 2014). For milder presentations of anxiety, there is more leeway in the treatment choice. Findings show that with mild anxiety there is generally more favorable outcomes with any treatment, making all three options a reasonable starting point. This information can help facilitate the shared decision-making process by presenting the likelihood for success of each treatment option based on the severity of symptoms. These statistics further help to provide clear, easily digestible, and realistic expectations for families. However, there are a few exceptions to consider.

CBT and pharmacotherapy together are superior, but if this is not a desired or feasible treatment approach then the literature suggests that CBT is superior to pharmacotherapy with a few exceptions. Nearly all studies in this literature review either found CBT to be superior to pharmacotherapy or at the very least equally effective. As mentioned above, for school-age children and adolescents with severe anxiety, CBT was superior with a 49% response rate as compared to pharmacological treatment with a 27% response rate (Beidas et al., 2014). Another 2013 study evaluating CBT, medication, and combination therapy found similar results with CBT being superior to medication. Alone CBT had a 63.6% response rate whereas medication alone had a 50% response rate (Masi et al., 2013). More recent literature and a Cochrane review also supported that CBT appears to be more effective than treatment as usual, still there is a need for more research to definitively determine the superiority (James et al.,

2018). The largest study to date evaluating pediatric anxiety involved 488 children and, not surprisingly, found the combination of CBT and sertraline to be more effective than either alone. The therapies alone had a response rate of 59.7% and 54% for CBT and sertraline respectively. Although this large study did not show a statistically significant difference, those receiving CBT had a lower dropout rate as well as less insomnia, fatigue, sedation, and restlessness than the sertraline group (Walkup et al., 2008). Considering the sertraline group had higher rates of side effects and dropouts, a limitation of this study was the potential for skewed results. Regardless, even though comparable in effectiveness, if side effects are a concern, CBT has proven to be an admirable alternative to pharmacological management. A notable theme favoring CBT is seen when reviewing separate studies looking specifically at these treatment options versus controls. CBT generally had higher rates of response, improved remission rates, and more favorable outcomes. Trials of CBT versus controls found response rates from 56%-95% (Chiu et al., 2013; De Souza et al., 2013; Galla et al., 2012) and remission rates up to 83% (Galla et al., 2012) versus controls response rates of 16-28% (De Souza et al., 2013; Galla et al., 2012). As for medication versus controls, medication response rates remain around 50-55% in varying studies compared to a response rate around 24% in the control groups (Burns & Thiessen, 2014; Wehry et al., 2015). While not compared head on, this supports the suggestion that CBT has higher response and remission rates of anxiety, demonstrating its superiority.

The exception of when CBT is not superior to pharmacotherapy is for children with a family history of anxiety. A positive family history of anxiety has been associated with a six-fold decrease in effectiveness of CBT compared to families without a family history of anxiety

(Gonzalez et al., 2015). When CBT versus sertraline was evaluated in the setting of anxious

parents, the children receiving sertraline had more favorable responses (Gonzalez et al., 2015).

Anxiety often clusters in families (Burns et al., 2017), thus this would be one exception where

pharmacotherapy is the superior treatment choice. This knowledge allows for a more tailored

and individualized approach with consideration of the child's genetics and environment. With

this being said, combination therapy remains superior, regardless of parental anxiety level

(Gonzalez et al., 2015).

Long-Term Outcomes

Another consideration in choosing a treatment approach is the long-term effect and

outcomes. Despite the fact that recent research indicates CBT is superior to pharmacotherapy,

providers ultimately care about the long-term effect and prevention of anxiety into adulthood.

The most recent research has been evaluating long-term outcomes and predictors of treatment

success for both these treatment options. The therapeutic effects of CBT appear to persist,

compared to pharmacological treatment, but evidence is limited (James et al., 2018). A long-

term follow-up study, with an average follow up at 50 months post treatment, found a 79%

remission rate of those who received CBT versus no treatment (Brown et al., 2017). This

indicates treatment gains are maintained for several years even after treatment is

discontinued. It can be extrapolated that CBT may have a curative effect on childhood anxiety.

This can be appreciated given the goal of CBT is to modify behavior and provide lifelong skills

that may carry forward despite stopping treatment. A different study, with a six year follow up,

found sustained effect with remission of anxiety for all treatment groups, including sertraline,

CBT, and combination therapy (Wehry et al., 2015). Another study found that 76% no longer

met diagnostic criteria of those who received either CBT or SSRI (Gibby et al., 2017). These two studies highlight that, regardless of treatment, there appears to be sustained long-term benefit if there is an initial treatment response. Only one long-term follow-up study of eight years had contradictory outcomes indicating that regardless of treatment or no treatment, there was a 50% remission of anxiety diagnoses (Adler et al., 2014). These findings imply that there may be some childhood anxieties that spontaneously remit. However, that perspective remains a debate, and knowledge of who spontaneously remits is unknown.

Researchers are beginning to evaluate potential predictors of treatment remission. Some factors, unfortunately, cannot always be predicted such as negative life events that have not yet occurred. Though the Adler et al (2014) eight-year follow up study concluded that childhood anxiety may improve without treatment, there may be bias. When collecting participants, researchers had far more participants from the non-treatment group decline participation at the eight-year follow up. This theoretically could have significantly skewed the data if it was hypothesized that the ones in the non-treatment group who declined participation were the ones who still carried an anxiety diagnosis. Adler et al. (2014) suggest that not all childhood anxiety needs to be treated and not all childhood anxiety will proceed into adulthood however there is no reliable means of deciphering which children are at risk. Given healthcare providers do not have good predictors and cannot forecast life events, this single study does not outweigh the potential benefit of treatment in light of the unknown variables. It does however raise question to the many unknowns about the long-term course of anxiety. Even though some believe anxiety may spontaneously remit, the general consensus is that children do not simply just outgrow their anxiety. The course of anxiety is a waxing and

waning process and is overall considered to be chronic and persistent, leading to psychiatric

disorders in adulthood if left untreated (Wehry et al., 2015).

Predictors of Treatment Success

Despite best efforts to individualize care, it can be challenging to identify which

treatment approach is best in each circumstance. Researchers continue to evaluate predictors

of treatment success and factors that contribute to successful treatment outcomes. One study

found that study participants with higher IQs have better responses to CBT (Benford, 2017).

Moreover, concurrent family dysfunction or parenting stress have been correlated with poorer

CBT response (Bunford, 2017). Children who are initial responders to treatment have been

shown to have better long-term outcomes as compared to initial non-responders (Gibby et al.,

2017). Positive parental and patient expectations that treatment will lead to better outcomes is

a robust predictor of adherence and positive outcomes (Zehgeer et al., 2018). Additionally,

those living with two parents is another positive predictor of treatment adherence that impacts

outcome (Zehgeer et al., 2018). Life events are another emerging predictor of outcomes, and

those experiencing a greater number of negative life events have poorer outcomes (Gibby et

al., 2017). Even still, life events may not be modifiable, so facilitating family coping strategies

during such times is important. Another factor contributing to outcomes is family

accommodations (FA). FA behaviors include talking on behalf of the child, letting them sleep in

their parents' bed, providing special meals, facilitating and allowing school avoidance or

avoidance of other activities. FAs have been shown to negatively impact child anxiety by

maintaining anxiety as opposed to alleviating symptoms (Norman et al., 2015). Though

unknown to the parent, these FAs negatively reinforce reliance on parents and hinder

independent growth and coping skills (Norman et al., 2015). Recognizing and educating parents on how these problematic behaviors impact treatment response and outcomes is needed. To date, of the longitudinal studies evaluating study subject's post-treatment, none found that age, race, gender, or ethnicity had a clear impact on the duration of outcomes (Gibby et al., 2017).

These emerging predictors of treatment success can help guide treatment decisions though are in early stages of analysis. The most meaningful predictor at this time is baseline severity of anxiety predicting treatment response, as previously described (Beidas et al., 2014). Those with severe anxiety have lower success rates and higher rates of continued anxiety, which impact behaviors and psychological conditions in adulthood. This knowledge aids predicting outcomes and is meaningful for making informed decisions regarding the best treatment. It likewise allows for better communication and the ability to set reasonable expectations for long-term prognosis with families. Again, this information highlights the need to screen for early signs of anxiety and facilitate family functioning early on to achieve a more favorable treatment response and patient outcome.

Recurring Themes of Literature to Aid Providers

Screening for Childhood Anxiety

Unfortunately, it is not uncommon for the diagnosis of anxiety to be given more than 20 years after symptom onset (James et al., 2018). Due diligence has not been achieved when it comes to screening childhood anxiety. Anxiety starts early in development with the median age of onset at six years old (Gibby et al., 2017) with social anxiety peaking in adolescents (James et

al., 2018). Clinical presentation varies greatly, hindering accurate diagnosis. Children likely present with somatic complaints of muscle tension, headaches, stomach aches, or anger outbursts (James et al., 2018). Often, children are first presenting in the nurse's office at school with varying physical complaints (Burns & Thiessen, 2014). Other characteristics may include a shy disposition, soft spoken, avoidance of eye contact, rigid posture, blushing, or activity/school avoidance behaviors (Burns & Thiessen, 2014). It is important to remember that anxieties cluster in families, thus providers should screen carefully in children of anxious parents (Gonzalez et al., 2015). Children who present with any of these varying complaints should have anxiety as a leading differential. If organic disease is ruled out, then anxiety should be more thoroughly explored. Beyond symptom presentation, providers should be inquiring about anxiety routinely as often families are hesitant to disclose anxiety early on due to stigma or concern for judgement on their parenting style (Norman et al., 2015).

A majority of the literature utilized the PARS or SCARED screening tool. PARS is a useful tool because it can benchmark treatment response. However, it is time intensive, it requires training for administration, (McGuire et al., 2019) and requires clinician grading (Wehry et al., 2015). Whereas SCARED can similarly be used for monitoring treatment response, it is a youth- and parent-rated anxiety scale that requires minimal training and interpreting (McGuire et al., 2019). SCARED is cost effective, as it is free and accessible online, and it has good reliability and validity. SCARED is recommended by NICE guidelines (Burns & Thiessen, 2014) and has the advantage of differentiating between different types of anxiety. In real world practice, SCARED is the favored screening tool for childhood anxiety though PARS is what is frequently utilized in trials (Wehry et al., 2015).

Treated vs Untreated

It is important to accurately diagnose anxiety early, but it is equally as important to treat it early. Early detection and intervention can prevent the development of abnormal behavioral patterns that interfere with functioning and lead to comorbidities in adulthood (Burns & Thiessen, 2014). Pediatrics who show positive response to initial treatment are far more likely to be anxiety free and less impaired in the long-term. Additionally, responders are significantly less likely to have depression and less likely to use marijuana or other substances (Gibby et al., 2017). Children who were older when they first received treatment were more likely to need interim mental health services, further emphasizing earlier intervention is better (Gibby et al., 2017). Untreated anxiety is a gateway illness for other lifelong adult psychiatric mood disorders. It is associated with higher rates of school dropout, and decreased quality of life, employment opportunity, and socioeconomic status. Additionally, with retained anxiety individuals are more likely to remain single and less likely to participate in life joys including social and leisure activities (Burns & Thiessen, 2014). Those with retained anxiety are also more prone to have children with anxiety given the tendency of clustering in families likely due to genetic and environmental factors (Burns et al., 2017). This literature review has highlighted the importance of treatment in light of all the potential negative outcomes that result from untreated anxiety.

Barriers to CBT

Though CBT is superior, it is significantly underutilized in real world practice, primarily due to barriers. In fact, treatment for anxiety in general is significantly underutilized with only 17% of children with anxiety receiving treatment in the United States (Salloum et al., 2016).

Barriers for CBT include lack of dissemination outside of specialty clinics and into community settings, geographic barriers, shortages of therapist, cost, need for ongoing therapy, and time consumption of therapy (Crawford et al., 2013; Salloum et al., 2016). Additionally, recommending CBT has proven to be a challenging barrier for providers on multiple levels due to lack of training, limited availability, large provider caseloads, and the varying clinical presentations impacting diagnosis (Crawford, et al., 2013). The common barrier from a parents' perspective are that they either do not recognize their child's problem as serious, they want to resolve the problem on their own, their worry about others knowing about treatment, or they simply don't not know where to go (Salloum et al., 2016).

Methods of CBT

Historically, CBT has been done through in-person therapy sessions. More recently, smaller studies have evaluated the effectiveness of other treatment modalities for CBT. The good news is that CBT appears to be equally effective in various formats including family, individual, group, and online as well as across a variety of other settings (James et al., 2018). This has huge implications for management of childhood anxiety in addressing the many barriers to receiving in-person CBT. Receiving face-to-face therapist delivered CBT has been a challenge on many fronts including scheduling conflicts, availability, accessibility, transportation, and more. This is disappointing given how effective CBT is for childhood anxiety. Fortunately, recent studies have looked at delivering CBT in various formats and settings in attempt to expand its availability and minimize barriers to receiving this treatment with their effectiveness looking promising.

A study from 2017 looked at computerized CBT and guided parent-delivered CBT and found these approaches are effective and have comparable outcomes to in-person therapy (Brown et al.). One study with therapist-guided internet delivered CBT with supplemented group and parent sessions had a 47% remission rate post treatment and 57% remission rate at 6 months post treatment (Nordh et al., 2017). These findings demonstrated the continued benefit and effectiveness over time. Another study found computer-assisted CBT had an 86.7% remission rate and that parents and children were highly satisfied with the treatment approach (Crawford et al., 2013). Computer- and parent-guided CBT have the significant advantages of being flexible and easily incorporated into daily life at home. Another logical place for CBT is within schools. School settings of CBT have shown significant response. One study had an initial response rate of 95.5% and a 1-year remission rate of 83% while controls only had a response rate of 16.7% while on waitlist (Chiu et al., 2013; Galla et al., 2012). Beyond addressing some of the initial barriers to receiving CBT, there have been other added benefits. For instance, computer-delivered CBT has allowed for more individualized scenarios to be played out. This modality can expose the child to specific anxiety scenarios and allow them to play it out and practice behavior modification in a controlled setting (Burns & Thiessen, 2014). The effectiveness of these varying modalities and settings allows for more opportunity for the child and parent to receive CBT.

Gaps in Literature

Several gaps in the research literature for childhood anxiety exist. To start, there is very little known about the natural course of anxiety. Debate exists between how much, if any, childhood anxiety spontaneously remits. There is varying literature on the different types of

childhood anxiety. Each study focused on varying combinations of the different types of anxiety including social, generalized, and separational anxiety as well as, OCD. It remains a possibility that each type of anxiety may have different long-term implications. However, it is difficult to isolate anxiety types due to the common co-occurrence they have with each other. Childhood anxiety is a known risk for varying conditions in adulthood, though predictors of which children will experience remission, and which will go on to develop adulthood conditions are in the early defining stages. CBT has been proven to be an effective and superior treatment option with long lasting benefit. However, tackling barriers to receiving this treatment remains a gap in knowledge. Most recently, literature has explored different avenues of CBT settings and though results are promising, they are still in the early stages. These gaps in the research literature cloud providers interpretation and generalization of results into practice, highlighting the continued need for more research in this field.

Discussion

Childhood anxiety is common among the pediatric population and is associated with lifelong implications. An anxiety diagnosis in childhood risks the wellbeing of the patient's acute health as well as their adult health. Adequate screening, diagnosing and treating childhood anxiety is in the best interest of not only the child but their family and society as well. Children are the future, addressing anxiety early has shown to have a lasting positive effect that carries forward into adulthood. The treatment of anxiety is very personal and should be individualized to incorporate the best evidence.

CBT and pharmacotherapy together are far superior in treating pediatric anxiety than either treatment alone. When these two treatments are compared alone, CBT is more effective than pharmacotherapy, with only a few exceptions. Additionally, CBT also has a longer lasting benefit that should be further explored in future research. Pharmacotherapy remains a respectable first line treatment option, but it is not the superior method and thus should not continue to be utilized as such in practice. Rather, CBT and pharmacotherapy should be offered to all children with anxiety as first line treatment. Shared decision-making should be utilized when choosing the treatment regimen. Education on the expected response rates for the combination of CBT and pharmacotherapy as well as both options alone should be provided to families. This information will facilitate families in making informed decisions given their specific circumstances.

The most meaningful information to guide treatment decisions is the severity of the child's anxiety at the time of presentation. Pediatrics with severely rated anxiety should be strongly encouraged to receive a combination of CBT and pharmacotherapy. Together they improve the likelihood of response and remission for patients with severe anxiety, as neither CBT nor medication alone are as effective (62%, 49%, 27% response effectiveness respectively). Those with mild to moderately rated anxiety should still be offered the combination of treatments given its superiority, but there are more favorable and comparable outcomes for all three treatment options with non-severe anxiety. When combination therapy is not desired, if there is a strong family preference, family dysfunction, low patient IQ, or the patient has anxious parents, then pharmacotherapy should be offered. These are the only circumstances when pharmacotherapy has been shown to be superior to CBT. For everyone else, CBT is the

superior treatment for monotherapy. These deciding factors for treatment are highlighted in Figure 1. Beyond the treatment choice, there is importance to implementing treatment early after the onset of anxiety. In general, there are more favorable outcomes for those with mild to moderate anxiety if they receive treatment early, regardless of the treatment choice. Thus, treatment should be offered for all patients with a diagnosis of anxiety, no matter their severity.

Implications for Future Practice

Clinical Pearls

Pediatric anxiety is highly prevalent yet significantly under-diagnosed and most often remains untreated. Diagnosing anxiety is hindered by the various and vague clinical presentations. It is also often underreported by family due to failure to recognize, concern of stigma, or writing it off as personality characteristic or shy disposition. Providers should be attentive to common presentations including various somatic complaints, shy disposition, avoidance of eye contact, history of school avoidance, frequent nurse visits, or children of anxious parents. If suspected, pediatric patients should be screened more carefully for an anxiety diagnosis. A quick two question method of screening may include: "Do you find yourself avoiding social situations or activities?" and "Are you fearful or embarrassed in social settings?" If answering yes to either question, then a more formal screening of either PARS or SCARED would be appropriate to more thoroughly screen for anxiety (Burns & Thiessen, 2014). If anxiety is present, there are very effective treatment options with high response and remission rates, but the key is to identify anxiety early for the best long-term outcome. If not dealt with,

chronic and persistent anxiety is considered a gateway to comorbidities in adulthood (Ege &

Reinholdt-Dunne, 2016). Nonetheless, with early detection, treatment has success rates as high

as 80% (Beidas et al., 2014). Those treated for childhood anxiety also have fewer anxiety-

related dysfunctions and disorders as an adult (Burns & Thiessen, 2014). The severity of anxiety

at the time of diagnosis has some implication to the treatment recommendations. Of the

treatment options available, the combination of CBT and an SSRI is the superior treatment

approach across all severity levels. Those who receive combination therapy can consistently

expect sustained and maintained reduction in their anxiety (Walkup et al., 2008). When both

options cannot be utilized together, CBT has been shown to be superior to medication alone

with its lasting effects and benefits (James et al., 2018). However, providers should remember

that children with anxious parents benefit more from medication (Gonzalez et al., 2015).

Additionally, multiple studies not only show high rates of response for CBT but high rates of

remission and continued benefit for years after discontinuing treatment. An algorithm that

highlights these clinical pearls and considerations has been developed based off this literature

review to further guide providers in identifying and managing childhood anxiety, see Figure 1.

One final clinical pearl is for providers to have a positive perception about treatment as this

leads to better outcomes. In general, if patients and families have a positive perception about

the treatment, they are more likely to have positive outcomes. The same is true for the

opposite, since if they have a negative perception about treatment, they likely will have

unfavorable outcomes. This emphasizes the importance of meeting family where they are.

Providers need to identify modifications that can be done to overcome barriers of treatment

and evaluate how to best address any concerns regarding treatment to yield the best outcome.

Referring to Cognitive Behavioral Therapy

Cognitive behavioral therapy can be implemented as early as six years of age. The important component is that they have the cognitive capability to utilize the CBT techniques. Some studies have reported effectiveness in children younger than six years of age, but this is the exception and decision should be made on a case by case basis for those younger than six (James et al., 2018). There are multiple settings where CBT has been shown to be equally effective in; the one caveat being that other than face-to-face, these other treatment options are not yet widely accessible. Only recently has literature explored other practical solutions for implementing CBT besides face-to-face. Alternative modalities should be the future but currently their availability is limited. While awaiting these other modalities for CBT, working with families to overcome any barriers to receiving face-to-face therapy is optimal. It is worth noting that for the treatment of anxiety, CBT usually takes 9-20 sessions (James et al., 2018). The duration of CBT underlines the likely temporary need for treatment. This understanding may make it more realistic and feasible for families. As for the cost of CBT, it may range from $100-200 depending on the therapist. Of note, the cost of CBT has been found to be lower than treatment as usual with a statistically significant difference after the first year of CBT versus pharmacotherapy (Dickerson et al., 2018). The other modalities that have been recently studied have likewise shown cost savings, particularly with therapist-guided internet delivered CBT (ICBT). ICBT includes minimal therapist assistance and has proven to be effective with substantial cost savings (Lenhard et al., 2017). ICBT allows for in home treatments at the parent or child's convenience and eliminates many barriers to receiving CBT. Researchers and government agencies should focus their efforts on effectiveness and coverage of these

modalities since sustained anxiety has a long-lasting impact and leads to strained personal and

national healthcare budgets (Lenhard et al., 2017). While awaiting these efforts, the

recommended resources that have proven helpful for families include *Timid to Tiger: A*

Treatment Manual for Parenting the Anxious Child (Norman et al., 2015) and *The Coping Cat*

programs (Salloum et al., 2016). The *Timid to Tiger* manual is available online at no cost and can

be utilized as a tool for parents of anxious children*. The Coping Cat* programs include the Camp

Cope-A-Lot and Child Anxiety Tales and have the advantage of being completely computer

driven with both a parent and child program available. Camp Cope-A-Lot is computer-delivered

CBT, with therapist assistance, for children. The Child Anxiety Tales is computer-based parent

training. *The Coping Cat* programs are available in 4-month or 12-month subscriptions, costing

$99 or $125 respectively. *The Coping Cat* is also an excellent resource for providers. These three

options, along with face-to-face CBT, are the current favored treatment approaches for CBT

(James et al., 2018).

Recommendations for Research

There are many areas in need of further research for childhood anxiety but since it has

been well established that CBT is effective and even superior in some cases, efforts of research

should be focused on how to make CBT more accessible. Dissemination of an effective

technique for CBT is an important research field (De Souza et al., 2013). Small studies have

been done looking at the effectiveness of CBT in a variety of formats and settings. Larger

studies evaluating these modalities should be done to confirm their effectiveness and further

the plans for dissemination. ICBT is available and remains promising but few are utilizing it.

Another potential promising setting for CBT is in schools. Those who work in schools are in an

ideal position to help recognize social anxiety (Burns & Thiessen, 2014). Children often present

to the nurse's office with varying complaints making school a likely place for the first signs of

anxiety. Trials should be done for CBT delivered within schools, with similar style to how

children receive speech therapy at school. CBT delivered at school would be ideal and help with

overcoming common barriers to treatment (Chiu et al., 2013). Thinking to the future, more

long-term studies should be conducted looking at relapse rates of anxiety when treated with

CBT versus pharmacotherapy. If CBT has more of a curative effect by delivering behavioral

modifications as opposed to a short-term effect of pharmacotherapy, this may drastically

change future recommendations once CBT is more easily accessible.

Recommendations for Education

Evidence-based treatment is often slow to filter from research settings into the real-

world. There is another gap between educating about first line treatment options and the

reality of how to obtain said treatment options. Academic centers should not only focus efforts

on what are the first line treatment options, but how, as future providers, these options will be

obtained. CBT is widely underutilized due to the lack of provider knowledge surrounding how to

obtain this treatment approach.

Recommendations for Policy

Recommendations for policy largely surround the need for coverage of the cost for

nonpharmacological interventions. One barrier to receiving CBT is the cost, even though in the

long run CBT has substantial cost savings (Lenhard et al., 2017). It is imperative to address

policy change and coverage at a government level because childhood anxiety impacts the

whole family function and can lead to anxiety and psychological conditions in adulthood. Moreover, the cycle could continue, and contribute to their future children's potential for anxiety (Nordh et al., 2017). Anxiety runs a chronic, cyclical course if untreated, in turn negatively impacting the economy. Nordh et al. (2017) evaluated the impact of pretreatment anxiety on family functioning. They found that pretreatment, 27% of parents were staying home frequently due to their child's anxiety. Childhood anxiety does not solely impact that child and their future, but rather the whole family and community around them. This in turn has a huge impact on the economy as a whole. It would be wise for policy change to occur to facilitate treatment of childhood anxiety.

Conclusion

Anxiety is incredibly prevalent among the pediatric population and is one disease that has been commonly overlooked and untreated. Most everyone experiences anxiety symptoms at some point in their lives, which may be in part why it is underdiagnosed. However, these normal fleeting anxiety symptoms are different than the dysfunctional emotional response seen in anxiety diagnoses (Ege & Reinholdt-Dunne, 2016). Considering anxiety is a dysfunctional emotional response, CBT is an obvious effective treatment for it is based on the concept that fear and anxiety are learned behaviors that can be unlearned (James et al., 2018). CBT differs from pharmacotherapy in that it is addressing the underlying maladaptive psychological thought process and is providing lifelong coping and adaptive skills. It has been shown to be more effective than pharmacology alone and is considered a first line treatment in childhood anxiety but is not being utilized as such. This must change. Ideally, prevention of childhood anxiety would be best. Providers should be encouraging nurturing parent-child relationships as

the early childhood years are the most critical for mental wellness (Burns et al., 2017).

Providers should often inquire about mental health as many families are reluctant to share

concerns spontaneously. Anticipatory guidance should not be overlooked as it becomes the

building blocks for mental health in children. When the opportunity for primary prevention has

been missed, providers must then rely on early detection and intervention. Mild anxiety

followed by early intervention has the most likelihood of success and remission. If providers do

not intervene, sustained anxiety will likely lead to significant impairment and become a strong

risk factor for severe psychopathology in adulthood. The negative outcomes of untreated

anxiety are not what providers intend for their pediatric patients' futures. It is time for due

diligence in tackling childhood anxiety and promoting pediatric mental health.

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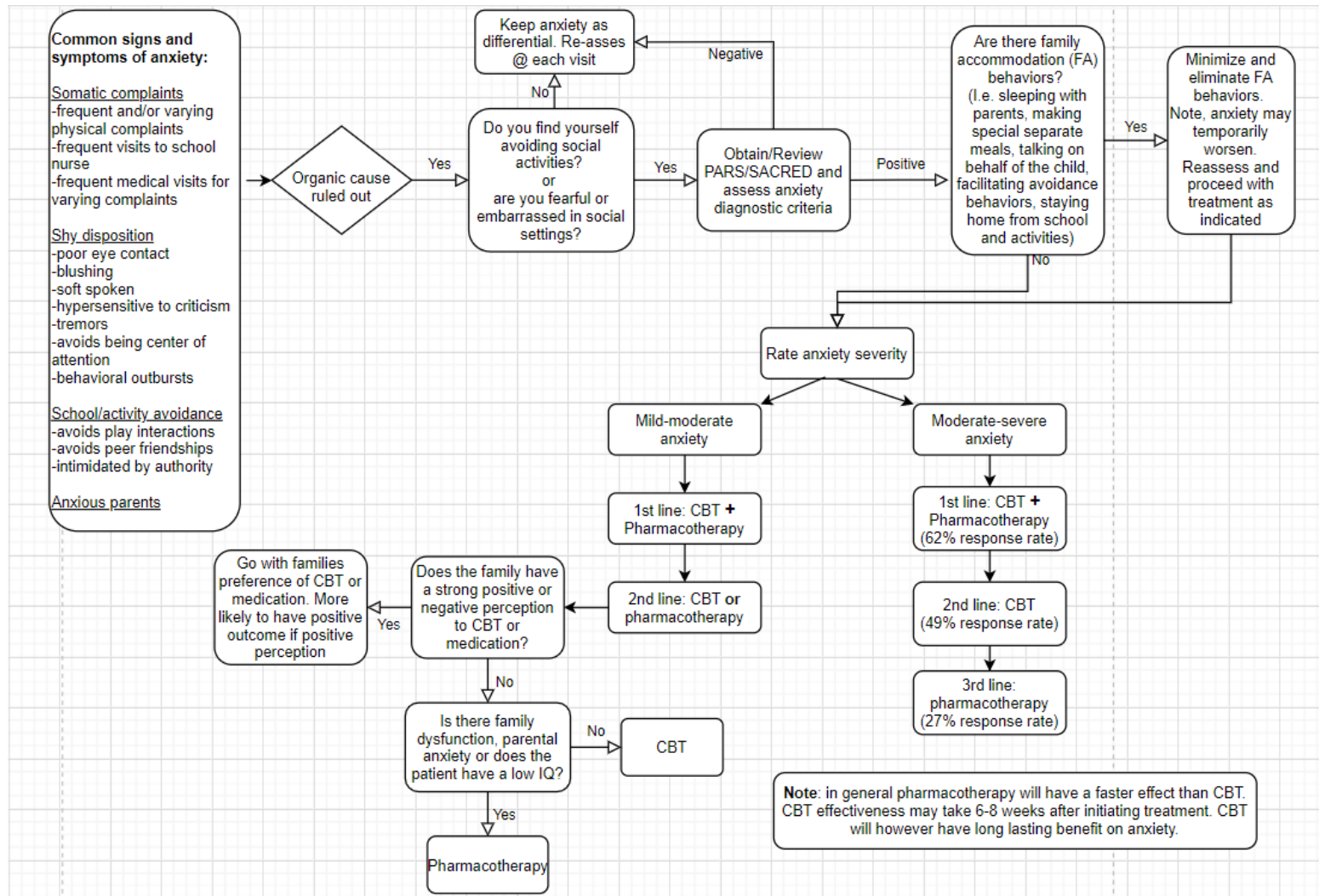Zehgeer, A., Ginsburg, G. S., Lee, P., Birmaher, B., Walkup, J., Kendall, P. C., Sakolsky, D., Peris, T. (2018). Pharmacotherapy adherence for pediatric anxiety disorders: Predictors and relation to child outcomes. *Child & Youth Care Forum*, *47*(5), 633-644. https://doi.org/10.1007/s10566-018-9459-9

Appendix

Figure 1

Pediatric Anxiety Treatment Algorithm

Common signs and symptoms of anxiety:

<u>Somatic complaints</u>
-frequent and/or varying physical complaints
-frequent visits to school nurse
-frequent medical visits for varying complaints

<u>Shy disposition</u>
-poor eye contact
-blushing
-soft spoken
-hypersensitive to criticism
-tremors
-avoids being center of attention
-behavioral outbursts

<u>School/activity avoidance</u>
-avoids play interactions
-avoids peer friendships
-intimidated by authority

<u>Anxious parents</u>

Organic cause ruled out

Do you find yourself avoiding social activities? or are you fearful or embarrassed in social settings? — Yes →

Keep anxiety as differential. Re-asses @ each visit

Obtain/Review PARS/SACRED and assess anxiety diagnostic criteria — Negative / Positive

Are there family accommodation (FA) behaviors? (I.e. sleeping with parents, making special separate meals, talking on behalf of the child, facilitating avoidance behaviors, staying home from school and activities) — Yes →

Minimize and eliminate FA behaviors. Note, anxiety may temporarily worsen. Reassess and proceed with treatment as indicated

Rate anxiety severity

Mild-moderate anxiety

Moderate-severe anxiety

1st line: CBT **+** Pharmacotherapy

1st line: CBT **+** Pharmacotherapy (62% response rate)

2nd line: CBT **or** pharmacotherapy

2nd line: CBT (49% response rate)

3rd line: pharmacotherapy (27% response rate)

Does the family have a strong positive or negative perception to CBT or medication? — Yes →

Go with families preference of CBT or medication. More likely to have positive outcome if positive perception

Is there family dysfunction, parental anxiety or does the patient have a low IQ? — No → CBT

Pharmacotherapy

Note: in general pharmacotherapy will have a faster effect than CBT. CBT effectiveness may take 6-8 weeks after initiating treatment. CBT will however have long lasting benefit on anxiety.

Tables 1

Database Search Description

Database	Restrictors/Expanders Added to Search	Dates Included in Database	General Subjects Covered in Database
Cochrane	Full Text, apply related words, search within text	2009-2020	Contains articles and protocols focusing on the effects of healthcare and providing evidence-based medicine data
CENTRAL	Abstract available	2009-2020	Controlled trials providing unbiased source of data and systemic review.
MEDLINE	Peer Reviewed, Full text, age 0-18 (specified)	2009-2020	Covers a variety of medical topics in various domains including medicine, nursing as well as dentistry and veterinary.
CINAHL	Full Text, Peer Reviewed	2009-2020	Providers literature on nursing and allied health.
PsycINFO	Full Text, Peer Reviewed, Childhood (0-12), Adolescence (13-17)	2009-2020	Provides literature about the disciplines related to psychology including; psychiatry, education, medicine nursing and more.

(MSU, 2019)

Table 2

Data Abstraction Process: Hit Results by Database

Key Words	Cochrane	CENTRAL	MEDLINE	CINAHL	PsycINFO
"Mindfulness"	127/ 8 (without expanders)	3,644	1,443	2,019	826
"Mindfulness" AND "Anxiety"	117	1,343	395	X	X
"CBT"	236	5,416	1,250	X	X
"CBT" AND "Anxiety	205	2,344	496	X	X
"Cognitive Behavioral Therapy" AND "Anxiety"	67	3,089	781	X	X
"Mindfulness" AND "Anxiety" AND "Pediatrics"	16	18	19/ 2 (for age group 0-18)	7	14
"CBT" AND "Anxiety" AND "Pediatrics"	37	104	30/ 4 (for age group 0-18)	25	149
"Cognitive Behavioral Therapy" AND "Anxiety" AND "Pediatrics"	13	131	34/ 8 (for age group 0-18)	20	151
"Treatment" AND "Pediatric" AND "Anxiety" AND "Mindfulness"	27	8	0	**3***	16
"Treatment" AND "Pediatric" AND "Anxiety" AND "Cognitive Behavioral Therapy"	122	152	7	19*	264
"Outcome" AND "Pediatric" AND "Anxiety" AND "Mindfulness"	27	13	1	5	11
"Outcome" AND "Pediatric" AND "Anxiety" AND "Cognitive Behavioral Therapy"	123	133	7	**11***	165

"Treatment" AND "Pediatric" AND "Anxiety" AND "Pharmacological"	135	40	0	**2***	55
"Pediatric anxiety" AND "Treatment" AND "Evidence Based"	**1***	**4***	14	27	122
"Pediatric anxiety" AND "Treatment" AND "Evidence Based" AND "Mindfulness or Cognitive Behavioral Therapy"	0	**4***	**2***	**4***	**9***
"Assessment and Treatment" AND "Pediatric or Child" AND "Anxiety Disorder"	166	7	**14***	**9***	54
Correlating Strategy: "children OR child OR pediatric OR adolescent" AND "CBT OR cognitive behavioral therapy OR mindfulness" AND "pharmacological OR treatment OR management" AND "anxiety OR anxiety disorder"	4	X	344	208/ 44* (with exclusion criteria applied to search)	619
Bibliography Review	**2***				

Note

* **BOLD**= articles reviewed for inclusion and exclusion criteria.

X= not searched in database

Table 3

Characteristics of Literature Included and Excluded

Reference	Included / Excluded	Rationale
Adler Nevo, G.,W., Avery, D., Fiksenbaum, L., Kiss, A., Mendlowitz, S., Monga, S., & Manassis, K. (2014). Eight years later: Outcomes of CBT-treated versus untreated anxious children. Brain and Behavior, 4(5), 765-774. https://doi.org/10.1002/brb3.274	Included	Long-term study evaluating effects of CBT 8 years post treatment vs none
Beidas, R., S., Lindhiem, O., Brodman, D., M., Swan, A., Carper M, Cummings, C., Kendall, P., Albano, A. M., Rynn, M., Piacentini, J., McCracken, J., Compton, S., March, J., Walkup, J., Ginsburg, G., Keeton, C. P., Birmaher, B., Skolsky, & D., Sherrill, J. (2014). A probabilistic and individualized approach for predicting treatment gains: An extension and application to anxiety disordered youth. Behavior Therapy, 45(1), 126–136. https://doi.org/10.1016/j.beth.2013.05.001	Included	Primary diagnosis of SAD or GAD according to DSM criteria. Evaluates CBT, CBT+ sertraline, sertraline, placebo
Brown, A., Creswell, C., Barker, C., Butler, S., Cooper, P., Hobbs, C., & Thirlwall, K. (2017). Guided parent-delivered cognitive behaviour therapy for children with anxiety disorders: Outcomes at 3- to 5-year follow-up. The British Journal of Clinical Psychology, 56(2), 149-159. https://doi.org/10.1111/bjc.12127	Included	Parent delivered CBT in childhood anxiety
Bunford, N., Kujawa, A., Fitzgerald, K., Swain, J., Hanna, G., Koschmann, E., Simpson, D., Connolly, S., Monk, C. S., & Phan, K. L. (2017). Neural reactivity to angry faces predicts treatment response in pediatric anxiety. Journal of Abnormal Child Psychology, 45(2), 385–395. https://link.springer.com/article/10.1007/s10802-016-0168-2	Included	Evaluates predictors to why patients do not respond to pharmacotherapy or CBT
Burns, E., & Thiessen, K. (2014). Look closer ... I am not "just shy": Recognizing social anxiety disorder: A case study. NASN School Nurse, 29(6), 316-322. https://journals.sagepub.com/doi/10.1177/1942602X14545481	Included	Case study reviewing screening tools based on age. Highlights school behaviors of children with anxiety
Caporino, N., E., Morgan, J., Beckstead, J., Phares, V., Murphy, T., K., & Storch, E., A. (2012). A structural equation	Excluded	Evaluating family accommodations

analysis of family accommodation in pediatric obsessive-compulsive disorder. *Journal of Abnormal Child Psychology*, *40*(1), 133–143. https://doi.org/10.1007/s10802-011-9549-8		for obsessive compulsive disorder
Cartwright-Hatton, S., Ewing, D., Dash, S., Hughes, Z., Thompson, E. J., Hazell, C. M., Field, A. P., & Startup, H. (2018). Preventing family transmission of anxiety: Feasibility RCT of a brief intervention for parents. The British Journal of Clinical Psychology, 57(3), 351-366. https://doi.org/10.1111/bjc.12177	Excluded	Study evaluating parents with anxiety and likelihood of child developing anxiety
Chiu, A., Langer, D., Mcleod, B., Har, K., Drahota, A., Galla, B., Jacobs, J., Ifekwunigwe, M., & Wood, J. (2013). Effectiveness of modular CBT for child anxiety in elementary schools. School Psychology Quarterly, 28(2), 141–153. https://doi.org/10.1037/spq0000017	Included	Clinical trial performed in elementary school using CBT.
Crawford, E. A., Salloum, A., Lewin, A. B., Andel, R., Murphy, T. K., & Storch, E. A. (2013). A pilot study of computer-assisted cognitive behavioral therapy for childhood anxiety in community mental health centers. Journal of Cognitive Psychotherapy, 27(3), 221-234. https://doi.org/10.1891/0889-8391.27.3.221	Included	Pilot study looking at computer assisted CBT in the community for childhood anxiety
De Souza, M., Augusta Mansur, Salum, G. A., Jarros, R. B., Isolan, L., Davis, R., Knijnik, D., Manfro, G. G., & Heldt, E. (2013). Cognitive-behavioral group therapy for youths with anxiety disorders in the community: Effectiveness in low and middle income countries. Behavioural and Cognitive Psychotherapy, 41(3), 255-264. https://doi.org/10.1017/S1352465813000015	Included	CBT is a known treatment option for pediatric anxiety, but little known about low- and middle-income families
Ege, S., & Reinholdt-Dunne, M. L. (2016). Improving treatment response for paediatric anxiety disorders: An information-processing perspective. Clinical Child & Family Psychology Review, 19(4), 392–402. https://doi.org/10.1007/s10567-016-0211-4	Included	Review examines informational processing biases
Galla, B. M., Wood, J. J., Chiu, A. W., Langer, D. A., Jacobs, J., Ifekwunigwe. M., & Larkins, C. (2012). One year follow-up to modular cognitive behavioral therapy for the treatment of pediatric anxiety disorders in an elementary school setting. Child Psychiatry and Human Development, 43(2), 219–226. https://doi.org/10.1007/s10578-011-0258-x	Included	Long-term effect of CBT post-delivery in elementary school setting. Evidence of ongoing advantage post 1 year of CBT

Gibby, B., Casline, E., & Ginsburg, G. (2017). Long-term outcomes of youth treated for an anxiety disorder: A critical review. Clinical Child & Family Psychology Review, 20(2), 201–225. https://doi.org/10.1007/s10567-017-0222-9	Included	Evaluates long-term effect of medication and CBT
Gonzalez, A., Peris, T. S., Vreeland, A., Kiff, C. J., Kendall, P. C., Compton, S. N., Albano, A. M., Birmaher, B., Ginsburg, G. S., Keeton, C. P., March, J., McCracken, J., Rynn, M., Sherrill, J., Walkup, J. T., & Piacentini, J. (2015). Parental anxiety as a predictor of medication and CBT response for anxious youth. Child Psychiatry & Human Development, 46(1), 84–93. https://doi.org/10.1007/s10578-014-0454-6	Included	Parental influence on treatment of pediatric anxiety
Hoffman, L. J., Guerry, J. D., & Albano, A. M. (2018). Launching anxious young adults: A specialized cognitive-behavioral intervention for transitional aged youth. *Current Psychiatry Reports*, *20*(4), 1. https://doi.org/10.1007/s11920-018-0888-9	Excluded	Transition of young adults and CBT. Excluded due to age, 18-25yr
Højgaard, D., Skarphedinsson, G., Nissen, J., Hybel, K., Ivarsson, T., & Thomsen, P. (2017). Pediatric obsessive-compulsive disorder with tic symptoms: clinical presentation and treatment outcome. *European Child & Adolescent Psychiatry, 26*(6), 681–689. https://doi.org/10.1007/s00787-016-0936-0	Excluded	Evaluating obsessive compulsive disorder, not GAD
James, A. C., James, G., Cowdrey, F. A., Soler, A., Choke, A., & James, A. C. (2018). Cognitive behavioural therapy for anxiety disorders in children and adolescents. Cochrane Database of Systematic Reviews, (2). https://doi.org/10.1002/14651858.CD004690.pub4	Included	Examines CBT vs controls vs medication vs combo. All RCT. Compared individual, group and family CBT
Keeton, C. P., Kolos, A. C., & Walkup, J. T. (2009). Pediatric generalized anxiety disorder: Epidemiology, diagnosis, and management. *Paediatric Drugs*, *11*(3), 171-183. https://doi.org/10.2165/00148581-200911030-00003	Excluded	Full text not available. Does not meet criteria
Klein, A. M., Müller-Göttken, T., White, L. O., Keitel-Korndörfer, A., & von Klitzing, K. (2015). Summary of the pilot study short-term psychoanalytic child therapy (PaCT) of anxious children]. *Praxis Der Kinderpsychologie Und Kinderpsychiatrie*, *64*(7), 563-571. https://doi.org/10.13109/prkk.2015.64.7.563	Excluded	Pilot study evaluating psychoanalytic therapy, not CBT or mindfulness

Knight, S., Harvey, A., Towns, S., Payne, D., Lubitz, L., Rowe, K., Reveley, C., Hennel, S., Hiscock, H., & Scheinberg, A. (2014). How is paediatric chronic fatigue syndrome/myalgic encephalomyelitis diagnosed and managed by paediatricians? An Australian Paediatric Research Network Study. *Journal of Paediatrics & Child Health, 50*(12), 1000–1007. https://doi.org/10.111/jpc.12677	Excluded	Evaluating chronic fatigue, not pediatric anxiety.
Law, E. F., Beals, E. S. E., Noel, M., Claar, R., & Palermo, T. M. (2015). Pilot randomized controlled trial of internet-delivered cognitive-behavioral treatment for pediatric headache. *Headache: The Journal of Head & Face Pain*, *55*(10), 1410–1425. https://doi.org/10.1111/head.12635	Excluded	Evaluating CBT for pediatric headaches, not anxiety
Lenhard, F., Ssegonja, R., Andersson, E., Feldman, I., Rück, C., Mataix-Cols, D., & Serlachius, E. (2017). Cost-effectiveness of therapist-guided internet-delivered cognitive behaviour therapy for paediatric obsessive-compulsive disorder: Results from a randomised controlled trial. BMJ Open, 7(5), 1. https://doi.org/10.1136/bmjopen-2016-015246	Included	Internet guided CBT for adolescents. Evaluating cost effectiveness
Masi, G., Pfanner, C., Mucci, M., Berloffa, S., Magazu, A., Parolin, G., Perugi, G. (2013). Pediatric social anxiety disorder: Predictors of response to pharmacological treatment. Brown University Child & Adolescent Psychopharmacology Update, 15(2), 7. https://doi.org/10.1089/cap.2012.0007	Included	Evaluates pharmacological approach to anxiety management and predictors of success
McGuire, J. F., Caporino, N. E., Palitz, S. A., Kendall, P. C., Albano, A. M., Ginsburg, G. S., Birmaher, B., Walkup, J., & Piacentini, J. (2019). Integrating evidence-based assessment into clinical practice for pediatric anxiety disorders. Depression & Anxiety, 36(8), 744–752. https://doi.org/10.1002/da.22900	Included	Evidence based assessment of clinical practice for pediatric anxiety
Misri, S., Abizadeh, J., Sanders, S., & Swift, E. (2015). Perinatal generalized anxiety disorder: *Assessment and Treatment. Journal of Women's Health* (15409996), *24*(9), 762–770. https://doi.org/10.1089/jwh.2014.5150	Excluded	Perinatal anxiety, not pediatric anxiety
Nadeau, J. M., Jacob, M. L., Keene, A. C., Alderman, S. M., Hacker, L. E., Cavitt, M. A., Alvaro, J., & Storch, E. A. (2015). Correlates and mediators of life satisfaction among youth with attention-deficit/hyperactivity disorder. *Children's Health Care*, *44*(2), 169–182. https://doi.org/10.1080/02739615.2014.896215	Excluded	Evaluating ADHD, not pediatric anxiety

Nakagawa, A., Grunebaum, M. F., Oquendo, M. A., Burke, A. K., Kashima, H., & Mann, J. J. (2009). Clinical correlates of planned, more lethal suicide attempts in major depressive disorder. *Journal of Affective Disorders, 112*(1-3), 237-242. http://doi.org/10.1016/j.jad.2008.03.021	Excluded	Evaluating suicide rate among adolescents with depression
NCT03269370. (2017). Family-focused CBT skills app and standard self help options for childhood anxiety. Https://Clinicaltrials.Gov/Show/Nct03269370	Excluded	Study has not yet been conducted. Proposal abstract evaluating effectiveness of an App for family guided CBT
NCT03585010. (2018). Brain response associated with parent-based treatment for childhood anxiety disorders. Https://Clinicaltrials.Gov/Show/Nct03585010	Excluded	Study is not evaluating CBT, but rather SPACE (support parenting for anxious childhood emotions)
Nordh, M., Vigerland, S., Öst, L., Ljótsson, B., Mataix-Cols, D., Serlachius, E., & Högström, J. (2017). Therapist-guided internet-delivered cognitive-behavioural therapy supplemented with group exposure sessions for adolescents with social anxiety disorder: A feasibility trial. BMJ Open, 7(12), 1. https://doi.org/10.1136/bmjopen-2017-018345	Included	Goal of study to evaluate feasibility of therapist guided internet-based CBT with supplemented group
Norman, K. R., Silverman, W. K., & Lebowitz, E. R. (2015). Family accommodation of child and adolescent anxiety: Mechanisms, assessment, and treatment. Journal of Child & Adolescent Psychiatric Nursing, 28(3), 131–140. https://doi.org/10.1111/jcap.12116	Included	Family accommodations for assessment and treatment
Ollendick, T. H., Ryan, S. M., Capriola-Hall, N. N., Salazar, I. C., & Caballo, V. E. (2019). Evaluation of the reliability and validity of the social anxiety questionnaire for children in adolescents with social anxiety disorder. *Journal of Psychopathology & Behavioral Assessment*, *41*(1), 16–24. https://doi.org/10.1007/s10862-018-9699-x	Excluded	Evaluating SAD screener tools, not effectiveness of treatment.
Ori, R., Amos, T., Bergman, H., Soares-Weiser, K., Ipser, J. C., & Stein, D. J. (2015). Augmentation of cognitive and behavioural therapies (CBT) with d-cycloserine for anxiety and related disorders. *The Cochrane Database of Systematic*	Excluded	Full text not available. Not pediatric

Reviews, (5), 1. https://doi.org/10.1002/14651858.CD007803.pub2		population focused.
Pajer, K. A., Gardner, W., Lourie, A., Chang, C., Wang, W., & Currie, L. (2014). Physical child abuse potential in adolescent girls: Associations with psychopathology, maltreatment, and attitudes toward child-bearing. *Canadian Journal of Psychiatry.Revue Canadienne De Psychiatrie*, *59*(2), 98-106. https://doi.org/10.1177/070674371405900205	Excluded	Evaluating child abuse potential, not childhood anxiety
Panganiban, M., Yeow, M., Zugibe, K., & Geisler, S. L. (2019). Recognizing, diagnosing, and treating pediatric generalized anxiety disorder. JAAPA : *Official Journal of the American Academy of Physician Assistants, 32*(2), 17-21. https://doi.org/10.1097/01.JAA.0000552719.98489.75	Excluded	Full text not available.
Reigada, L. C., Benkov, K. J., Bruzzese, J.-M., Hoogendoorn, C., Szigethy, E., Briggie, A., Walder, D. J., & Warner, C. M. (2013). Integrating illness concerns into cognitive behavioral therapy for children and adolescents with inflammatory bowel disease and co-occurring anxiety. *Journal for Specialists in Pediatric Nursing*, *18*(2), 133–143. https://doi.org/10.1111/jspn.12019	Excluded	Evaluating CBT for inflammatory bowel disease and co-occurring anxiety
Roos, C., Oord, S., Zijlstra, B., Lucassen, S., Perrin, S., Emmelkamp, P., & Jongh, A. (2017). Comparison of eye movement desensitization and reprocessing therapy, cognitive behavioral writing therapy, and wait-list in pediatric posttraumatic stress disorder following single-incident trauma: a multicenter randomized clinical trial. *Journal of Child Psychology & Psychiatry*, *58*(11), 1219–1228. https://doi.org/10.1111/jcpp.12768	Excluded	Evaluating CBT and PTSD
Rusch, H. L., Shvil, E., Szanton, S. L., Neria, Y., & Gill, J. M. (2015). Determinants of psychological resistance and recovery among women exposed to assaultive trauma. *Brain and Behavior, 5*(4), 1. https://doi.org/10.1002/brb3.322	Excluded	Evaluating women exposed to traumatic events and risk of developing psychiatric disorder
Salloum, A., Johnco, C., Lewin, A. B., McBride, N. M., & Storch, E., A. (2016). Barriers to access and participation in community mental health treatment for anxious children. Journal of Affective Disorders, 196, 54–61. https://doi.org/10.1016/j.jad.2016.02.026	Included	Examines barriers to CBT for anxiety. Community based RCT. Results, parents don't know

		where to seek care.
Smith-Schrandt, H., & Ellington, E. (2018). Unable to speak: Selective mutism in youth. *Journal of Psychosocial Nursing and Mental Health Services, 56*(2), 14-18. https://doi.org/10.3928/02793695-20180122-04	Excluded	Evaluating clinical characteristics and recommendations for selective mutism
Soussana, M., Sunyer, B., Pry, R., & Baghdadli, A. (2012). Anxiety in children and adolescents with pervasive developmental disorder without mental retardation: Review of literature]. *L'Encephale, 38*(1), 16-24. https://doi.org/10.1016/j.encep.2011.05.007	Excluded	Full text not available. Evaluating PDD as opposed to anxiety
Stapersma, L., van den Brink, G., van der Ende, J., Szigethy, E. M., Beukers, R., Korpershoek, T. A., Theuns-Valks, S. D., Hillegers, M., Escher, J., & Utens, E. M. W. J. (2018). Effectiveness of disease-specific cognitive behavioral therapy on anxiety, depression, and quality of life in youth with inflammatory bowel disease: A randomized controlled trial. *Journal of Pediatric Psychology, 43*(9), 967–980. https://doi.org/10.1093/jpepsy/jsy029	Excluded	Evaluating CBT for depression and Irritable Bowl Disease, not pediatric anxiety
Walkup, J. T., Albano, A. M., Piacentini, J., Birmaher, B., Compton, S. N., Sherrill, J. T., Ginsburg, G., Rynn, M., McCracken, J., Waslick, B., Lyengar, S., March, J. S., & Kendall, P. C. (2008). Cognitive behavioral therapy, sertraline, or a combination in childhood anxiety. The New England Journal of Medicine, 359(26), 2753-66. https://doi.org/10.1056/NEJMoa0804633	Included	CAMS trial often referred to in other literature. Largest RCT of pediatric anxiety to date
Wehry, A. M, Beesdo-Baum, K., Hennelly, M. M., Connolly, S. D., & Strawn, J. R. (2015). Assessment and treatment of anxiety disorders in children and adolescents. Current Psychiatry Reports, 17(7). https://doi.org/10.1007/s11920-015-0591-z	Included	Evaluates current epidemiology, longitudinal trajectory of anxiety disorder in youth; including CBT vs medication
White, L. K., Sequeira, S., Britton, J. C. Brotman, M. A., Gold, A. L., Berman, E, Towbin, K., Abend, R., Fox, N., Bar-Haim, Y., Leibenluft, E., & Pine, D. S. (2017). Complementary features of attention bias modification therapy and cognitive-behavioral therapy in pediatric anxiety disorders. *American Journal of Psychiatry*, *174*(8), 775–784. https://doi.org/10.1176/appi.ajp.2017.16070847	Excluded	Study is examining Attention Bias Modification Therapy.

Zavadenko, N. N., Simashkova, N. V., Vakula, I. N., Suvorinova, N. Y., Balakireva, E. E., & Lobacheva, M. V. (2015). Current possibilities in pharmacotherapy of anxiety disorders in children and adolescents]. *Zhurnal Nevrologii i Psikhiatrii Imeni S.S.Korsakova, 115*(11), 33-39. http://doi.org/10.17116/jnevro201511511133-39	Excluded	Article not available in English
Zehgeer, A., Ginsburg, G. S., Lee, P., Birmaher, B., Walkup, J., Kendall, P. C., Sakolsky, D., Peris, T. (2018). Pharmacotherapy adherence for pediatric anxiety disorders: Predictors and relation to child outcomes. Child & Youth Care Forum, 47(5), 633-644. https://doi.org/10.1007/s10566-018-9459-9	Included	Evaluates adherence of treatment for pediatric anxiety

Table 4

Literature Review Table of All Included Studies

Citation	Study Purpose	Pop/ Sample Size	Design/ Level of Evidence	Variables/ Instruments	Intervention	Findings	Implication
Adler Nevo, G.,W., Avery, D., Fiksenbaum, L., Kiss, A., Mendlowitz, S., Monga, S., & Manassis, K. (2014). Eight years later: Outcomes of CBT-treated versus untreated anxious children. Brain and Behavior, 4(5), 765-774. https://doi.org/10.1002/brb3.274	To evaluate the long-term impact of CBT treatment vs none in the management of childhood anxiety	N=120. Ages; 8-12 years	Level 2; RCT	Subjects who had previously received some form of CBT in the past were excluded	Treated children received 12 sessions of group CBT or individual with parent sessions utilizing the "Coping Bear" manual "Coping Cat" protocol. Semi structured interviews upon follow up	Anxiety levels were found to be significantly lower in the nontreatment group. This suggest that some childhood anxiety may remit spontaneously over time.	First long-term study evaluating CBT treatment for anxiety in children and long-term outcomes. Results are interesting because long-term outcome is better for those who didn't receive treatment. Study looked at those with separational, generalized or social anxiety.
Beidas, R., S., Lindhiem, O., Brodman, D., M., Swan, A., Carper M, Cummings, C., Kendall, P., Albano, A. M., Rynn, M., Piacentini, J., McCracken, J.,	Evaluate the probability of multiple treatment benefit of multiple treatmen	N=488. Ages; 7-17 years	Level 2; RCT	Participants were from the CAMS trial. Recruited by variety of means (flyers, TV,	CBT, sertraline, CBT + sertraline, placebo	Combination of CBT and sertraline were superior than either monotherapy but only for moderate/severe cases of	For moderate to severe anxiety multiple treatment approaches should be implemented. For mild anxiety there may not be a superior first line and patient/parent

Compton, S., March, J., Walkup, J., Ginsburg, G., Keeton, C. P., Birmaher, B., Skolsky, & D., Sherrill, J. (2014). A probabilistic and individualized approach for predicting treatment gains: An extension and application to anxiety disordered youth. Behavior Therapy, 45(1), 126–136. https://doi.org/10.1016/j.beth.2013.05.001	t approaches			radio ads, website)		anxiety. For mild anxiety, all three treatments were comparable.	preference should be considered.
Brown, A., Creswell, C., Barker, C., Butler, S., Cooper, P., Hobbs, C., & Thirlwall, K. (2017). Guided parent-delivered cognitive behaviour therapy for children with anxiety disorders: Outcomes at 3- to 5-year follow-up. The British Journal of Clinical Psychology,	Evaluate long-term outcomes (3-5 years posttreatment) of parent delivered CBT for childhoo	N=57. Ages; 11-17 years	Level 4; Long-term follow up cohort study	Participants of previous trial. Parent delivered. Parents provided self-help book and two forms of therapy support	Parent guided CBT. Overcoming your child's fears and worries'; Creswell & Willetts, 2007	At the time of the long-term follow up, 79% of CBT participants no longer met DSM criteria for anxiety	CBT appears to have long-term effect and may resolve anxiety diagnosis in childhood anxiety. Parent delivered CBT is a reasonable approach and should be further explored and supported

56(2), 149-159. https://doi.org/10.1111/bjc.12127	d anxiety disorders						
Bunford, N., Kujawa, A., Fitzgerald, K., Swain, J., Hanna, G., Koschmann, E., Simpson, D., Connolly, S., Monk, C. S., & Phan, K. L. (2017). Neural reactivity to angry faces predicts treatment response in pediatric anxiety. Journal of Abnormal Child Psychology, 45(2), 385–395. https://link.springer.com/article/10.1007/s10802-016-0168-2	Pharmacotherapy and CBT are known treatment approaches to pediatric anxiety, this study evaluates what predicts treatment response	N=52. Ages; 7-18 years	Level 4; Case control	Participants self-selected group	SSRI, CBT. PARS anxiety tool. Emotional Face-Matching Task	Higher LPP to angry faces was associated with lower post treatment anxiety however did not differ between treatment types (CBT vs SSRI)	ERPs are potentially useful indicates to treatment response, though not in differentiating between most effective treatment
Burns, E., & Thiessen, K. (2014). Look closer ... I am not "just shy": Recognizing social anxiety disorder: A case study. NASN School Nurse, 29(6), 316-322.	Case study to highlight the classic characteristics of children with anxiety	NA	Level 6; Case Study	NA	Screening tools based on age, SSRIs, SNRIs, other antidepressant, psychotherapy	NA	Provides recommendations for school assessments. Highlights common school behaviors of children with anxiety

https://journals.sagepub.com/doi/10.1177/1942602X14545481	within the school setting						
Chiu, A., Langer, D., Mcleod, B., Har, K., Drahota, A., Galla, B., Jacobs, J., Ifekwunigwe, M., & Wood, J. (2013). Effectiveness of modular CBT for child anxiety in elementary schools. School Psychology Quarterly, 28(2), 141–153. https://doi.org/10.1037/spq0000017	Clinical trial evaluative CBT for anxiety, performed within the school setting.	N=40. Ages; 5-12 years	Level 2; RCT	*Building confidence* intervention, ADIS-C/P. Study conducted at two elementary schools	CBT	Nearly all children, 95.5% no longer met criteria for anxiety disorder post treatment. Statistically significant results.	Clinicians and researches should consider implementation of CBT within elementary school settings
Crawford, E. A., Salloum, A., Lewin, A. B., Andel, R., Murphy, T. K., & Storch, E. A. (2013). A pilot study of computer-assisted cognitive behavioral therapy for childhood anxiety in community mental health centers. Journal of Cognitive Psychotherapy, 27(3),	A pilot study looking at the use of computer driven CBT for pediatric anxiety, carried out through	N=17. Ages; 7-13 years	Level 3; Pilot study	Pilot study, small sample size	12 sessions of interactive computer driven CBT derived from the *Coping Cat* protocol	73% were treatment responders. Child and parent scored high for satisfaction of delivery of CBT	There is high success in anxiety remission with the use of CBT if patients have access. This study is one that draws attention to the multiple means for carrying out CBT for the management of pediatric anxiety.

221-234. https://doi.org/10.1891/0889-8391.27.3.221	community centers						
De Souza, M., Augusta Mansur, Salum, G. A., Jarros, R. B., Isolan, L., Davis, R., Knijnik, D., Manfro, G. G., & Heldt, E. (2013). Cognitive-behavioral group therapy for youths with anxiety disorders in the community: Effectiveness in low and middle income countries. Behavioural and Cognitive Psychotherapy, 41(3), 255-264. https://doi.org/10.1017/S1352465813000015	Evaluate use and effectiveness of CBT in low- and middle-income countries for pediatric anxiety	N=28. Ages; 10-17 years	Level 3; Open clinical trial	Small sample size	CBT. 14 sessions of group CBT, 2 sessions for parents using *Coping Cat* program. PARS, SCARED assessment tools	CBT was significantly effective for youth of low- and middle-income countries	Across different socioeconomic classes, CBT is effective in management of anxiety if access is available
Ege, S., & Reinholdt-Dunne, M. L. (2016). Improving treatment response for paediatric anxiety disorders: An information-	Exploratory review of literature on pediatric anxiety	NA	Level 3; Observational study	Selective rather than exhaustive analysis	NA	Categories potential limitations of utilizing CBT for pediatric anxiety	Offers how limitations and barriers to obtaining CBT may be addressed in clinical practice

processing perspective. Clinical Child & Family Psychology Review, 19(4), 392–402. https://doi.org/10.10 07/s10567-016-0211-4	including CBT						
Galla, B. M., Wood, J. J., Chiu, A. W., Langer, D. A., Jacobs, J., Ifekwunigwe. M., & Larkins, C. (2012). One year follow-up to modular cognitive behavioral therapy for the treatment of pediatric anxiety disorders in an elementary school setting. Child Psychiatry and Human Development, 43(2), 219–226. https://doi.org/10.10 07/s10578-011-0258-x	Evaluate long-term effect of CBT	N=24. Ages; 5-12 years	Level 2; RCT	Small sample size. Participants were from previous trial conducted by same authors	CBT. Trained independent persons conducted diagnostic interviews before CBT treatment, post treatment and 1 year later. Tools included; MASC-C and MASC-P	There is ongoing benefit 1-year post CBT. 71.4% of participants had positive response 1 year following treatment. 83.3% were free of anxiety diagnosis.	CBT may have lasting effect on anxiety and may remove diagnosis. Research should look at implementing interventions within elementary school setting.
Gibby, B., Casline, E., & Ginsburg, G. (2017). Long-term outcomes	Shifts focus on efforts of effective	Age; less than 18 years	Level 5; Review of evidence	Databased included; PsycInfo, PubMed	CBT, selective serotonin reuptake inhibitors.	Review indicates long-term outcome are positive. Half	Providers long-term outcome for parental and patient knowledge

of youth treated for an anxiety disorder: A critical review. Clinical Child & Family Psychology Review, 20(2), 201–225. https://doi.org/10.1007/s10567-017-0222-9	treatment and evaluate the long-term outcome from treatment including CBT and medication				Evaluates 21 published reports of Long-term follow up cohorts.	youth no longer met anxiety diagnosis. Mean assessment was at 5.85 years after initial treatment	expectation from treatment.
Gonzalez, A., Peris, T. S., Vreeland, A., Kiff, C. J., Kendall, P. C., Compton, S. N., Albano, A. M., Birmaher, B., Ginsburg, G. S., Keeton, C. P., March, J., McCracken, J., Rynn, M., Sherrill, J., Walkup, J. T., & Piacentini, J. (2015). Parental anxiety as a predictor of medication and CBT response for anxious youth. Child Psychiatry & Human	Evaluate impact of parental anxiety on pediatric anxiety	N=488. Ages;7-17 years	Level 2; RCT	Coping Cat program, 14 sessions over 12 weeks. PARS scale	Cognitive Behavioral Therapy, Sertraline, Combo of both, placebo.	Parental anxiety was positively correlate with youth depression.	Youth who received both CBT and sertraline were benefited the most. Unexpectedly, higher levels of parental anxiety predicted a better symptom trajectory for the sertraline group. Parental anxiety did not significantly influence trajectory of other treatment groups.

Development, 46(1), 84–93. https://doi.org/10.1007/s10578-014-0454-6							
James, A. C., James, G., Cowdrey, F. A., Soler, A., Choke, A., & James, A. C. (2018). Cognitive behavioural therapy for anxiety disorders in children and adolescents. Cochrane Database of Systematic Reviews, (2). https://doi.org/10.1002/14651858.CD004690.pub4	Review of literature looking at CBT for anxiety in children and adolescents. Assess CBT vs placebo vs medication. Looks at long-term effect of CBT	NA	Level 1: Review	41 studies were reviewed.	Review of RCTs. Interventions varied between the 41 studies reviewed.	CBT is an effective treatment for anxiety. Limited information surrounding if CBT is more effective than medication	More studies are needed to evaluate the difference between effectiveness in treatment approaches for anxiety.
Lenhard, F., Ssegonja, R., Andersson, E., Feldman, I., Rück, C., Mataix-Cols, D., & Serlachius, E.	Evaluate cost effectiveness of internet-	N= 67. Ages; 12-17 years	Level 2; Single blinded RCT	Study performed at single research clinic	12-week therapist guided ICBT vs waitlist condition	ICBT is cost saving. Savings mainly attributed to reduced	Results suggest ICBT is cost effective and should be implemented in

(2017). Cost-effectiveness of therapist-guided internet-delivered cognitive behaviour therapy for paediatric obsessive-compulsive disorder: Results from a randomised controlled trial. BMJ Open, 7(5), 1. https://doi.org/10.1136/bmjopen-2016-015246	based CBT					healthcare use of CBT	practice with consideration to the strain on healthcare budget
Masi, G., Pfanner, C., Mucci, M., Berloffa, S., Magazu, A., Parolin, G., Perugi, G. (2013). Pediatric social anxiety disorder: Predictors of response to pharmacological treatment. Brown University Child & Adolescent Psychopharmacology Update, 15(2), 7. https://doi.org/10.1089/cap.2012.0007	Evaluating predictors of successful pharmacological treatment for pediatric anxiety	N=140. Ages; 7-18 years	Level 4; Case controlled study	NA	SSRIs vs psychotherapy + SSRIs.	72.8% of psychotherapy +SSRI responded after 3 months of treatment. 50.8% responder with medication alone.	More severe forms of anxiety linked to poorer prognosis, dual therapy or SSRI + CBT may be best approach

McGuire, J. F., Caporino, N. E., Palitz, S. A., Kendall, P. C., Albano, A. M., Ginsburg, G. S., Birmaher, B., Walkup, J., & Piacentini, J. (2019). Integrating evidence-based assessment into clinical practice for pediatric anxiety disorders. Depression & Anxiety, 36(8), 744–752. https://doi.org/10.1002/da.22900	Assess whether use of evidence-based practice enhance therapist judgement and therapeutic improvement	N=436. Ages; 7-17 years	Level 2; RCT	Participants were from Child/Adolescent Multimodal Study	Medication, CBT, placebo. Anxiety scales included SCARED, MASC	Optimal approach to determining treatment response includes therapist and parent reporting	Parent reporting measures should be included in clinical practice to evaluate pediatrics response to therapy
Nordh, M., Vigerland, S., Öst, L., Ljótsson, B., Mataix-Cols, D., Serlachius, E., & Högström, J. (2017). Therapist-guided internet-delivered cognitive-behavioural therapy supplemented with group exposure sessions for adolescents with social anxiety	Evaluates feasibility and effectiveness of therapist guided internet CBT with supplemented group sessions	N=30. Ages; 13-17 years	Level 3; Open observational clinical trial	Study was conducted at a psychiatric research participant. SAD diagnosis	12 weeks of intervention. 9 therapist guided internet CBT. 3 group sessions. 5 internet parents' sessions	Results revealed significant decrease in clinician, adolescent and parent rated anxiety. 47% of participants no longer met anxiety criteria. Adolescents were satisfied with internet treatment	Internet therapy guided CBT appears to be cost effective as well as management effective. Additionally, resonates with adolescent population

disorder: A feasibility trial. BMJ Open, 7(12), 1. https://doi.org/10.1136/bmjopen-2017-018345							
Norman, K. R., Silverman, W. K., & Lebowitz, E. R. (2015). Family accommodation of child and adolescent anxiety: Mechanisms, assessment, and treatment. Journal of Child & Adolescent Psychiatric Nursing, 28(3), 131–140. https://doi.org/10.1111/jcap.12116	Evaluates ways in which family accommodations impact anxiety management given substantial number of children do not respond to treatment	NA	Level 3; Observational	Pubmed and Psyc-INFO were the sources used for lit search	Family accommodation meaning ways parents adapt their own behavior to reduce children's anxiety	Family accommodation is common among pediatric anxiety disorder and has a potential negative impact on illness	Incorporating parent involvement in treatment may not only help with outcome but may address barriers and relapse
Salloum, A., Johnco, C., Lewin, A. B., McBride, N. M., &	Assesses barriers to receiving	N=100. Age; 7-13 years	Level 2; RCT	Computer-assisted CBT	Community based RCT utilizing computer-	Most common barrier was parents not knowing where	Accessibility, time efficiency and cost should strongly be considered when

Storch, E., A. (2016). Barriers to access and participation in community mental health treatment for anxious children. Journal of Affective Disorders, 196, 54–61. https://doi.org/10.1016/j.jad.2016.02.026	CBT for anxiety in the pediatric population.				assisted CBT. Assess barriers of treatment completers vs non completers	to seek services (66%). Difference between completers and non-completers was stigma, confidentiality and cost.	implementing CBT for anxiety in order for compliance and treatment success.
Walkup, J. T., Albano, A. M., Piacentini, J., Birmaher, B., Compton, S. N., Sherrill, J. T., Ginsburg, G., Rynn, M., McCracken, J., Waslick, B., Lyengar, S., March, J. S., & Kendall, P. C. (2008). Cognitive behavioral therapy, sertraline, or a combination in childhood anxiety. The New England Journal of Medicine, 359(26), 2753-66. https://doi.org/10.1056/NEJMoa0804633	One of the initial big studies to evaluate the effectiveness of treatment options for pediatric anxiety	N=488. Age; 7-17 years	Level 2; RCT	NA	Participants received 14 sessions of CBT, sertraline (up to 200mg/day), combo or placebo	80.7% improvement with combination therapy. 59.7% for CBT and 54.9% for sertraline. Placebo 23.7%. Combination was superior, followed by CBT	Combination therapy with both CBT and sertraline were significantly better than either alone, though CBT was more effective as monotherapy then sertraline. Barriers need to be addressed so patients can utilize the combination therapy.

Wehry, A. M, Beesdo-Baum, K., Hennelly, M. M., Connolly, S. D., & Strawn, J. R. (2015). Assessment and treatment of anxiety disorders in children and adolescents. Current Psychiatry Reports, 17(7). https://doi.org/10.1007/s11920-015-0591-z	Review of childhood anxiety management, outcome and trajectory.	NA	NA	NA	CBT, mindfulness, SSRIs, SNRIs, TCAs	Summary of current modalities for treating fear-based anxiety in the pediatric population	Provides a thoughtful review of fear-based anxiety disorders in the pediatric population. Identifies that certain clinical and demographic variables may predict successful treatment outcomes
Zehgeer, A., Ginsburg, G. S., Lee, P., Birmaher, B., Walkup, J., Kendall, P. C., Sakolsky, D., Peris, T. (2018). Pharmacotherapy adherence for pediatric anxiety disorders: Predictors and relation to child outcomes. Child & Youth Care Forum, 47(5), 633-644. https://doi.org/10.1007/s10566-018-9459-9	Evaluates adherence to evidence-based treatment of pediatric anxiety	N=349, Age; 7-17 years	Level 2; RCT	Pharmacotherapist used to measure pharmacotherapy adherence	Sertraline, placebo, sertraline + CBT. 12 weeks follow through.	Few significant predictors of adherence. Greater adherence when living with two parents and parents' positive expectation of possible outcome	Study highlights the importance of shared decision making, adherence improved by hope and belief of positive outcome from treatment plan