CHILDREN'S MENTAL HEALTH
POLICY RESEARCH PROGRAM
UNIVERSITY OF BRITISH COLUMBIA

# Preventing and Treating Anxiety Disorders in Children and Youth

A Research Report Prepared for the
British Columbia Ministry of Children
and Family Development

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# PREFACE

This report is one in a series of research reports being prepared by the Children's Mental Health Policy Research Program at the University of British Columbia at the request of British Columbia's (BC's) Ministry of Children and Family Development (MCFD). At any given time, over one in seven or 140,000 children in BC experience mental disorders serious enough to impair their development and functioning at home, at school and in the community.[1] MCFD has made it a goal to improve children's mental health in BC. To assist MCFD to achieve this goal, in 2002-2003 we produced four reports on: population health and clinical service considerations;[2] on practice parameters for treating attention-deficit/hyperactivity disorder, conduct disorder, depression, obsessive-compulsive disorder and schizophrenia;[3] on child psychiatric epidemiology;[1] and on performance monitoring.[4] In 2003, MCFD then announced a new *Child and Youth Mental Health Plan* (the *Plan*)[5] to better address the needs of children and families in BC.

Our research reports will support the *Plan* by identifying the most effective approaches for preventing and treating a variety of children's mental health problems. This report focuses on anxiety disorders. We have also recently produced reports on conduct disorder[6] and on the mental health of First Nations children.[7,8] Future reports will focus on suicide prevention, early psychosis, depression, eating disorders, co-morbidity, at tention problems and other mood and developmental problems. Future reports will also address knowledge exchange, parenting and service models. These reports are intended to be a resource for policy-makers, practitioners, families, teachers and community members working with children in BC. We recognize that research evidence is only one component of good policy and practice. Our goal, nevertheless, is to facilitate evidence-based policy and practice by making summaries of the best research evidence available to everyone concerned with improving children's mental health in BC.

# EXECUTIVE SUMMARY

Anxiety disorders are the most common mental disorders in children. They are associated with high social costs and immense personal distress. Over 64,000 children in BC are affected. Anxiety disorders take many forms but are characterized by a persistent pattern of excessive worry and uneasiness that interferes with healthy development and functioning in multiple domains of life. The following anxiety conditions are included in this report: generalized anxiety disorder, separation anxiety disorder, social phobia, specific phobia, panic and post-traumatic stress (obsessive compulsive disorder will be addressed in a separate report).

It is increasingly recognized that both prevention and treatment strategies are required to reduce the distress and impairment associated with anxiety disorders in children. Historically, however, most public investments have been made in treatment services. While it is not yet clear which causal risk and protective factors contribute to the development of anxiety disorders, there is nevertheless emerging research evidence on prevention. Therefore, this report focuses on both preventing and treating anxiety disorders in children in order to guide policy and practice in BC. Using systematic review methods, we identified the best available research evidence completed over the past 10 years. To be included, studies had to meet a high standard involving randomization, use of comparison groups, a maximum drop-out rate of 20 per cent at post-test, and evidence of both clinical and statistical significance in populations similar to BC's.

## Findings

- Seven prevention articles met criteria. Most efficacious anxiety prevention programs used cognitive-behavioural techniques in school settings with either universal or targeted approaches.
- Twenty-six treatment articles met criteria. For most anxiety disorders, cognitive-behavioural therapy (CBT) was the most efficacious treatment. For specific phobias, live graded exposure was the most efficacious treatment.
- Preliminary evidence of efficacy was found for other treatments from a small number of studies. Medications such as serotonergic anti-depressants improve anxiety symptoms in short-term studies but are associated with serious side effects. Other psychotherapies for specific phobias were found to reduce symptoms but less so than live graded exposure.

## Recommendations

- Prevention is crucial and should be part of the spectrum of mental health strategies for children in BC. Prevention programs should be piloted and modelled after cognitive-behavioural techniques described in the research. Schools are ideal settings for delivering both universal and targeted prevention programs.
- CBT is strongly supported by the research evidence and should be considered the standard of care for treating most types of anxiety disorders in children. CBT can be delivered in both group and individual formats and can involve parents. Live graded exposure should be considered the standard of care for treating specific phobias.
- Although some serotonergic anti-depressant medications have been found to reduce symptoms, given the side effects and given the recent concerns about safety in children, these medications should not be first-line treatments for anxiety disorders in children except in severe cases. It is essential to carefully monitor all children being treated with medications.
- For both prevention and treatment, approaches that are not supported by the best available research evidence should be discontinued or carefully evaluated.
- For populations where the research evidence is lacking (such as children with concurrent mental health problems), prevention and treatment interventions should be modelled after the approaches that are supported in the research.
- Newly developed prevention and treatment interventions should be consistent with the research evidence. Fidelity to the original program models should be ensured and outcomes should be rigorously evaluated.

# 1 INTRODUCTION

## 1.1 What are Anxiety Disorders?

Anxiety disorders involve a persistent pattern of worry and uneasiness in children that causes distress and interferes with healthy development. They are characterized by a relatively early age of onset, recurring episodes or chronic symptoms, and periods of being unable to function at home, at school or in the community.[9] The conditions included in this report are generalized anxiety disorder, separation anxiety disorder, social phobia, specific phobia, panic and post-traumatic stress (obsessive compulsive disorder will be addressed in a separate report). To be diagnosed with an anxiety disorder as defined in the Diagnostic and Statistical Manual (DSM-IV-TR) of the American Psychiatric Association (APA),[10] a child must exhibit disorder-specific anxiety symptoms and these symptoms must cause significant impairment in functioning (for a detailed description, see Appendix A). There are no definitive biological or psychological tests for anxiety disorders. Consequently, diagnoses must be made clinically based on reports from multiple informants (children, parents, teachers and others), ideally involving multidisciplinary team assessment.

Large-scale community-based epidemiological surveys in Canada, the UK and the US show that anxiety disorders are the most common children's mental disorders with an estimated prevalence rate of 6.4 per cent.[1] BC has a population of approximately one million children.[11] This means that at any given time, at least 64,000 children in BC may be seriously affected. Concurrent mental health problems such as depression and other anxiety disorders are common and add to the child's distress and impairment.[12] Anxiety disorders in childhood lead to an elevated risk for adult anxiety and depression.[13] Given the large number of children affected and the established link between child and adult disorders, the social costs associated with anxiety disorders are high.

Like other complex children's mental health problems, anxiety disorders are likely caused by a web of interacting factors.[13] Risk factors are characteristics, events or processes that increase the likelihood of the onset of a disorder.[14] In contrast, protective factors can moderate the impact of risk factors by allowing children to develop resilience in the face of adversity.[15] While many factors may be correlated with a disorder, not all are causal. To be causal, factors must precede the onset of a disorder and must be shown to alter the symptoms of the disorder if they are altered.[16,17] For complex problems like mental disorders in children, notions of causation must also take into account the way that factors interact over time as children develop.[13] To date, no consistent causal factors have been defined for childhood anxiety disorders. Children of anxious parents are more likely to experience anxiety and most children diagnosed with anxiety disorders are female. However, it is not known whether these patterns are influenced by genetics, parenting styles or other factors. As a result, there is little consensus about which risk and protective factors affect the development of childhood anxiety.[18]

## 1.2 Prevention and Treatment Issues

The distress and impairment associated with anxiety disorders in children makes prevention a priority. Prevention programs begin early — *before* disorders develop — to enhance protective factors or mitigate risk factors and therefore reduce the number of new cases of disorders in the population.[15,19,20] Prevention programs may be either universal or targeted. Universal programs are directed at entire populations while targeted programs are directed at children identified as being at high-risk on the basis of having risk factors or early symptoms.[15,21] Both types of prevention programs have advantages and disadvantages.[22] Universal programs avoid isolating or labelling particular children but may be unnecessarily expensive and may intervene with many children and families who are not at risk.

Meanwhile, targeted programs can be more efficient but require accurate identification of children at risk, which is difficult. Targeted programs may also expose identified children to labelling and stigma. Although more research is required to determine the optimal mix of universal and targeted prevention programs, it is generally agreed that both are needed.

Prevention and treatment fall on a continuum of interventions to address mental disorders. Prevention is a priority if we are to reduce the number of children with anxiety disorders. However, treatment is crucial for children who have established symptoms of disorder. Treatment aims to reduce the duration, severity and impairment associated with a disorder, as well as prevent recurrence.[15] Treatment focuses on individuals or small groups rather than on populations. As with prevention, there are trade-offs.[22] Treatment provides much needed support to children and families and can alleviate symptoms through a specific focus on those who are most severely affected. However, treatment programs are costly, may result in labelling and associated stigma, and cannot reach all children in need. Evidence from large-scale epidemiological surveys in Canada and elsewhere indicates that fewer than 25 per cent of children with serious mental disorders (including anxiety) receive treatment from specialized mental health services (although more than 50 per cent likely receive services through primary care and schools).[2] While the optimal mix of prevention and treatment is not yet known, it is generally acknowledged that both strategies are needed if we are to reduce the distress and impairment associated with children's mental disorders, including anxiety.

## 1.3 Purpose of this Report

In the prevention literature, several recent reviews have examined children's issues. However, while comprehensive, these reviews did not deal with the issue of prevention in young children,[23] were not systematic[24] or did not specifically focus on mental health.[19] Similarly, recent reviews on the treatment of anxiety disorders were not systematic,[25-27] did not explore interventions for a broad age range (zero to 18 years)[28] or focused too narrowly on certain treatment approaches (such as medication).[29-33] No previous reviews have examined the prevention and treatment of anxiety disorders for the full range of ages and interventions. Consequently, this report was requested by MCFD in order to inform the development of more effective policies and programs for preventing and treating anxiety.

# 2 METHODS

Using Medline, PsycINFO and the Cochrane Database of Systematic Reviews, we searched for original studies published from 1991-2003 on preventing or treating anxiety disorders in children aged zero to 18 years. Studies were included that examined *efficacy* (can this intervention work in ideal settings?) and, if possible, *effectiveness* (does this intervention work in usual settings?). We also sought information on the costs of interventions. The search terms for prevention were *prevention*, *early childhood development* and *anxiety disorder*. The search terms for treatment were *anxiety disorder*, *separation anxiety*, *social phobia*, *phobia*, *panic disorder* and *post-traumatic stress disorder*, combined with *treatment*, *management*, *intervention* or *therapy*. Where applicable, search terms were modified to follow database indexing. We also searched for systematic reviews on the prevention and treatment of anxiety disorders. Systematic reviews were then hand-searched to identify additional studies. All abstracts identified through these searches were assessed. Relevant articles were then retrieved. Two independent reviewers assessed all articles retrieved using the criteria outlined in Appendix B. To be included, studies had to meet a high standard involving randomization, use of comparison groups, a maximum drop-out rate of 20 per cent at post-test, and evidence of both clinical and statistical significance in populations similar to BC's. For studies of medications, we also required double blinding and placebo controls. All treatment populations met standard diagnostic criteria for at least one anxiety disorder diagnosis, except for post-traumatic stress where studies included children who had severe clinical symptoms but did not necessarily meet full diagnostic criteria (due to the limited number of studies where children met full diagnostic criteria). Disagreements about which articles to include were resolved by consensus involving the first three authors. A meta-analysis was not attempted due to the diverse methods used and populations studied. Studies were then summarized according to prevention program or treatment type.

# 3 FINDINGS

## 3.1 Summary

In total, 10 prevention and 74 treatment articles were retrieved. Of these, seven articles on prevention and 26 articles on treatment met criteria for inclusion in our review. All interventions demonstrated clinically and statistically significant reductions in symptoms and behaviours relevant to anxiety. Sample sizes in prevention studies ranged from 25 to 594 and in treatment studies from 18 to 290. Most studies used comparison groups comprising usual care, wait list controls or no intervention. Four treatment studies used other therapies as comparison groups.[34-37] Prevention results are summarized by program (see Tables 1 and 2) and grouped as universal or targeted. All programs except one used cognitive-behavioural techniques. The *STEP* prevention program[38] focused on modifying the school environment to enhance the ability to adjust to junior high school and to mitigate situations that may provoke anxiety. Treatment results are summarized by type (see Tables 3 through 6) and grouped as cognitive-behavioural therapy (CBT), exposure treatment, medications or other treatments. CBT was the intervention used for treating most anxiety disorders and was applied in individual, group and family formats. For specific phobias, exposure treatment was mainly used.

All prevention studies and most treatment studies were conducted in the US or Australia. Two CBT treatment studies were conducted in the Netherlands[37,39] and two in Canada.[35,40] One exposure treatment study was conducted in Sweden[41] and one eye movement reprocessing desensitization (EMDR) study was conducted in the Netherlands.[36] Boys and girls were equally represented in most studies. However, one prevention study[42] involved only boys and one treatment study[36] involved only girls. Both prevention and treatment studies included predominately Caucasian groups. Overall, few studies were conducted in Canada and none included First Nations populations.

Although only efficacy was required for inclusion in this report, we also assessed whether studies demonstrated effectiveness. Only one prevention study (*STEP*)[38] established both efficacy and effectiveness because it was conducted in a school setting that approximated a "real world" situation. Most prevention and treatment studies included follow-up measures, assessing participants over the longer term. Follow-up for the prevention programs ranged from 11 weeks to two years whereas for the treatment interventions, it ranged from three months to five years. None of the medication studies completed follow-up. In addition, none of the prevention or treatment studies assessed costs.

## 3.2 Prevention

### Universal Prevention Programs

Three universal prevention programs were described in four articles (see Table 1). All programs were based in primary or middle schools. *Cognitive-Behavioral Stress Management*[42] and *FRIENDS*[43,44] used cognitive-behavioural techniques to teach children how to use problem solving and relaxation skills to manage feelings of worry and anxiety. *STEP*[38] re-organized the school environment to reduce anxiety provoking situations and create stronger links between children, parents, teachers and peers.

TABLE 1. Universal Programs for Preventing Anxiety Disorders

| Program | Sample | Description | Main Findings |
|---|---|---|---|
| ***Cognitive-Behavioral Stress Management*** **(US)**[42] | • *Focus:* Urban adolescent boys<br>• *Age:* 15-16 years<br>• *Sex:* 100% male<br>• *Ethnic majority:* 96% Caucasian | • Child intervention; duration not reported<br>• Used cognitive restructuring or anxiety management training to reduce stress<br>• School-based group sessions followed by individual training for 30-40 minutes | • Improvements in anxiety & depressive symptoms<br>• Effects maintained at 11-week follow-up |
| ***FRIENDS*** **(Australia)**[43,44] | • *Focus:* Children from urban schools<br>• *Age:* 10-13 years<br>• *Sex:* 47% male<br>• *Ethnic majority:* Not reported | • Child, family & school intervention over 10 weeks<br>• Children received weekly 1-hour teacher-led cognitive behavioural sessions<br>• Parents at tended 3 sessions of child management skills training | • Improvements in anxiety & depressive symptoms<br>• Results strongest for children with high levels of anxiety at pre-test<br>• Effects maintained at 1-year follow-up |
| ***STEP*** **(US)**[38] | • *Focus:* Children at tending urban, suburban & rural schools<br>• *Age:* 11-12 years<br>• *Sex:* Not reported<br>• *Ethnic majority:* Not reported | • School intervention over 2 years<br>• School environment organized to create stable peer support & reduce complexity of setting for students moving to junior high school<br>• Students were assigned to a group that at tend all core classes together<br>• Homeroom teachers acted as a key resource person for children & parents | • Improvements in anxiety & depressive symptoms & antisocial behaviour<br>• No follow-up |

### Targeted Prevention Programs

Two targeted prevention programs were described in three articles (see Table 2). Both were based in middle schools and used cognitive-behavioural techniques. The *Penn Prevention*[45] program focused on children who had depressive as well as anxiety symptoms, while the *Queensland*[46,47] program focused on children who had anxiety symptoms only.

TABLE 2. Targeted Programs for Preventing Anxiety Disorders

| Program | Sample | Description | Main Findings |
|---|---|---|---|
| ***Penn Prevention*** **(US)**[45] | • *Focus:* Rural children with elevated depression<br>• *Age:* 11-13 years<br>• *Sex:* 50% male<br>• *Ethnic majority:* Caucasian (% not reported) | • Child intervention over 12 weeks<br>• Weekly school-based cognitive-behavioural group sessions | • Improvements in anxiety symptoms<br>• Effects maintained at 6-month follow-up |
| ***Queensland*** **(Australia)**[46,47] | • *Focus:* Children with elevated anxiety<br>• *Age:* 7-14 years<br>• *Sex:* 27% male<br>• *Ethnic majority:* Over 70% Caucasian | • Child & family intervention over 10 weeks<br>• Children received weekly 1-2 hour cognitive-behavioural sessions<br>• Parents at tended 3 child management training sessions | • Improvements in anxiety symptoms<br>• Effects maintained at 2-year follow-up |

## 3.3 Treatment

### Cognitive-Behavioural Therapy

Four types of CBT were described in 19 articles (see Table 3). In the treatment setting, CBT children to reframe negative thoughts and develop positive coping skills. Most studies used individual or group sessions over 10-20 weeks and included a family component.

TABLE 3. Cognitive-Behavioural Therapy for Anxiety Disorders

| Treatment | Sample | Description | Main Findings |
|---|---|---|---|
| **Individual CBT (US)**[48-50] | • *Focus:* Children with generalized or separation anxiety disorder or social phobia<br>• *Age:* 9-13 years<br>• *Sex:* 57% male<br>• *Ethnic majority:* 82% Caucasian | • Child intervention over 16 weeks<br>• Used exposure, reinforcement techniques, cognitive strategies & relaxation training<br>• Weekly 1-hour sessions | • Improvements in anxiety symptoms<br>• Effects maintained at 3-year follow-up |
| **Individual CBT with family component (Australia, Canada, Netherlands, US)**[37,39,51-55] | • *Focus:* Children with generalized or separation anxiety disorder, panic or social phobia, or posttraumatic stress resulting from sexual abuse<br>• *Age:* 5-18 years<br>• *Sex:* 42% male<br>• *Ethnic majority:* 91% Caucasian | • Child & parent intervention over 10-20 weeks<br>• Individual child CBT plus a family component that involved parent-only and/or parent & child sessions about CBT principles, behaviour management skills & family communication<br>• Weekly 30–90-minute sessions | • Improvements in anxiety symptoms<br>• Compared to childonly CBT, family CBT was generally superior<br>• Effects maintained at 6-year follow-up except for family CBT, which was no longer superior |
| **Group CBT (US)**[56-58] | • *Focus:* Children with generalized or separation anxiety disorder, social phobia or post-traumatic stress resulting from violence<br>• *Age:* 8-16 years<br>• Sex: 32% male<br>• *Ethnic majority:* Diverse | • Child intervention over 10-18 weeks<br>• Adapted techniques from individual CBT for groups of 5-8 children<br>• Weekly 90-minute sessions | • Improvements in anxiety symptoms<br>• Effects maintained at 6-month follow-up |
| **Group CBT with family component (Australia, Canada)**[34,35,40,59-61] | • *Focus:* Children with any anxiety disorder other than posttraumatic stress<br>• *Age:* 6-14 years<br>• *Sex:* 51% male<br>• *Ethnic majority:* 85% Caucasian or English-speaking | • Child & parent intervention over 10-14 weeks<br>• Adapted techniques from individual CBT plus family component to a group format<br>• One study focused on teaching parents to manage their own anxiety<br>• Weekly 30-minute to 2-hour sessions | • Improvements in anxiety symptoms<br>• Compared to childonly group CBT, family group CBT was generally superior<br>• Effects maintained at 1-year follow-up |

## Exposure Treatment

Two types of exposure treatment were described in two studies (see Table 4). Exposure treatment pairs a feared stimulus with relaxation in order to desensitize the child to the stimulus. Both studies involved variations on live graded exposure techniques that expose a child directly to the feared stimulus (e.g., a spider). Live graded exposure treatment received much empirical support prior to 1991 (the cut-off date for our searches) and is considered a well-established treatment for children with specific phobias.[31] The studies identified in our review add to this previous work with a family component or the use of computer-aided vicarious exposure (CAVE).

TABLE 4. Exposure Treatment for Anxiety Disorders

| Treatment | Sample | Description | Main Findings |
|---|---|---|---|
| **Brief live graded exposure with family component (Sweden)**[41] | • *Focus:* Children with any specific phobia<br>• *Age:* 7-17 years<br>• *Sex:* 38% male<br>• *Ethnic majority:* Not reported | • Child & parent intervention over 1 day<br>• Exposed child to the feared stimulus while parents provided support<br>• One 3-hour session | • Improvements in anxiety symptoms<br>• Similar gains found with child-only brief exposure<br>• Effects maintained at 1-year follow-up |
| **CAVE (Australia)**[62] | • *Focus:* Children with a spider phobia<br>• *Age:* 10-17 years<br>• *Sex:* 36% male<br>• *Ethnic majority:* 100% Caucasian | • Child intervention over 9-12 days<br>• Exposed child to a computer representation of spiders<br>• Three 45-minute sessions every 3-4 days | • Improvements in anxiety symptoms<br>• CAVE superior to waitlist but live graded exposure was superior to CAVE (live graded exposure > CAVE > waitlist)<br>• Effects maintained at 1-month follow-up |

## Medications

Three serotonergic anti-depressant medications were described in three studies (see Table 5). All three were selective serotonin reuptake inhibitors (SSRIs). Anxiety is associated with reduced circulating levels of serotonin, a neurotransmitter in the brain that regulates mood and emotion. SSRIs are thought to work by inhibiting the reuptake of serotonin, thereby increasing its availability.

### TABLE 5. Medications for Anxiety Disorders

| Treatment | Sample | Description | Main Findings |
|---|---|---|---|
| **Fluoxetine (US)**[63] | • *Focus:* Children with generalized or separation anxiety disorder, or social phobia<br>• *Age:* 7-17 years<br>• *Sex:* 46% male<br>• *Ethnic majority:* 96% Caucasian | • 12-week intervention<br>• Medication management visits once every 2 weeks<br>• Maximum dose: 20 mg/day | • Improvements in anxiety symptoms<br>• Significantly more abdominal discomfort in treatment group<br>• No follow-up |
| **Fluvoxamine (US)**[12] | • *Focus:* Children with generalized or separation anxiety disorder, or social phobia<br>• *Age:* 6-17 years<br>• *Sex:* 51% male<br>• *Ethnic majority:* 63% Caucasian | • 8-week intervention<br>• Weekly medication management & supportive counselling sessions<br>• Maximum dose: 250 mg/day for children less than 12 years old; 300 mg/day for children over 12 years old | • Improvements in anxiety symptoms<br>• Significantly more abdominal discomfort and increased motor activity in treatment group<br>• No follow-up |
| **Sertraline (US)**[64] | • *Focus:* Children with generalized anxiety disorder<br>• *Age:* 5-17 years<br>• *Sex:* 77% male<br>• *Ethnic majority:* 81% Caucasian | • 9-week intervention<br>• Medication management visits once every week<br>• Maximum dose: 50 mg/day | • Improvements in anxiety symptoms<br>• No significant difference between treatment and control groups on reports of side effects<br>• No follow-up |

## Other Treatments

Two additional treatments were described in two studies (see Table 5). Emotive imagery and EMDR used desensitization techniques to treat children with specific phobias.

### TABLE 6. Other Treatments for Anxiety Disorders

| Treatment | Sample | Description | Main Findings |
|---|---|---|---|
| **Emotive imagery (Australia)**[65] | • *Focus:* Children with a darkness phobia<br>• *Age:* 7-10 years<br>• *Sex:* Not reported<br>• *Ethnic majority:* Not reported | • Child intervention over 6 weeks<br>• Used guided imagery to pair feared images with positive emotions<br>• Weekly 40-minute sessions | • Improvements in anxiety symptoms<br>• Effects maintained at 3-month follow-up |
| **EMDR (Netherlands)**[36] | • *Focus:* Children with a spider phobia<br>• *Age:* 8-17 years<br>• *Sex:* 100% female<br>• *Ethnic majority:* 100% Caucasian | • Child intervention over 1 day<br>• Therapist directed children move their eyes laterally while describing images of spiders<br>• One 4-hour session | • Improvements in anxiety symptoms<br>• EMDR was superior to computerized exposure but live graded exposure was superior to EMDR (live graded exposure > EMDR > computerized exposure)<br>• No follow-up |

# 4 DISCUSSION

Overall, there is a considerable body of research evidence on preventing and treating anxiety disorders in children. The prevention and treatment interventions we reviewed primarily focused on cognitive-behavioural techniques to help children develop coping skills and manage anxiety. All prevention and treatment interventions were efficacious in both males and females. There was no information about the costs of either prevention or treatment interventions.

Regarding prevention, our findings indicate that school-based universal interventions can be successful at reducing anxiety symptoms regardless of risk status. Prevention programs that used cognitive-behavioural techniques to foster coping skills in children, such as the *FRIENDS* program,[43,44] were found to be efficacious. As well, the *STEP* program produced benefits by restructuring the school environment to support stable peer networks and simplifying the school setting to ease the transition into junior high school.[38] Prevention programs that specifically targeted children with elevated anxiety or depression also demonstrated a reduction in symptoms. However, these programs required accurate identification of children at higher risk for anxiety disorders, which can be difficult in school-age children.

Regarding treatment, evidence for CBT was uniformly positive for most anxiety disorders. CBT is a potent, relatively short-term 10-to-20 week treatment that can be delivered individually or in groups when wait-times or costs are a concern. Inclusion of a family component may improve outcomes but this conclusion was not uniformly supported by the studies and improvements were not always maintained long term. In seven studies that compared child CBT to child-plus-family CBT, two studies found no difference,[37,39] three suggested child-plus-family was better but not significantly so,[34,59,61] and two showed child-plus-family was significantly superior.[40,51]

Live graded exposure treatment for specific phobias in children was well supported in the literature prior to 1991 and remains so.[31] One study found support for a brief (one day) version of live graded exposure in both child-only and child-plus-family conditions.[41] Furthermore, two studies compared newer treatments for phobic children, EMDR[36] and CAVE,[62] to live graded exposure. Although CAVE and EMDR were found to be efficacious, live graded exposure was superior to both of these newer treatments. Therefore, there is insufficient evidence to support the use of CAVE and EMDR in treating specific phobias in children. As well, since there is only one study to support emotive imagery,[65] live graded exposure remains the standard of care for specific phobias.

Although medications can reduce anxiety symptoms, in two of the three medication studies SSRIs were associated with significant side effects.[12,63] More importantly, there is growing concern that for children, SSRIs may cause emotional and behavioural changes that increase the risk of selfharm or harm to others. Recently Health Canada issued a warning that in a small number of cases, these medications have been associated with an increase in suicidal thoughts and the onset or worsening of adverse events such as suicide in children.[66] In addition, the advisory notes that while prescribing is a physician's responsibility, Health Canada has not specifically authorized the use of SSRIs in children. Consequently, there is insufficient evidence to support the use of SSRI's in children except for severe situations where other treatments cannot be used and where there is close monitoring.

There are several limitations in the prevention and treatment research. First, most studies were completed with Caucasian populations. Because response may be affected by ethnicity,[67] studies involving different ethnic populations are required. Second, only two CBT treatment studies were done in Canada. Differences in health, social and education systems can also have an impact on outcomes for children. Evaluations preformed in a Canadian context, such as the research currently underway in BC on the *FRIENDS* program,[68] are needed to increase our understanding of local implementation issues and outcomes. Finally, most studies we reviewed did not assess concurrent disorders. Since concurrent mental health problems are common for children diagnosed with anxiety,[1] more research addressing optimal treatments in this population is required.

Despite the limitations, the research suggests that there is good evidence to support new public policy investments in both preventing and treating anxiety disorders in children. Prevention is preferable given the high distress and impairment associated with anxiety disorders. Cognitivebehavioural approaches are the most promising strategies for both prevention and treatment. In fact, our review of the literature revealed a cognitive-behavioural program, *FRIENDS*, that appears to be efficacious across the entire spectrum, as a universal prevention program, as a targeted prevention program and as a treatment.[43,44,46,47,60] New policies and programs need to be informed by this research evidence. Careful evaluation of all new programs is imperative and would make a valuable contribution to both research and policy development in Canada.

# 5 RECOMMENDATIONS

- Prevention is crucial and should be part of the spectrum of mental health strategies for children in BC. Prevention programs should be piloted and modelled after cognitive-behavioural techniques described in the research. Schools are ideal settings for delivering both universal and targeted prevention programs.
- CBT is strongly supported by the research evidence and should be considered the standard of care for treating most types of anxiety disorders in children. CBT can be delivered in both group and individual formats and can involve parents. Live graded exposure should be considered the standard of care for treating specific phobias.
- Although some serotonergic anti-depressant medications have been found to reduce symptoms, given the side effects and given the recent concerns about safety in children, these medications should not be first-line treatments for anxiety disorders in children except in severe cases. It is essential to carefully monitor all children being treated with medications.
- For both prevention and treatment, approaches that are not supported by the best available research evidence should be discontinued or carefully evaluated.
- For populations where the research evidence is lacking (such as children with concurrent mental health problems), prevention and treatment interventions should be modelled after the approaches that are supported in the research.
- Newly developed prevention and treatment interventions should be consistent with the research evidence. Fidelity to the original program models should be ensured and outcomes should be rigorously evaluated.

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# APPENDIX A

## Key Features of Anxiety Disorders in Children

For any anxiety disorder diagnosis in childhood, a child must be under 18 years of age and must display symptoms that significantly impair functioning at home, at school, with peers or in the community. The following descriptions are adapted from the *Diagnostic and Statistical Manual* of the American Psychiatric Association.[10]

**Generalized Anxiety Disorder (referred to as overanxious disorder prior to 1994)**

For a diagnosis of generalized anxiety disorder, a child must experience excessive anxiety and worry with at least one of the following symptoms during the past six months:

- Restlessness
- Fatigue
- Difficulty concentrating
- Irritability
- Muscle tension
- Sleep disturbance

**Separation Anxiety Disorder**

For a diagnosis of separation anxiety disorder, three or more of the following symptoms must be present during the past four weeks:

- Distress when separated from home or major at tachment figures (e.g. parents)
- Complaints of physical symptoms when separating from major attachment figures
- Concern about harm to major attachment figures
- Fear of being alone at home and in other set tings
- Reluctance to go to sleep without a major at tachment figure close by
- Fear of sleeping away from home
- Repeated nightmares involving the theme of separation

**Social Phobia (referred to as avoidant disorder prior to 1994)**

For a diagnosis of social phobia, all of the following symptoms must be present for at least six months:

- Fear of social situations where the child is exposed to unfamiliar people or to scrutiny by others
- Exposure to the feared situation provokes anxiety
- Anxiety must occur in peer settings (not just in interactions with adults)
- The feared situation(s) are avoided or are endured with intense distress

**Specific Phobia (referred to as simple phobia prior to 1994)**

For a diagnosis of specific phobia, all of the following symptoms must be present for at least six months:

- Marked and persistent fear cued by the presence or anticipation of a specific object or situation
- Exposure to the phobic stimulus provokes an immediate anxiety response
- The phobic stimulus is avoided or endured with intense distress

## Key Features of Anxiety Disorders in Children *continued*

**Panic Disorder**

For a diagnosis of panic disorder, the child must have recurrent unexpected panic at tacks and at least one at tack must be followed by a month of one of the following symptoms:

- Concerns about having additional attacks
- Worry about the consequences of the attack
- Significant behaviour changes related to at tacks

**Post-traumatic Stress Disorder**

For a diagnosis of post-traumatic stress disorder, a child must have been exposed to a traumatic event involving death or serious injury or a threat to the physical integrity of self or others. The child's response must involve intense fear, helplessness or horror. The child must have symptoms present in the past four weeks from each of the following clusters:

The traumatic event is persistently re-experienced in at least one of the following ways:

- Distressing recollections of the event or repetitive play in which themes of the trauma are expressed
- Recurrent distressing dreams
- Feeling as if the traumatic event were recurring or actual trauma-specific re-enactment
- Psychological distress when exposed to cues that symbolize an aspect of the trauma
- Physiological reactivity when exposed to cues that symbolize an aspect of the trauma

Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness, as indicated by at least three of the following:

- Efforts to avoid thoughts, feelings or conversations about the trauma
- Efforts to avoid activities, places or people that are reminders of the trauma
- Inability to recall an important aspect of the trauma
- Markedly diminished interest or participation in significant activities

Persistent symptoms of increased arousal as indicated by at least two of the following:

- Sleep disturbance
- Irritability or anger
- Difficulty concentrating
- Hypervigilance
- Exaggerated startle response

# APPENDIX B

## Criteria for Evaluating Research Articles

**Basic Criteria**
- Original or review articles in English about humans
- About topics relevant to children's mental health in BC communities

**Reviews**
- Clear statement of relevant topic
- Clear description of the methods including sources for identifying literature reviewed
- Explicit statement of criteria used for selecting articles for detailed review
- At least two studies reviewed meet criteria for assessing original research studies

**Research Studies**
- Clear descriptions of participant characteristics, study settings and interventions
- Random allocation of participants to comparison groups
- Maximum drop-out rate of 20% (post-test)
- Outcome measures of both clinical and statistical significance
- For treatment, diagnostic "gold" standard used for assessment
- For medication, double-blinding, placebo-controlled procedures used

(Adapted from *Evidence Based Mental Health*[69])