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Enhancing the Capacity of School Nurses to Reduce Excessive Anxiety in Children: Development of the CALM Intervention

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PROBLEM: Excessive anxiety is among the most common psychiatric problems facing youth. Because anxious youth tend to have somatic complaints, many seek help from the school nurse. Thus, school nurses are in an ideal position to provide early intervention. This study addresses this problem and describes the plans to develop and test a new intervention (Child Anxiety Learning Modules; CALM), delivered by school nurses, to reduce child anxiety and improve academic functioning.

METHODS: An iterative development process including consultation with an expert panel, two open trials, and a pilot randomized controlled study comparing CALM to usual care is proposed. Feedback will be solicited from all participants during each phase and data on outcome measures will be provided by children, parents, teachers, and independent evaluators.

FINDINGS: Data will be collected on intervention satisfaction and feasibility. Primary outcomes that include child anxiety symptoms, classroom behavior, and school performance (e.g., attendance, grades, standardized test scores) will be collected at pre- and post-interventions and at a 3-month follow-up evaluation.

CONCLUSIONS: Pediatric anxiety is a common problem that school nurses frequently encounter. Consequently, they are well positioned to play a key role in enhancing access to behavioral health interventions to reduce anxiety and may therefore make a significant positive public health impact.

Anxiety disorders are among the most common psychiatric conditions affecting youth, with approximately 30% experiencing an anxiety disorder before reaching adulthood (Merikangas et al., 2010). Excessive symptoms of anxiety that are severe but do not meet diagnostic thresholds are also common and account for many primary care visits (Safer, Rajakannan, Burcu, & Zito, 2015). The negative impact of excessive anxiety symptoms and anxiety disorders on child functioning is well documented and associated with a broad range of impairments in academic, social, and familial functioning (Hansen, Sanders, Massaro, & Last, 1998; Hughes, Lourea-Waddell, & Kendall, 2008; Ialongo, Edelsohn, Werthamer-Larsson, Crockett, & Kellam, 1995; Langley, Bergman, McCracken, & Piacentini, 2004; Mazzone et al., 2007; Stein & Kean, 2000). Given the high burden associated with these disorders, enhancing access to effective and early interventions is vital.

A wealth of evidence from over 25 randomized controlled trials (RCTs) suggests that cognitive-behavioral therapy (CBT) is effective in reducing anxiety in children with gains maintained over several years (e.g., Barrett, Duffy, Dadds, & Rapee, 2001; Cobham, Dadds, Spence, & McDermott, 2010; Kendall, Safford, Flannery-Schroeder, & Webb, 2004). Moreover, among youth with subclinical levels of anxiety, early intervention with CBT reduces the incidence of later disorders (Dadds et al., 1999; Dadds, Spence, Holland, Barrett, & Laurens, 1997; Ginsburg, 2009; Neil & Christensen, 2009), highlighting the importance of identifying these children when they are young and when anxiety symptoms are still subclinical.

Unfortunately, few anxious children are identified early in the course of their illness and few receive prevention or early intervention. Less than 15% of youth with anxiety disorders utilize mental health services before the age of 14 (Merikangas

et al., 2011). One of the most frequently reported barriers to receiving treatment is access to mental health services, including long waiting times and scheduling conflicts (e.g., lack of compatible hours with school and work schedules; Smith, Linnemeyer, Scalise, & Hamilton, 2013).

School-based treatments have been promoted to address the low service utilization and reduced access to treatment for anxious youth. Schools are an ideal location for delivering early interventions because children spend most of their time in school and the school context is a primary setting in which anxiety-related problems occur (Langley et al., 2004; Weist, Goldstein, Morris, & Bryant, 2003). School factors, such as teachers, peers, academic performance, classroom interactions, extracurricular performances, and school violence, contribute to and/or maintain anxiety symptoms. Moreover, school-based interventions are more accessible and affordable than traditional community or hospital-based services (Atkins, Graczyk, Frazier, & Abdul-Adil, 2003; Husky, Sheridan, McGuire, & Olfson, 2011; Wu et al., 1999) and reduce barriers to treatment attendance by eliminating the need for transportation and after-school scheduling (Anglin, 2003; Burns et al., 1995; Committee on School Health, 2004; Kaplan, Calonge, Guemsey, & Hanrahan, 1998). Furthermore, the familiar nature of the setting contributes to higher utilization rates (Weist & Evans, 2005) and treatment attendance/adherence (Neil, Batterham, Christensen, Bennett, & Griffiths, 2009) for school-based mental health interventions.

A growing literature shows that CBT, delivered in schools, is effective. Experienced mental health practitioners and school-based clinicians have successfully delivered treatments with core CBT components in schools that reduced clinically significant anxiety symptoms better than a comparison group (Ginsburg, Becker, Drazdowski, & Tein, 2012; Ginsburg, Becker, Kingery, & Nichols, 2008; Ginsburg & Drake, 2002; Mifsud & Rapee, 2005). Prevention studies have also demonstrated effectiveness for youth with mild to moderate anxiety symptoms in schools (Dadds et al., 1999; Liddle & Macmillan, 2010).

Although a range of professionals could interact with anxious youth in schools (e.g., social workers, counselors, school psychologists), the service needs often exceed available resources. Consequently, there is a growing recognition of the potential for school nurses to provide clinical care to anxious youth. Indeed, the majority of school nurses' office visits consist of children often referred to as "somatizers" or "frequent flyers," who over-utilize school health services due to frequent, vague physical complaints (Joost, Grossman, McCarter, & Verhulst, 1993; Wolk & Kaplan, 1993) which may be masking mental health concerns. According to the National Association of School Nurses (NASN, 2005), school nurses were found to be uniquely qualified and poised to conduct initial assessments, advocate for mental health services, educate parents/teachers, and implement brief interventions. Findings from a national survey of school nurses regarding mental health services in U.S. public schools (N = 83,500 schools) indicated that school nurses spend approximately 32% of their time providing mental health services (Foster et al., 2005) and a more recent study reported that psychosocial strategies to reduce anxiety were a common type of intervention used by school nurses (Lee, Park, Nam, & Whyte, 2011).

The common use of strategies to reduce anxiety specifically is likely due to the overlap of physical and mental health symptoms. Children with frequent somatic complaints are four times as likely to screen positively for anxiety and depression (Campo, Jansen-McWilliams, Comer, & Kelleher, 1999; Meesters, Muris, Ghys, Reumerman, & Rooijmans, 2003) and over 90% of youth with anxiety disorders report somatic symptoms such as restlessness, stomachaches, palpitations, muscle tension, sweating, and trembling/shaking (Campo & Fritsch, 1994; Garber, Walker, & Zeman, 1991; Ginsburg, Riddle, & Davies, 2006). Related studies also find that children with anxiety disorders frequently visit the school nurse (Ollendick & March, 2004).

Although few studies have systematically examined the effectiveness of nurse-delivered psychological interventions, a small but growing body of literature indicates that school nurses can effectively use various psychosocial interventions with children who present with mental health concerns. For instance, nurse-facilitated psychosocial interventions (e.g., providing support, psycho-education, social skills training, problem-solving training, and other elements of CBT) have been conducted with youth with persistent health complaints (Clausson & Berg, 2008), chronically absent and depressed children (Houck & Perri, 2002), socially withdrawn and depressed girls (Houck & Stember, 2002), adolescents at risk for depression (Houck, Darnell, & Lussman, 2002), and youth with attention deficit hyperactivity disorder (Houck, King, Tomlinson, Vrabel, & Wecks, 2002). With respect to anxiety, Stallard, Simpson, Anderson, Hibbert, and Osborn (2007) trained school nurses to deliver a universal, manualized, CBT-based prevention program for child anxiety (FRIENDS; Barrett, Dadds, & Rapee, 1996) to 106 children aged 9–10 years. The FRIENDS program consisted of 10 weekly sessions that covered core CBT components (i.e., behavioral exposure, relaxation, and cognitive restructuring) and was delivered as part of the school curriculum to entire classes by two trained nurses and teaching staff who facilitated CBT-related activities. Results from an open trial indicated a significant reduction in anxiety symptoms at 3 months post-intervention for all children, regardless of baseline anxiety severity, and these improvements were maintained at the 12-month follow-up (Stallard, Simpson, Anderson, & Goddard, 2008). Although this type of universal intervention was not compared to a control

condition and may not "fit" nurses' work schedule, which is characterized by fewer and briefer meetings with individual children, findings demonstrate that school nurses can be effectively trained to deliver standardized CBT interventions to children.

Purpose

In light of the high prevalence of pediatric anxiety, the need for increased access to quality care, the promise of prevention, and the unique role of school nurses in interacting with anxious youth, we proposed to develop a brief nurse-delivered intervention to reduce anxiety, Child Anxiety Learning Modules (CALM). The goals of this project, recently funded by the Department of Education's Institute of Education Sciences, are to (a) develop and pilot test the feasibility of conducting the CALM intervention, and (b) compare the effectiveness of CALM and usual care (UC) in reducing anxiety symptoms and improving academic functioning in elementary school children with excessive symptoms of anxiety.

Method

Study Design

The development of the CALM intervention will include an iterative process in which versions of the intervention and its implementation procedures will be conducted sequentially and refined in response to feedback from expert consultants (i.e., the CALM Development Workgroup; CDW), school nurses, children, parents, and school personnel until it is usable in the school environment. Feedback regarding all aspects of the intervention content, feasibility of delivery (i.e., session number and duration), and fidelity/competence of nurse-facilitated intervention will be incorporated into revisions of the intervention and protocol in order to enhance its usability. This 3-year project consists of three stages.

Stage 1: This stage involves establishing the CDW which consists of the study investigators, leaders within the National Association of School Nurses (NASN), experts in developing and evaluating school-based behavioral and mental health interventions, and practicing school nurses. The CDW will meet throughout the study to refine the protocol and determine which aspects of the protocol need to be modified to ensure that the intervention, assessments, and implementation procedures are feasible and viable in the school setting. They will also provide detailed feedback about the CALM strategies, study methods/measures, perceived barriers to successful implementation of the intervention and adoption by nurses and school systems, and solutions to potential barriers. A central focus will be on ways to minimize burden on school staff and integrate the intervention within the goals/mission of schools interdisciplinary teams.

Stage 2: During stage 2, nurses will complete a 1-day training in the intervention and two sequential open trials of the revised protocol will be implemented. The purpose of the open trials is to evaluate the feasibility of the implementation plan, modify methods as needed, allow nurses to administer the intervention and receive supervision with actual children, and assess intervention acceptability and satisfaction from children, parents, and nurses. After each open trial, feedback via exit interviews and standardized measures from children, parents, nurses, and members of each school's interdisciplinary team will be integrated by the research team and will then be presented to the CDW for another revision of the protocol.

Stage 3: In stage 3, we will conduct a pilot RCT with nurses randomized equally (1:1) to either the CALM intervention or UC. Data from the RCT will provide preliminary data on outcomes of the CALM intervention when compared to UC in reducing anxiety symptom severity and improving academic outcomes. This pilot will also continue to assess the feasibility and fidelity of the intervention delivered by school nurses.

Samples

Nurse Participants

A total of 30 volunteer nurses will be randomly selected to participate (5 in each of the two open trials and 20 in the RCT). Nurses will be recruited using flyers, school talks, e-mails, and professional networking. All nurse participants must be a registered nurse and be at least a part-time employee of a Maryland or New England school in the role of school nurse.

Child Participants

A total of 80 children from Maryland and New England elementary schools with enrolled school nurses (10 in each of the two open trials and 60 in the RCT) will be recruited through flyers, nurse referrals, and word of mouth. All children must (a) be in elementary school (e.g., ages 5–12), and (b) have elevated anxiety symptoms (i.e., a total score of 15 or higher on the Screen for Child Anxiety-Related Emotional Disorders [SCARED; Birmaher et al., 1997, 1999] and/or a Clinician Severity Rating (CSR) of 3 or higher on the Anxiety Disorders Interview Schedule for DSM-IV, Parent and Child Versions [ADIS-IV-C; Silverman & Albano, 1996]). Children will be excluded if they (a) have a medical or psychiatric condition contraindicating the study intervention (e.g., pervasive developmental disorder, psychosis), (b) are receiving psychosocial treatment for anxiety, or (c) need more immediate or alternative treatment (e.g., for another psychiatric disorder, suicidal intent). All inclusion and exclusion criteria will be assessed during a clinical interview. Children who meet all

inclusion criteria and no exclusion criteria will be deemed eligible for the study.

Measures

Anxiety Symptoms and Disorders

Screen for Child Anxiety-Related Emotional Disorders, Child and Parent Versions (SCARED; Birmaher et al., 1997, 1999) is a 41-item self- and parent-report measure of childhood anxiety. Youth and parents respond to items using a 3-point Likert-type scale describing the degree to which statements are true (0 = *not true or hardly ever true*, 1 = *somewhat true or sometimes true*, 2 = *very true or often true*). The SCARED total score, a sum of the 41 items, ranges from 0 to 82. Reliability and validity for the total score have been found to be acceptable in clinical and community samples of diverse youth (Birmaher et al., 1997, 1999; Boyd, Ginsburg, Lambert, Cooley, & Campbell, 2003; Muris, Merckelbach, Gadet, Moulaert, & Tierney, 1999).

Anxiety Disorders Interview Schedule for DSM-IV, Parent and Child Versions (ADIS-IV-C; Silverman & Albano, 1996) is considered the gold standard for assessing anxiety disorders and severity. Impairment ratings are generated for each disorder using the CSR (range = 0–8; a rating of 4 is required to assign a diagnosis). The ADIS-IV-C has good test–retest reliability for the parent interview and for the child interview (Silverman, Saavedra, & Pina, 2001) and is sensitive to treatment effects in studies that have included diverse samples of youth (e.g., Ferrell, Beidel, & Turner, 2004; Ginsburg & Drake, 2002; Silverman, Kurtines, Ginsburg, Weems, Lumpkin, et al., 1999; Silverman, Kurtines, Ginsburg, Weems, Rabian, et al., 1999; Treadwell, Flannery-Schroeder, & Kendall, 1995; Walkup et al., 2008).

Child Anxiety Impact Scale (CAIS; Langley et al., 2004) is a 27-item self-report parent and child measure of anxiety-related interference in social, academic, and family functioning. The CAIS possesses acceptable psychometric properties (i.e., $\alpha = .87$ for the total score) with diverse samples of youth (Langley et al., 2004).

Clinical Global Impression-Severity (CGI-S) and Improvement (CGI-I) Scales (Guy, 1976). The CGI-S score provides a global rating of anxiety severity ranging from 1 (*not at all ill*) to 7 (*extremely ill*), while the CGI-I provides a global rating of clinical improvement in anxiety (relative to baseline) ranging from 1 (*very much improved*) to 7 (*very much worse*). Both scales have been used extensively in child treatment trials (Walkup et al., 2008).

Academic Functioning

Teacher Observation of Classroom Adaptation Checklist (TOCA-C; Koth, Bradshaw, & Leaf, 2009) is a 21-item measure that assesses teachers' ratings of a student's classroom behavior in three factors: concentration problems, disruptive behavior, and prosocial behavior. The TOCA-C is a reliable and consistent measure for teachers to complete on students in kindergarten through fifth grade ($\alpha = .96$ for the total score; Koth et al., 2009).

Behavior Assessment System for Children (BASC-2; Reynolds & Kamphaus, 2002) is a widely used instrument of problem and adaptive behaviors at home and school. Parents, teachers, and students respond to items using a four-choice response format regarding frequency of behaviors: never, sometimes, often, or always. The BASC-2 has several scales that assess academic functioning (school maladjustment, attitude toward school, attitude toward teachers, attention problems, learning problems, study skills) and has demonstrated sound psychometric properties and is sensitive to treatment effects (Merydith, 2001; Reynolds & Kamphaus, 2002).

Woodcock–Johnson Tests of Achievement (WJ-III; Woodcock, McGrew, & Mather, 2001) is a widely used norm-referenced measure of academic achievement. Select subscales from the WJ-III (reading, writing, math fluency, and numbers reversed) will be administered by the IE to measure cognitive factors (e.g., efficiency, speed) that are believed to be affected by anxiety. The measure has good internal consistency, and evidence of content and concurrent validity (Woodcock et al., 2001).

School records will provide information about academic grades, attendance, standardized test scores, referrals for special education evaluations, referrals to the nurse, and referrals for disciplinary actions (e.g., suspensions, detentions).

Feasibility, Satisfaction, and Fidelity

The acceptability and feasibility of the CALM intervention will be monitored via written feedback regarding satisfaction from nurses, children, and their parents.

CALM Treatment Satisfaction Questionnaires were developed for this study. Parallel measures will be administered to children, their parent(s), and the school nurse. Items assess the respondents' perceived helpfulness of the intervention overall, the helpfulness of individual components of the intervention (e.g., psycho-education, relaxation, behavioral exposure), and solicits feedback regarding the number of sessions, session duration, and intervention materials (such as child handouts). Participants are also provided with opportunities to provide open-ended feedback about the most and least helpful aspects of the CALM program. Nurses will also be asked to rate the level of difficulty they experienced when delivering each intervention component (and to provide an explanation for their ratings).

CALM Intervention Fidelity, Adherence, and Competence Checklist (also developed for this study) contains a list of the key points/principles that should be covered during a session. Nurses audio-tape all of their sessions so they can be accessed by their clinical supervisors and research staff. Independent evaluators will listen to audio-recorded sessions and rate sessions for fidelity and adherence (i.e., the skill with which intervention components are delivered to the child and the degree to which the protocol is being followed for each intervention module). Example items include "Practiced facing fears" and "Taught steps for changing thoughts." The independent evaluator will also rate the quality of the nurses' basic therapeutic skills during the intervention meetings (including nonspecific factors such as assessing comprehension, maintaining professional boundaries, and maintaining a positive working relationship) using a 4-point scale (0 = *poor* to 3 = *very good*). Finally, as an additional measure of intervention fidelity, the CALM nurse will complete the checklist at each session to document which points/principles were addressed.

Exit interview: After completing a study case using CALM, the study team will arrange a time to meet or talk over the phone for 15–20 min with the nurse. The interview is designed to be a guided, but open-ended, opportunity for nurses to share feedback, problems/solutions, and barriers that may enhance future iterations of the intervention and implementation strategies.

Procedures

Interested parents will contact study staff and complete a brief phone screen. Families who pass the screen will complete informed consent and a baseline evaluation with an independent evaluator. During the baseline evaluation, symptoms of anxiety will be assessed using the measures listed above to determine child eligibility. Eligible children will then participate in the 8-week intervention phase. At the end of the 8-week intervention, children will complete the post-intervention evaluation consisting of the same interview and standardized measures collected at baseline. A follow-up evaluation will be conducted at 3 months post-intervention to assess the durability of the outcomes. Children classified as "non-responders" after completing CALM (i.e., those children who have not shown reductions in anxiety and need additional treatment) will be referred to the school counselor or other provider for treatment.

Interventions

CALM Intervention

The CALM intervention is a brief nurse-delivered intervention consisting of 5–8 sessions administered over 8 weeks during short (20–30 min) visits with the individual anxious child. As shown in Table 1, the proposed components of CALM include psycho-education and the following core CBT strategies: C = Calm down by learning relaxation strategies, A = Actions that will reduce anxiety, L = Listen to scary thoughts and change them into coping thoughts, M = Manage problems using problem-solving strategies and relapse prevention. These components focus on teaching skills that address the core symptoms of anxiety (somatic, behavioral, and cognitive) and include relaxation training (to reduce physiological arousal), behavioral strategies (i.e., "exposure" or facing anxiety-provoking situations which lowers anxiety via habituation and reducing stress/conflict by using problem-solving skills), and cognitive strategies (i.e., cognitive restructuring to reduce maladaptive cognitions related to anxiety). These "common elements" of CBT are powerful agents of change and have been successfully implemented by experts (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004; Southam-Gerow, Kendall, & Weersing, 2001; Walkup et al., 2008) and non-CBT experts (Langer, McLeod, & Weisz, 2011). An intervention manual will be developed to serve as a guide for school nurses. The manual will describe the content of each session and provide examples of dialogue to illustrate how nurses can convey the content to children effectively. The first session consists of psycho-education because it is essential that each child has an opportunity to learn about anxiety, what it is, how it shows up, what makes it worse/better, etc. After that session, nurses administer the components sequentially (i.e., C-A-L-M). Following these four sessions, the nurses will administer a relapse prevention session, which will prepare each child for future anxiety symptoms and generalize their learned coping strategies to a broad range of situations.

Usual Care

UC, similar to a waitlist condition, will serve as the comparison group for the CALM intervention. Children in this condition will receive UC, meaning that school nurses will interact with these children in a way that reflects their usual, or typical, practices. These families will not be prohibited from seeking treatment for their children and they will be offered the CALM intervention after completing the post-evaluation (as is the case with standard waitlist control conditions).

Nurse Training and Supervision

Licensed psychologists will provide a day-long training workshop to include general information about identifying and treating childhood anxiety, the CBT model, and an overview of study methods. The CALM intervention manual and reading

Table 1. Proposed CALM CBT Components, Content, Rationale, and Implementation Strategies

Component	General content	Rationale for the skill	Implementation strategies
Psycho-education	Present tripartite model of anxiety. Teach CBT model that guides treatment.	Provides corrective information and normalizes anxiety (e.g., you are not only child with anxiety). Instills hope and increases motivation for implementing change strategies.	Present didactic information on anxiety; teach how to recognize the signs of anxiety (physical, thoughts, behaviors); explain connections between manifestations of anxiety and how therapy will target each; assign practice tasks to increase identification of anxiety
C = Calm down by learning relaxation skills	Identification of arousal signals of anxiety, teach deep breathing, and progressive muscle relaxation	Reduces autonomic arousal in response to anxiety-provoking situations, lower arousal reduces anxiety and improves attention to social, behavioral, and educational activities (e.g., engagement in class activities)	Identify somatic signs of anxiety; explain that the child can control the amount of arousal in his/her body and can calm the body down; teach and practice relaxation exercises
A = Actions that will reduce anxiety (i.e., via exposure)	Identify feared/avoided situations and engage in a graduated, systematic approach	Avoidance of feared situations results in negative reinforcement of avoidance and maintains anxiety. Graduated exposure reduces anxiety via habituation and improves social, behavioral, and education performance.	Provide rationale for gradually facing fears and create fear hierarchy (i.e., avoidance maintains anxiety; facing fears will shrink anxiety); select exposure exercise that will be completed during the upcoming week
L = Listen to scary thoughts and change them into coping thoughts	Identify and modify maladaptive thoughts (e.g., teach realistic, coping-focused thinking)	Anxious thoughts maintain and increase anxiety; modifying maladaptive thoughts reduces anxiety/worry and avoidance of anxiety-provoking situations which improves social and educational outcomes	Use cognitive restructuring to teach child how thoughts influence anxious behavior and feelings; you can change thoughts and become less scared; teach/practice recognizing self-talk in anxiety-provoking situations; teach/practice changing anxious thoughts to coping thoughts
M = Manage problems using problem-solving skills	Present a five-step plan for problem solving	Anxiety increases conflicts and unresolved problems increase anxiety levels. A systematic problem-solving method helps solve problems effectively, thereby reducing anxiety and improving academic, behavioral, and social outcomes.	Provide rationale for problem solving; explain that having a method to solve problems can help child feel less anxious and more likely to face fears; teach and practice the five steps of the SOLVE method
Relapse prevention	To anticipate and proactively plan for reemergence of anxiety symptoms	Symptoms of anxiety can reemerge in the future. If anticipated and approached with a plan to cope with the anxiety symptoms, children can utilize their coping skills and prevent anxiety symptoms from becoming more severe and debilitating.	Provide rationale for relapse prevention; emphasize the importance of continued practice of anxiety reduction skills; develop a proactive plan for coping with future symptoms of anxiety

materials also will be provided. Training strategies will be based on published guidelines (Beidas & Kendall, 2010) and will include active/experiential learning strategies, opportunities for observation (via video clips), modeling and live role play, and coached practice. Nurses will be also offered 30–60 min (based on need) of weekly clinical supervision by licensed psychologists, including case review, skill rehearsal, and feedback regarding performance. Supervision meetings will be held in person, over the phone, or via Skype, and at times convenient for nurses and may be in an individual or group format.

Data Analytic Plan

Preliminary analyses will be descriptive in nature and focus on recruitment, refining the intervention, monitoring adherence, and obtaining satisfaction information from all participants. Mean scores on measures of fidelity (i.e., the CALM Intervention Fidelity, Adherence, and Competence Checklist) and satisfaction (i.e., the Training Satisfaction and Feedback Questionnaire and the Treatment Satisfaction Questionnaires) as well as participants' responses to open-ended questions on these measures will be summarized. The primary

outcome analyses for children are anxiety symptoms as measured by the SCARED. We will assess the impact of the intervention using multilevel mixed effect models of the post-pre change score. These models are flexible and appropriate for assessing clustered longitudinal data, i.e., data collected repeatedly on the same set of students over pre- and post-interventions, clustered within nurses (Raudenbush & Bryk, 2002). The hierarchical model will have two levels, with children's change scores on the first level and being clustered within nurses on the second level. We will include years of experience as a nurse-level covariate and will control for baseline outcome at the child level. Outcome analyses will be conducted for intent to treat and intervention completer samples.

Summary and Conclusions

Childhood anxiety disorders are common (affecting up to 30% of youth) and are associated with adverse academic, social, and other long-term consequences. These devastating outcomes may be averted by enhancing children's access to mental health services. Expanding the network of mental health providers to include nurses represents an important—and innovative—step in disseminating evidence-based interventions for reducing anxiety and improving academic outcomes of children. Given that children with early anxiety symptoms frequently visit the school nurse due to somatic complaints or to avoid anxiety-provoking situations, school nurses are often the first point of contact and are therefore well positioned to identify and intervene early with these children. Thus, this study aims to enhance the capacity of school nurses by developing and refining a novel nurse-administered intervention designed to reduce anxiety symptoms and improve academic, social, and behavioral functioning. Equally important, this study will assess the feasibility, fidelity, and promise of the intervention when delivered in a school setting and by school nurses. The end product of this project will be a fully developed intervention with evidence of feasibility in the school setting and pilot data to support the intervention's promise in reducing anxiety and improving academic functioning. If successful, a larger randomized controlled clinical trial to fully evaluate the intervention's efficacy will be conducted.

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