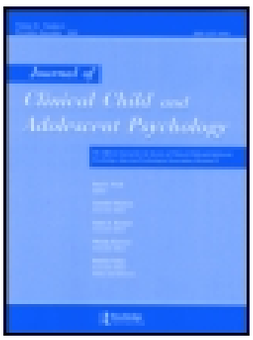

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A pilot RCT of a school nurse delivered intervention to reduce student anxiety

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The goal of this study was to evaluate the feasibility and impact of brief school-nurse-administered interventions for reducing anxiety. Thirty school nurses in Connecticut and Maryland were randomly assigned to deliver the Child Anxiety Learning Modules (CALM; $n = 14$) or CALM–Relaxation only (CALM-R; $n = 16$). Students ($N = 54$) were ages 5–12 (M age = 8; 84.9% White; 68.5% female) with elevated anxiety symptoms and/or anxiety disorders. Feasibility was assessed based on recruitment, retention, attendance, training and intervention satisfaction, and intervention adherence. Multiple informants, including independent evaluators (IEs), completed measures of clinical improvement at postintervention and at a 3-month follow-up. Of nurses in CALM and CALM-R, 62% and 81%, respectively, enrolled a student and completed an average of 6 sessions. Youth retention was 85% and 94% in CALM and CALM-R, respectively. Training and intervention satisfaction were high. At postintervention and follow-up, youth in both groups showed significant reductions in anxiety and related symptoms and improvements in functioning. Within-group effect sizes were medium to large, and between-group effect sizes were small. Task shifting responsibility for delivering brief mental health interventions to school nurses is feasible and shows promise for reducing anxiety and related impairment. This approach may also be integrated within a response to intervention model used in schools.

Public Health Significance: Brief school-nurse-administered anxiety reduction interventions were shown to be feasible and had a positive impact on student anxiety and related impairment highlighting that school nurses can be an important school resource.

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A wide gap exists between the number of youths suffering from anxiety disorders and the number who receive treatment (Merikangas et al., 2010). The provision of school-based

mental health services by school clinicians is recognized as one important and potentially effective approach for reducing this gap (Weist et al., 2017). However, school-based clinicians (e.g., social workers, guidance counselors, psychologists) have high caseloads that often preclude them from treating all youth with mental health needs, and their allotted time for providing psychotherapy is limited due to competing responsibilities (Splett, Fowler, Weist, & McDaniel, 2013). For these reasons, task shifting of mental health interventions to non-mental-health specialists has been suggested as a solution and has been successful in the delivery of mental and general health interventions nationally and globally (e.g., Kakuma et al., 2011). Among school personnel, the school nurse can play a vital role in addressing the mental health needs of students. This is particularly true for youth with anxiety because core manifestations of anxiety include somatic symptoms and avoidant behavior often leading these youth to visit the school nurse (Ollendick & March, 2004). Consequently, school nurses face a subgroup of students who overutilize school health services because of frequent, vague physical complaints associated with anxiety. Thus, school nurses are in an ideal position to identify and provide anxiety reduction interventions.

Although limited in number, studies do suggest that school nurses *can* effectively deliver behavioral and mental health interventions (e.g., Pbert et al., 2013; Wilson et al., 2008). To the best of our knowledge, only one study to date has focused specifically on pediatric anxiety (Stallard, Simpson, Anderson, Hibbert, & Osborn, 2007). In this study, school nurses (along with a teacher) delivered a 10-session universal version of FRIENDS to nonreferred groups of youth ($n = 106$; 9–10 years old) in their classroom. The intervention covered core components of cognitive behavioral therapy (CBT) for anxiety (i.e., exposure, relaxation, and cognitive restructuring). Nurses attended a 2-day training that focused on understanding the theoretical basis of CBT and implementation procedures. Training and monthly supervision were provided by a clinical psychologist with expertise in CBT. Results indicated a significant reduction in anxiety symptoms in youth and an increase in level of self-esteem at 3-month postintervention. These improvements were maintained at the 12-month follow-up (Stallard et al., 2008). Unfortunately, there was no comparison condition, and the 10-session intervention did not "fit" nurses work schedule, which is characterized by fewer and briefer meetings with individual students. Moreover, universal interventions may not be an efficient use of school resources, classroom time, or nurses' time, as not all youth need or benefit from universal interventions. Despite these limitations, their findings demonstrate that school nurses can be effectively trained to deliver standardized CBT-based interventions for anxiety.

In light of the need and benefits of increasing access to mental health services and for task shifting mental health service delivery among school personnel, our research team used an iterative process to develop and refine a brief school-nurse-administered intervention for anxious youth (see Drake, Stewart, Muggeo, & Ginsburg, 2015; Muggeo, Stewart, Drake, & Ginsburg, 2017, for details); data from two successive open trials were promising (Muggeo et al., 2017). The resulting intervention (referred to as Child Anxiety Learning Modules [CALM]), based on CBT strategies, was developed and modified for implementation by school nurses with input from school nurses, a team of national experts in the field of school mental health, National Association of School Nurse leadership, and feedback from volunteer parents and youth. The CALM intervention focuses on anxiety because data show that anxiety disorders in youth are among the most common psychiatric conditions and result in profound short- and long-term functional impairment (Swan & Kendall, 2016; Swan et al., 2018). Within the school context, excessive anxiety has been associated with a range of academic impairments (e.g., Breslau et al., 2008; Hughes, Lourea-Waddell, & Kendall, 2008). Moreover, the school context contains numerous triggers of anxiety (e.g., interacting with peers, worries about academic and extracurricular performances, and separating from parents).

The current study presents data from a pilot randomized controlled trial (RCT) evaluating the feasibility and preliminary impact of CALM. Our initial proposal was to compare CALM to "usual school nursing care." However, usual care was equivalent to no intervention. Thus, to rectify the inherent ethical dilemma associated with withholding or delaying intervention from children in distress, we developed an active comparison condition, referred to as CALM-R, which controlled for nurse time and attention and used only relaxation strategies. CALM-R was also used to increase nurse recruitment and to enhance subject retention. The primary aim of this project was to pilot test the fully developed CALM intervention (conceptualized as a first line intervention for students with excessive anxiety, not a full course of treatment provided by a mental health specialist) and assess its feasibility and acceptability. Secondarily, we examined the impact of the intervention on student outcomes. Given the evidence supporting the effectiveness of CBT-based interventions and in preparation for a large efficacy trial, we hypothesized that CALM would result in greater reductions in anxiety symptoms and related impairment relative to CALM-R.

METHOD

Nurse Participants

Thirty school nurses in Connecticut and Maryland who were full-time or part-time school employees were randomized and trained in CALM ($n = 14$) or CALM-R ($n = 16$). All nurses were female, 90% were White, and 10% were Hispanic/Latino. The majority (56.7%) reported no previous training in CBT for anxiety. See Table 1 for additional demographic and professional characteristics and

TABLE 1
Comparison of Nurse Baseline Demographics and Professional Characteristics in CALM and CALM-R

	CALM[a]	*CALM-R*[b]	
Baseline Characteristics	*M (SD)*	*M (SD)*	p
Nurse Age (Years)	52.50 (7.51)	50.50 (6.99)	.46
Total Years School Nursing	10.14 (7.28)	9.88 (6.83)	.92
Previous Training in Anxiety Reduction[c]	2.21 (1.12)	2.06 (.854)	.68
	N (%)	*N* (%)	
Gender[d]	14 (100)	16 (100)	—
Ethnicity (Hispanic/Latino)	0 (0)	3 (18.80)	.08
Race (% White)	14 (100)	13 (81.30)	.93

Note. CALM = Child Anxiety Learning Modules; CALM–R = Child Anxiety Learning Modules–Relaxation only.

[a]$n = 14$.

[b]$n = 16$.

[c]Range is 1 (*none*), 3 (*some*), 5 (*a lot*).

[d]All nurses are female.

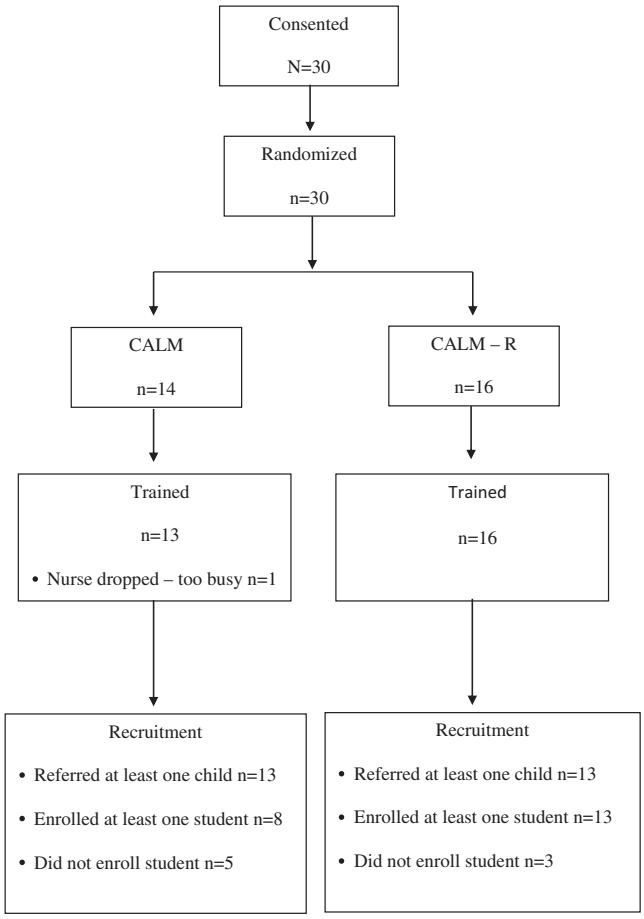

FIGURE 1 Consort diagram for nurse participants in CALM and CALM-R.

Figure 1 for the CONSORT diagram of recruitment and retention of nurses.

Child Participants

Fifty-four children 5–12 years of age inclusively with elevated anxiety symptoms were enrolled (20 in CALM, 34 in CALM-R). All participants had to be fluent in English to provide informed consent and assent for their participation and to complete the study measures. Children were excluded if they (a) had a medical or psychiatric condition contraindicating participation (based on clinical interview and consultation with nurse and study team), (b) were receiving individual psychosocial treatment for anxiety, (c) needed immediate treatment for another psychiatric disorder (e.g., depression) as determined via clinical interview, and (d) were in foster care or not living with their legal guardian. Children on a stable dose of pharmacological treatment were eligible if families agreed to maintain this dose for the duration of the intervention phase (8 weeks) unless clinically contraindicated. Ambiguous cases were decided by the study team and the school nurse. Table 2 presents demographic and clinical characteristics of the child sample.

TABLE 2
Comparison of Child Baseline Demographics and Clinical Characteristics in CALM and CALM-R

	CALM[a]	*CALM-R*[b]	
Baseline Characteristics	*M (SD)*	*M (SD)*	p
Child Age (Years)	8.75 (1.92)	8.10 (1.99)	.25
	N (%)	*N* (%)	
Gender (Female)	15 (75)	22 (64.7)	.44
Ethnicity (Hispanic/Latino)	4 (20)	9 (26.5)	.52
Race (White)	17 (85)	28 (82.4)	.50
Free Lunch (Yes)	3 (15)	9 (26.5)	.31
Parents Married	16 (80)	24 (70.6)	.46
Parental Income > 80,000	12 (60)	19 (55.9)	.77
Primary Entry Diagnosis			
GAD	9 (45)	17 (50)	
SAD	3 (15)	6 (17.6)	
SoP	2 (10)	3 (8.8)	
Panic Disorder	1 (5)	0 (0)	
Specific Phobia	2 (10)	0 (0)	
Other–Unspecified	1 (5)	1 (2.9)	
No Diagnosis	2 (10)	7 (20.6)	

Note. CALM = Child Anxiety Learning Modules; CALM–R = Child Anxiety Learning Modules–Relaxation only; SAD = separation anxiety disorder; GAD = generalized anxiety disorder; SoP = social phobia.

[a]$n = 20$.

[b]$n = 34$.

Intervention Conditions

Both interventions consisted of six modules that were expected to be delivered during brief meetings over 8 weeks by the school nurse with the individual child.

CALM included the core components of CBT for pediatric anxiety: psychoeducation, relaxation strategies, exposure, cognitive-restructuring, problem-solving, and relapse prevention. These components (Drake et al., 2015) represent skills that address the central manifestations of anxiety (somatic, behavioral, and cognitive). These "common elements" of CBT are powerful agents of change and have been successfully implemented by experts and non-CBT experts and in school settings (e.g., Masia-Warner et al., 2016).

Comparison Condition: CALM-R consisted of relaxation skills only. Relaxation skills were selected because they are a core component of CBT; they have been shown to reduce anxiety (Manzoni, Pagnini, Castelnuovo, & Molinari, 2008); and a range of professionals, including school nurses, already teach relaxation skills. The key components of CALM-R included psychoeducation, deep breathing, progressive muscle relaxation, guided imagery, and relapse prevention.

PROCEDURES

The study was approved by the UConn Health Institutional Review Board and each participating school district and school principal. School nurses and parents provided written informed consent and children provided assent prior to study participation. Nurses were matched on years of school nursing experience and randomized (1:1) to CALM:CALM-R. The study was conducted in 30 schools in Connecticut and Maryland. Nurses were recruited through their district's nursing supervisor, flyers distributed by study staff to schools, and word of mouth. Interested nurses contacted the study staff and completed informed consent and baseline questionnaires about their professional experience. Randomized nurses completed a 1-day training in their assigned condition. Nurses were compensated $25 in gift cards to a local store for attending the training and $50 in gift cards for completing study forms for each enrolled child. All nurses were offered "consultation" (by a doctoral-level clinical psychologist) and provided with intervention materials (e.g., intervention manual, training videos, handouts). Given the developmental differences between the youngest (age 5) and oldest (age 12) students in our participating elementary schools, training and consultation also highlighted ways in which nurses could modify the delivery of the intervention materials to appropriately "fit" the student's developmental level (e.g., adjusting vocabulary, using pictures and simplified examples to illustrate concepts).

Children were recruited through their school nurse, teachers, flyers posted in the school newsletter, and/or word of mouth. Interested families contacted study staff or gave permission to be contacted by study staff. After a brief phone screen to assess key inclusion criteria, potentially eligible families were invited for an in-person baseline evaluation during which an IE administered a diagnostic clinical interview to parent and child (separately) and parent-and-child completed questionnaires (described next). IEs had a professional degree in psychology (i.e., a masters or doctorate), and all met stringent criteria prior to assessing a study participant. Training included completing (a) directed readings, (b) didactic instruction, (c) scoring and matching a minimum of three gold standard video-taped assessments, and (d) matching and approval by a senior evaluator after being observed. All evaluations were reviewed by a senior doctoral-level IE supervisor.

Eligible children were expected to meet with their school nurse to complete one of the two interventions. The assessment procedures were repeated at a postevaluation (approximately eight weeks later) and at a 3-month follow-up. All study participants and teachers were compensated for their time with gift cards to a local store.

MEASURES

Feasibility and Acceptability

Recruitment and Retention Trackers: Study trackers were used to document participant flow through the study (see CONSORT diagrams).

Training Satisfaction and Feedback Questionnaire: This measure was developed by the research team for both CALM and CALM-R and included four overlapping items across conditions (see Table 4) that nurses rated on a 7-point Likert scale ranging from 1 (*not at all*) to 7 (*very much*).

Session Summary Form: Session summary data (e.g., attendance, session duration, child engagement) were recorded after each session by the nurse.

Intervention Adherence and Competence: This measure was adapted for CALM from a measure used by Ginsburg, Becker, Drazdowski, and Tein (2012). The measure was completed by raters while listening to audiotaped sessions. At total of 114 tapes (38.78% of available recorded sessions) were coded (43% of CALM and 36% of CALM-R). Raters used a 4-point scale—1 (*poor*), 2 (*fair*), 3 (*good*), 4 (*very good*)—to indicate the overall adherence and quality for each module (e.g., psychoeducation, relaxation) using a coding guide. All raters completed training and achieved reliability on two gold standard tapes prior to coding study tapes. A mean score for adherence/quality for each module for each nurse across students was calculated.

CALM and CALM-R Satisfaction Questionnaire: Two identical items across intervention conditions were used to assess intervention satisfaction. The first item assessed

the helpfulness of the program in regards to coping with fear, anxiety, and worry and was rated on a 5-point scale from 0 (*very unhelpful*) to 5 (*very helpful*). The second item assessed whether the informant would recommend the program to other children who had fears or were scared and was rated on a 3-point scale: 1 (*no*), 2 (*don't know*), 3 (*yes*).

Inclusion and Outcomes

Anxiety Disorders Interview Schedule for DSM-V, Parent and Child Versions (ADIS; Albano & Silverman, in press). The ADIS, used to confirm inclusion criteria, is a semistructured diagnostic interview and assesses a broad range of pediatric anxiety, mood, and externalizing behavior disorders. Impairment ratings are generated for each diagnosis using a Clinician Severity Rating (CSR; range = 0–8; a rating of 4 or more is required to assign a diagnosis). Child and parent were interviewed separately, and the IE generated a composite diagnosis using their clinical judgement after discussion with an IE supervisor.

Clinical Global Impression–Severity (CGI-S) and Improvement (CGI-I) Scales (Guy, 1976). The CGI-S represents a global rating of anxiety severity ranging from 1 (*not at all ill*) to 7 (*extremely ill*), whereas 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*). "Responders" were defined as youth assigned a CGI-I score of 1 or 2. Both scales have been used extensively in child anxiety treatment trials (Walkup et al., 2008). Interrater agreement in the current study, defined as scoring within 1 point on the measure, was 100% and 80% for the CGI-S and CGI-I, respectively.

Child Anxiety Impact Scale (Langley et al., 2014) is a 27-item child- and parent-report measure of anxiety-related impairment. Children/parents respond to items using a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*very much*). A total score was used and the internal consistency for the current sample at baseline was .92 (child) and .80 (parent); higher scores reflect greater impairment.

Children's Somatization Inventory (Walker, Beck, Garber, & Lambert, 2009) is a 24-item child and parent report measure of the perceived severity of somatic symptoms. Parents and children respond to items using a 5-point scale ranging from 0 (*not at all*) to 4 (*a whole lot*). A total score was used; higher scores reflect greater severity of somatic symptoms. Internal consistency for the current sample at baseline was .82 (parent) and .92 (child).

Children's Automatic Thoughts Scale (Schniering & Rapee, 2002) is a 40-item questionnaire completed by children using a 5-point scale rating of how often they have maladaptive thoughts associated with anxiety. A total score is calculated, and higher scores reflect more frequent maladaptive thoughts (internal consistency at baseline was .96).

Behavioral Avoidance Scale is a three-item measure completed by the IE who rated three situations that were most frequently avoided due to anxiety at baseline using a 7-point scale: 1 (*never avoid*) to 7 (*avoid every time*). A mean avoidance rating was used.

Data Analysis Plan

Feasibility was assessed by examining descriptive statistics (percentage, means, standard deviations) related to (a) recruitment, retention, and attendance; (b) training and intervention satisfaction; and (c) adherence. Group comparisons on feasibility as well as nurse and child demographic and outcome measures were conducted using chi-square tests for categorical variables and *t* tests for continuous variables. Attrition analyses and evaluation of missing data were conducted to examine whether attrition rates differed across conditions. Outlier analyses were conducted to determine whether outliers substantially biased the results (Neter, Wasserman, & Kutner, 1989). Intervention effects were examined using intent-to-treat analyses. Intervention effects over time between CALM and CALM-R were examined using a longitudinal mixed modeling framework. Missing data were managed using multiple imputation strategies (Harel & Zhou, 2007) using R (R Core Team, 2013). We also examined intervention effects by estimating within and between group effect sizes.

RESULTS

Feasibility

Figures 1 and 2 present the CONSORT diagrams reflecting recruitment and retention. Table 3 presents additional details on referrals, enrollment of youth, and session attendance. Table 4 presents data on training satisfaction and use of consultation. Table 5 presents fidelity/adherence data on each module, as well as overall competence ratings. Table 6 presents intervention satisfaction as reported by the nurse, child, and parent.

No baseline intervention group differences were found on nurse demographic or professional characteristics (see Table 1). The overall nurse attrition rate was 10% (1 in CALM; 2 in CALM-R). None of the child demographic or clinical characteristics significantly differed between groups (see Table 2). Table 3 presents comparisons of several intervention-related variables. Youth in both groups received an average of 5.87 sessions (range = 0–8 sessions) with an average session length of 22.01 min. However, the mean length of CALM sessions (25.43 min) was

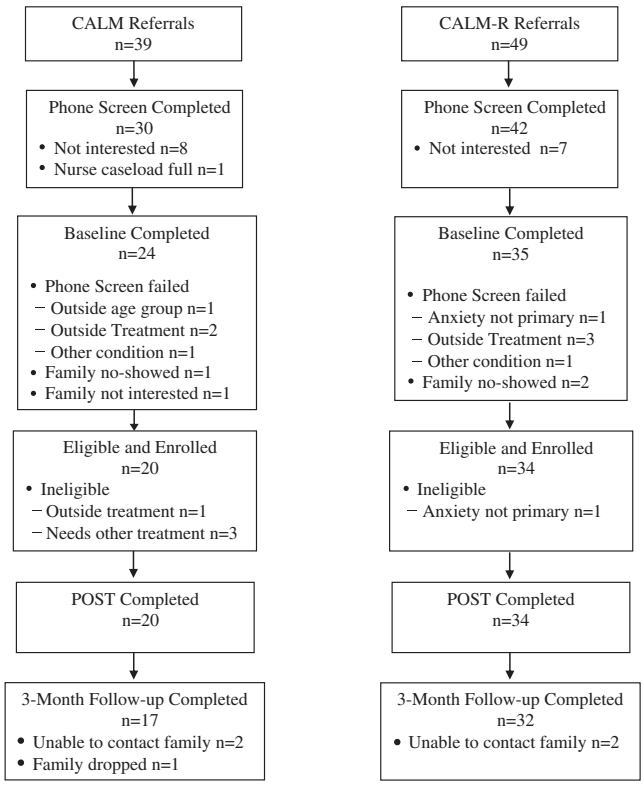

FIGURE 2 Consort diagram for children in CALM and CALM-R.

significantly longer than CALM-R sessions (18.70 min; $p < .001$). In terms of fidelity, mean adherence ratings were adequate. Satisfaction scores were high across informants. There was no significant difference in the overall adherence/competence ratings for nurses who used consultation ($M = 2.95$, $SD = 0.36$) and nurses who did not ($M = 2.47$, $SD = 0.71$), $t(13) = 1.71$, $p = .112$. There was no significant difference in the post CGI-S ratings for youth whose nurse used consultation ($M = 3.78$, $SD = 0.67$) and those whose nurse did not ($M = 3.64$, $SD = 0.87$), $t(49) = -0.63$, $p = .531$. Similarly, there was no significant difference in the 3-month follow-up CGI-S ratings for participants whose nurses used ($M = 3.43$, $SD = 1.04$) or did not use not use consultation ($M = 3.42$, $SD = 1.06$), $t(45) = -0.06$, $p = .953$.

Table 7 presents group comparisons and effect sizes for key outcome variables. Based on IE ratings of improvement, youth in both groups showed clinically meaningful improvement at postintervention and follow-up (but no group differences were found). Results from longitudinal data analyses showed that children in both groups showed similar and statistically significant and positive changes over time on all measures (e.g., Children's Somatization Inventory, Children's Automatic Thoughts Scale, and Behavioral Avoidance). Improvements from pre- to postintervention were generally maintained at the 3-month follow-up. Within-group effect sizes were generally large, whereas between-group effect sizes were generally small (see Table 7).

DISCUSSION

This study explored the feasibility and preliminary impact of two school-nurse-administered interventions for reducing anxiety. With respect to feasibility, a notable challenge was getting school districts to allow the study team to recruit nurses. Once consented, nurse retention was high, and overall 70% enrolled a child (62% in CALM; 81% in CALM-R). Nurses administered the majority of intervention modules

TABLE 3
Comparison of Referral, Enrollment, and Session Attendance Data for CALM and CALM-R

	CALM Nurses[a]		*CALM-R Nurses*[b]		
	M (SD)	*Range*	*M (SD)*	*Range*	*p-value*
No. of youth referred per nurse	3.00 (1.63)	0–6	3.06 (1.77)	0–6	.923
No. of youth enrolled per nurse	1.54 (1.76)	0–5	2.13 (1.71)	0–6	.372
	CALM Students[c]		CALM-R Students[d]		
	M (SD)	Range	M (SD)	Range	p-value
No. of sessions completed per child	5.85 (1.73)	0–8	5.88 (1.09)	0–8	.940
No. of minutes per session per child	25.43 (8.44)	0–37.13	18.70 (5.69)	0–31	.001

Note. CALM = Child Anxiety Learning Modules; CALM–R = Child Anxiety Learning Modules–Relaxation only.
[a]$n = 13$.
[b]$n = 16$.
[c]$n = 20$.
[d]$n = 34$.

TABLE 4
Comparison of Nurse Training and Consultation for CALM and CALM-R

	CALM[a,b]		*CALM-R*[b,c]		
	M (SD)	*Range*	M (SD)	*Range*	p
Nurse Training Satisfaction[d]					
Overall Satisfaction	6.83 (0.39)	6–7	6.73 (0.59)	5–7	.620
Training Helpfulness	6.58 (0.67)	5–7	6(0.74)	5–7	.952
Implementation Feasibility	5.92 (1.00)	4–7	5.80 (1.08)	4–7	.776
Knowledge Gained	6.75 (0.45)	6–7	6.67 (0.62)	5–7	.699
	CALM[e]		CALM-R[f]		
	n (%)		*n* (%)		
No. Who Used Consultation[g]	6 (75%)		8 (61.54%)		
	M (SD)	Range	M (SD)	R	*p*
Consultation Minutes[h]	199.67 (137.08)	49–404	48.88 (42.34)	10–120	.042

Note. CALM = Child Anxiety Learning Modules; CALM–R = Child Anxiety Learning Modules–Relaxation only.
[a]$n = 12$.
[b]One nurse in each intervention condition failed to complete the nurse training satisfaction form and therefore were removed from analyses.
[c]$n = 15$.
[d]Nurse Training Satisfaction Form ratings ranged from 1 (*not at all*) to 7 (*very much*).
[e]$n = 8$.
[f]$n = 13$.
[g]Calculated for nurses who enrolled a student (CALM = 8; CALM-R = 13).
[h]Consultation minutes presented for nurses who accessed consultation.

TABLE 5
IE Adherence/Quality Ratings of CALM and CALM-R Sessions

CALM (49 Session Tapes)		*CALM-R (41 Session Tapes)*	
Module	*M (SD)*	*Module*	*M (SD)*
Psychoeducation	2.70 (.45)	Psychoeducation	2.90 (.50)
Relaxation	3.00 (.00)	Deep Breathing	3.00 (.46)
Exposure	2.60 (.96)	Progressive Muscle Relaxation	2.69 (.60)
Changing Thoughts	2.83 (.88)	Guided Imagery	2.36 (.56)
Problem Solving	1.88 (.63)	General Calming Strategies	1.90 (.65)
Relapse Prevention	2.00 (.00)	Relapse Prevention	2.50 (.50)
Overall Quality/Competence	2.50 (.46)	Overall Quality/Competence	2.56 (.40)

Note. Ratings range from 1 (*poor*) to 4 (*very good*). CALM = Child Anxiety Learning Modules; CALM–R = Child Anxiety Learning Modules–Relaxation only.

(77.8% of youth received six sessions across conditions). Among youth who were eligible and enrolled, retention was high (100% at postassessessment and 91% at follow-up across conditions). Intervention satisfaction was also high across informants. Nurse adherence delivering the intervention was adequate, but not all nurses took advantage of the consultation offered by study staff. Nurses in CALM, compared to CALM-R, used more consultation. Although not directly assessed, this may have resulted from greater outreach by the study team to these nurses to increase adherence for the experimental condition, greater nurse perceptions of difficulty of CALM, and/or CALM-R nurse perceptions that relaxation strategies were relatively straightforward to administer. To boost adherence, furture tests of the interventions will require some degree of consultation until nurses achieve a set criterion for adherence and competence.

Children in both interventions experienced significant reductions in anxiety symptoms and related impairment and improvements in functioning. Specifically, improvements in anxiety severity, somatic symptoms, maladaptive thoughts, and avoidant behavior were observed. Improvements in maladaptive thoughts and avoidant behavior among youth in CALM-R may be due to teaching the tripartite model of anxiety during the psychoeducation module (i.e., that anxiety manifests

TABLE 6
Comparison of Intervention Satisfaction for CALM and CALM-R

	CALM[a]			CALM-R[b]			
Satisfaction Forms	*Mean (SD)*	*Range*	*% yes*	*M (SD)*	*Range*	*% yes*	p
Nurse							
Intervention Helpfulness[c]	3.11 (1.10)	0–4	—	3.06 (1.22)	0–4	—	.901
Would Recommend Intervention	—	—	100%	—	—	90.9%	.176
Child							
Intervention Helpfulness[c]	3.11 (1.37)	0–4	—	3.10 (1.33)	0–5	—	.983
Would Recommend Intervention	—	—	80%	—	—	62.5%	.359
Parent							
Intervention Helpfulness	3.42 (1.17)	1–5	—	3.00 (1.02)	1–4	—	.182
Would Recommend Intervention	—	—	85%	—	—	93.9%	.280

Note: CALM = Child Anxiety Learning Modules; CALM–R = Child Anxiety Learning Modules–Relaxation only.
[a]One student in CALM was excluded from analyses because student did not receive intervention because nurse did not have time.
[b]One student in CALM-R was excluded from analyses because student did not receive intervention because of school attendance.
[c]Intervention Helpfulness scale raged from 0 (*unhelpful*) to 4 (*very helpful*).

physically, cognitively, and behaviorally, and that changing one manifestation can change the others). Alternatively, although relaxation has not been found to be the curative factor in CBT for anxiety, these strategies have been shown to reduce anxiety (Manzoni et al., 2008) and were reported as being helpful by students. It is also likely that teaching students relaxation skills is already part of school nurses' intervention repertoire; nurses in both groups had the highest adherence/quality and competence ratings for the Relaxation module. Taken together, these promising results suggest that school nurses can be an important resource in schools for assisting anxious youth and highlight another opportunity for task shifting of mental health interventions to non-mental-health specialists. A fully powered efficacy trial is needed to further evaluate the relative effectiveness, moderators, and mediators of these interventions.

Given low rates of service utilization in outpatient settings and an insufficient number of CBT providers in schools, data supporting the expanded role of school nurses as potential providers of an initial brief, empirically supported intervention could have implications for reducing impairing anxiety and its sequelae. Results from this pilot RCT suggest that school nurses can deliver a variety of CBT-oriented strategies effectively and have a positive and therapeutically meaningful impact on children with excessive anxiety. Of particular note are findings that improvements were reported by all informants (child, parent, and IEs). Moreover, within-group effect sizes were moderate to large, consistent with effect sizes in meta-analyses of CBT (In-Albon & Schneider, 2007).

Although the results of this study are encouraging, there are several limitations. The sample was predominately White and young, thus restricting the generalizability of results to more diverse and older youth. The sample size was too small to detect between-group differences. The failure to find between-group differences may also be due to low doses of exposure and other

TABLE 7
Means (Standard Deviations) and Effect Sizes on Outcome Measures Across Time for CALM and CALM-R

	CALM				CALM-R				
	BL	*PO*	*F3*	d*(w)*	*BL*	*Post*	*F3*	d*(w)*	d*(b)*
Anxiety									
% CGI-I Resp. (1,2)	—	45%	58.8%	—	—	21.6%	34.4%		—
CGI-S	4.55 (0.83)	3.70 (1.03)	3.41 (1.12)	−0.91	4.32 (0.91)	3.73 (.76)	3.47 (1.02)	−0.70	−0.29
CAIS-C	19.60 (13.53)	10.73 (6.22)	12.09 (10.13)	−0.84	25.38 (16.34)	21.27 (17.87)	16.71 (13.61)	−0.24	−0.31
CAIS-P	16.11 (7.97)	12.34 (8.63)	8.92 (8.20)	−0.45	16.09 (10.98)	12.72 (10.59)	10.52 (7.50)	−0.31	−0.04
Behavioral Avoidance	6.43 (.553)	4.17 (1.756)	3.76 (1.74)	−1.74	6.59 (.716)	4.96 (1.57)	4.19 (1.67)	−1.34	−0.95
CSI-24	18.10 (16.11)	8.40 (9.82)	8.50 (10.94)	−0.73	21.59 (18.75)	13.62 (13.97)	10.29 (11.02)	−0.48	−0.10
CATS	15.47 (17.73)	7.42 (10.34)	6.88 (9.27)	−0.55	11.25 (16.32)	7.45 (13.31)	6.92 (9.07)	−0.26	−0.25

Note: CALM = Child Anxiety Learning Modules; CALM–R = Child Anxiety Learning Modules–Relaxation only; BL = baseline; PO = post; F3 = 3-month follow-up; *d*(w) = within-group effect size; *d*(b) = between-group ES; CGI-I = Clinical Global Impression–Improvement; CGI-S = Clinical Global Impression–Severity; CAIS-C/P = Child Anxiety Impact Scale Child/Parent; CSI-24 = Children's Somatization Inventory; CATS = Children's Automatic Thoughts Scale.

CBT strategies given the brevity of the intervention. Although the current results suggest that nurse-administered interventions are feasible, not all nurses (or school systems) view mental health interventions as part of their job. Indeed, although nurse interest and retention was high, more than 50 school districts were approached. School systems in particular may need data supporting the cost benefits of these interventions prior to investing in the adoption of these interventions. Data from this pilot study showed significant reductions in children's somatic symptoms, which may translate to fewer visits to the school nurse and greater participation in classroom activities, thus freeing up school nurse time for other tasks. The majority of nurses saw only one child because of a variety of factors including the short recruitment window (e.g., length of school year, RCT conducted in the last year of a 3-year development grant), limited nurse time and competing demands, and difficulty contacting families. A larger study with a longer recruitment phase is needed to determine if the low number of youth enrolled per nurse reflects a lack of willingness or restricted time imposed by the duration of the grant. Based on feedback, nurses seemed unlikely to hold individual meetings with more than one student at a time but expressed interest in delivering the intervention to a small group of students at one time. Despite these limitations, additional study of utilizing school nurses for addressing excessive anxiety is warranted.

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