

Cystic Fibrosis Education For School Personnel

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Cystic Fibrosis Education For School Personnel: Chapter 1

Chronic illness in pediatrics can be defined as a condition that impacts normal routines for three months or more, requires management with long-term medication or therapy, and is characterized by ongoing or extended periods of debilitating or progressive symptoms that may be life threatening (Hinton & Kirk, 2014; Merianos, Vidourek, King, & Nabors, 2015). Illnesses such as asthma, acquired immune deficiency syndrome (AIDS), cancer, cerebral palsy, congenital heart disease, diabetes, epilepsy, sickle cell disease, and cystic fibrosis account for some of the chronic illnesses that continue to affect children today. With advances in the diagnosis, treatment and management of chronic diseases, most children with chronic illnesses will attend school (Hinton & Kirk, 2014).

Problem Statement

In 2014, there were an estimated 74.3 million children in the United States (US) (U. S. Census Bureau, 2012) and it is estimated that 10 to 20 percent of these children have a chronic disease (Hinton & Kirk, 2014). State compulsory school attendance laws require that children between the ages of 5 and 18 years attend school (National Center for Education Statistics, 2013), suggesting that schools will have multiple children with special health care needs enrolled. Because children will spend approximately 30% of their day at school (Lucas, Anderson, & Hill, 2012), the school setting provides an opportunity to promote the health of chronically ill children (Lineberry & Ickes, 2015). However, current literature suggests that school faculty have insufficient knowledge about the healthcare needs of students with chronic illnesses, the effect of symptoms and medications on the child's cognitive function, how to adapt classroom activities to accommodate the needs of the child, and how to effectively manage long-term absence and school re-entry for children with chronic illnesses, thus leading to poor health

outcomes among this population of children. Due to the increase in life expectancy of children diagnosed with CF, education for school personnel about this chronic childhood illness is essential.

Children in the 1950's diagnosed with cystic fibrosis (CF) were not expected to survive past 4-6 years of age (Cystic Fibrosis Foundation [CFF], 2014). However, with improvements in treatment, the median age of survival for CF has steadily risen over the last 25 years, and more than half of the CF population in the US is over the age of 18 years (CFF, 2014). Each year, an estimated 1,000 new diagnoses of CF are made, with 75% of those diagnosed by two years of age (CFF, 2014). Evidence-based guidelines for the treatment of CF include oral and inhaled medications, airway clearance therapies, chest physiotherapy, and exercise (Mogayzel et al., 2013). These most recent medical guidelines and the development of new medications has increased both the quality of life and life expectancy for those affected by CF. As the life expectancy of individuals affected by CF increases, so does the likelihood of a child with CF attending school.

Despite the increase in life expectancy among children with CF, education provided for school faculty who spend most time with these children outside of the home is minimal. Within the school setting and among school personnel, teachers spend most time interacting with students (Hinton & Kirk, 2014). It is, therefore, important to provide them with the tools necessary to understand the healthcare needs of students with chronic illnesses, the effect of symptoms and medications on the child's cognitive function, how to adapt classroom activities to accommodate the needs of the child, and how to effectively manage long-term absence and school re-entry of students with CF while in their care. Failure to provide school personnel with

training, education and support of children with chronic diseases such as cystic fibrosis, can put these students at increased health risk (Hinton & Kirk, 2014).

Purpose and Rationale

Children with CF must make lifestyle alterations (Barker, Driscoll, Modi, Light, & Quittner, 2011) that will affect their daily school routine. These lifestyle alterations include increasing caloric intake, attending quarterly clinic appointments, and frequent hospitalizations for pulmonary exacerbations (Barker et al., 2011). Children with CF will spend a large part of their day at school with teachers and friends. As these children begin to reach adolescence, the time spent away from home interacting with peers also will increase (Barker et al., 2011). As these normal developmental changes occur, it is important for healthcare teams to identify how and where there are impediments to disease management outside of the home and to assist patients, families and school personnel through this transition (Barker et al., 2011).

To date, there exists no guideline or standardized school-based program to educate school faculty about CF and the needs of children with CF while in school. Current guidelines for CF care include health care provider adherence guidelines for diagnosis, nutritional intake, respiratory care, infection control, age specific care, and antioxidant use (CFF, 2014). These care guidelines are utilized by a large regional CF clinic in Southern Arizona. Standard practice at this clinic does not include a guideline to educate school personnel about CF. In a study conducted by Ryan and Williams (1996), the authors indicate that many parents felt that teachers did not know much about CF and welcomed opportunities to educate teachers. A recent parent survey conducted at the University of Arizona Pediatric Pulmonary Center (Ytuarte, 2015) also indicates that parents of children with CF would welcome school personnel education about CF at their child's school. The parent survey results also indicated what content is important to

include in a CF educational program for school personnel. Parents reported that information about infection control, what CF is, and that children with CF are not different from other children should be included in the education to school personnel and classmates.

This chapter examines the literature addressing school personnel knowledge of chronic disease and how it affects the health outcomes of children with CF. The resultant critical appraisal and synthesis of the literature discusses effective interventions to improve school personnel knowledge of CF, thereby improving the health outcomes among the pediatric CF population. The best evidence provides support for implementing a practice change within an outpatient pulmonary clinic and district schools. Data is provided to support the implementation of a CF educational program for those elementary schools and personnel who have students with CF.

Background and Significance

School nurses serve approximately 50 million students in public schools across the US and provide a wide range of care for these students (Rodriguez, Rivera, Perlroth, Becher, Wang & Landau, 2013). Research demonstrates that school nurses have a positive effect on student health and academic outcomes (Rodriguez et al., 2013). High nurse to student ratios are shown to increase immunization rates, referrals and follow-up care, and decrease absenteeism and hospitalization rates (Rodriguez et al., 2013). The current standard nurse to student ratio set by Healthy People 2020 is 1 nurse to every 750 students (Healthy People 2020). However, according to Rodriguez et al. (2013), only 13 states in 2009 met the 1:750 standard. This school nurse shortage is attributed to budget cuts within school districts. For those school districts in which a nurse serves more than the standard number of students, it is imperative that education

on chronic diseases that affect students is presented not only to school nurses, but to teachers and other school personnel as well.

Though school nurses play a big role in managing the care of children with a chronic disease during school, these children spend most of their school time with teachers. Most teachers according to Hinton and Kirk (2014) will have at least one student with a chronic illness during their teaching career. Evidence suggests that teachers also play a big role in the management of students with chronic illnesses by helping with the management of symptoms, integrating with peers, and achieving academic potential (Hinton & Kirk, 2014). However, attitudes and knowledge of children with a chronic illness differ among teachers.

In their literature review of teachers' perspectives on supporting students with long-term conditions, Hinton and Kirk (2014), found that primary and secondary school teachers had insufficient knowledge of common childhood chronic illnesses. These teachers were found to lack the knowledge about the healthcare needs of students with chronic illnesses, the effect of symptoms and medications on the child's cognitive function, how to adapt classroom activities to accommodate the needs of the child, and how to effectively manage long-term absence and school re-entry. This study also showed that primary and secondary school teachers viewed children with chronic illnesses as "risky" students that placed additional responsibility on teachers (Hinton & Kirk, 2014). Teachers were concerned about their ability to recognize medical emergencies in the classroom and respond appropriately. In addition, teachers worry about their accountability and personal liability when caring for children with chronic illnesses.

Parents and students with chronic conditions also believe that teachers lack sufficient training, knowledge, and experience in long-term conditions (Lucas, Anderson, Hill & Faan, 2012; Hinton & Kirk, 2014). Students with chronic illnesses also report feeling disappointed and

frustrated with teachers' lack of knowledge, which limits a students' capacity to self-manage their illness and succeed at school (Hinton & Kirk, 2014). In their literature review, Hinton and Kirk (2014), indicate that healthcare professionals should assist with the development and delivery of educational programs to increase teachers' knowledge of childhood chronic illnesses. Two studies according to Hinton and Kirk (2014), indicate that providing teachers with information and/or education about a student's chronic illness increases their knowledge and ability to deal with the healthcare needs of students with a chronic illness and to accommodate their academic needs.

In addition to the difficulties mentioned, students with chronic illnesses will often experience difficulty with school attendance, academic performance and social integration (Hinton & Kirk, 2014). Students with CF are often embarrassed about the chronic cough that accompanies CF as well as the therapies needed to treat CF (Williams, Mukhopadhyay, Dowell, & Coyle, 2007). Patients with CF are prone to frequent lung infections, wheezing and or shortness of breath, poor growth, slow weight gain, and delayed puberty (CFF, 2014). Without the proper knowledge, teachers and other school personnel cannot provide a safe and healthy environment for these students, leading to poor health outcomes such as increased infection rates, increased hospitalizations, and low rates of medication adherence. Both teachers and school nurses indicate that poor communication with parents and healthcare services and poor parental and school support contribute to the inability to support children with chronic illnesses (Hinton & Kirk, 2014; Liberatos et al., 2013; Lucas et al., 2012). Communication between schools, parents, and healthcare professionals can assist to ensure that students' academic and healthcare needs are met at school.

With the shortage of school nurses available onsite at schools and the lack of knowledge among school personnel, education about childhood chronic illnesses is imperative (Lucas et al., 2012). Due to the lack of a current program or guideline to educate school personnel about CF and the needs of students with CF, the development of educational programs to educate school personnel is needed. Recognizing that education of school personnel can improve health outcomes among children with CF, has led to the relevant PICOT question, “Does education for school personnel about CF improve knowledge among school personnel and improve health outcomes among children with CF compared to standard practice?”

Search Strategy

An exhaustive literature search was conducted utilizing the following databases: Academic Search Premier, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane Library, Education Full Text, MEDLINE (ProQuest), PubMed, and Teacher Reference Center utilizing the PICOT question. This search yielded 463 initial results (Appendix A, Figure 1). Keywords used in the search of each database included “interventions, improve, teacher, knowledge, chronic disease, cystic fibrosis, and health outcomes”. Search limitations included publications between January 2010 and July 2015, published in the English language, and access to full-text availability. The term “cystic fibrosis” was used to replace the term chronic disease, resulting in a narrowing of studies, at times resulting in no studies for review in the database. The PubMed search yielded more than 1,000 studies, so the term “health outcomes” was added and studies were then limited to children and preschool children to narrow the results to a manageable number of studies for review.

Results of the literature search included 5 studies utilizing the search engine EBSCO Host to search the CINAHL, Academic Search Premier, Teacher Reference Center, and

Education Full Text databases, 1 study from the Cochrane Library database, 417 studies from Medline (ProQuest), and 1 study from PubMed. The study retrieved from the PubMed database search had a link for 43 similar articles that were reviewed, for a total of 467 studies. Studies were independently reviewed and were included in the literature review if the aim the study was to determine the use of an educational intervention to increase the knowledge of school personnel or caregiver about childhood chronic illnesses. A total of 11 relevant studies were selected and included in the critical appraisal, however, only one study was found specific to CF education for school personnel (Ryan & Williams, 1996).

Assessment of the literature was done utilizing the 2010 Consolidated Standards of Reporting Trials (CONSORT) checklist as a guideline to appraise and report on the randomized controlled trials (RCT's). Selected studies reviewed included four randomized clinical trials (RCTs), four pilot studies (PS), two cohort studies, and one comparative study. Studies were included if they had at least one intervention that was based on an education program. Each study was independently reviewed for data extraction and organized into an evaluation table (Appendix B). See Figure 1 in Appendix A for details of the literature search.

Appraisal & Synthesis

Eleven studies met the inclusion criteria for the search and were selected for critical appraisal Eight studies included in this review were conducted in the US (Appendix B). The RCT by Kawafha and Tawalbeh (2015) was conducted in Jordan; the cohort study by Rae, Mckenzie, and Murray (2011) in Scotland; and the comparative study by Chao, Gow, Akintola, and Pauly (2010) in Africa. The most common outcome measurement among the studies evaluated was knowledge and the most common study design used for measurement of outcomes was a pre and post-test (Appendix C, Table 1).

Two cohort studies (Rae et al., 2011; White et al., 2011) that tested short educational training sessions for school personnel found that short training sessions improved teaching staff knowledge. Rae and colleagues (2011) found that a training session improved knowledge among teachers ($p < 0.0005$). White and colleagues (2011) found that a two-hour teacher training workshop increased teacher knowledge for some childhood chronic illnesses ($p < 0.001$). However, teacher knowledge for obsessive compulsive disorders in children decreased in the study done by White et al. (2011). A comparative study by Chao and colleagues (2010), which compared different methods used to teach educators found that computer-based education and a skill training program both produced statistically significant improvements in educator knowledge of HIV ($p < 0.0069$). However, the interventions had little effect on educator self-efficacy in the handling of situations associated with HIV ($p = 0.6591$).

Four pilot studies suggest that educational interventions improve school personnel knowledge and confidence in caring for students with a chronic illness (Jones et al., 2012; Smith et al., 2012; Brown et al., 2011). Jones, Owens, and Pham (2012) found that providing caregivers' simple education improved their knowledge ($p < 0.001$), thereby increasing the number of caregivers who planned a health behavior change. The pilot study by Smith, Chen, Plake, and Nash (2012) showed a significant increase in school personnel knowledge ($p < 0.001$) and confidence in caring for students with a chronic illness ($p < 0.001$) after the introduction of a 60 minute and a 3-hour educational session. Brown, Bolen, Brinkman, Carreira, and Cole (2011) found that computer-based training modules increased teacher knowledge about chronic illnesses ($p < 0.001$) and teacher preparedness in caring for students with a chronic illness in the classroom ($p < 0.001$). A pilot study by Ryan and Williams (1996) found that teacher knowledge about CF was increased ($p < 0.005$) with the use of a CF handbook for teachers.

The four critically appraised RCTs (Kawafha & Tawalbeh, 2015; Kieckhefer et al., 2014; Cicutto et al., 2013; Johnston et al., 2013) suggest that educational interventions are effective for producing an increase in school personnel knowledge of childhood chronic illnesses which increased support and care of students with a chronic illness, and improved the health outcomes of children. The use of a one-hour PowerPoint® asthma education program significantly improved teacher knowledge ($p < 0.001$), and knowledge retention at 3 months after among teachers after the intervention ($p < 0.001$) (Kawafha & Tawalbeh, 2015). Kieckhefer and colleagues (2014), found that the use of a seven session computer-based educational curriculum significantly increased a parents' management and coping of children with chronic illnesses ($p < 0.001$). Cicutto, To, and Murphy (2013) and Johnston and colleagues (2013) both found that the use of school-based educational interventions in elementary schools was effective for the improved management and decreased morbidity of students with chronic illnesses. Cicutto and colleagues (2013) found that the use of urgent healthcare services ($p < 0.0001$), student school absence rates ($p < 0.01$), and school plans for creating supportive schools for students with chronic illnesses (29-45% increase) were statistically improved after the implementation of six 45-60 minute educational sessions. Johnston and colleagues (2013) also found that use of a school-based educational intervention reduced body mass index (BMI) scores among students ($p < 0.001$). Results also indicted that when a healthcare professional assists in training school staff, schools are more effective in creating successful school-based health interventions.

Several limitations were mentioned by authors of the evidence. Small sample sizes were noted in several studies, limiting the generalizability of the results (White et al., 2011; Smith, et al., 2012; Ryan & Williams, 1996). Three studies indicate the setting as a limitation (Kawafha & Tawalbeh, 2015; White et al., 2011; Ryan & Williams (1996). Follow-up was indicated by

several studies, limiting the results of studies to short term knowledge improvement (Kawafha & Tawalbeh, 2015; Cicutto, To, & Murphy, 2013; Johnston et al., 2013; Jones, Owens & Pham, 2012; Rae, Mckenzie, & Murray, 2011; White et al., 2011). Several studies indicate limitations with the study design and materials. Chao et al., (2010) indicate limited internal and external validity of pre and post-tests. Smith et al., (2012) indicate participant pre and post-tests were not linked. Johnston et al., (2013) indicated a lack of measures that directly assessed health outcomes and change among teachers, and Rae, McKenzie & Murray et al., (2011) indicate that the educational intervention was not developed for use in the education sector.

Strengths of the studies include interdisciplinary collaboration for the educational intervention and short intervention times (Appendix C, Table 1). Short intervention times are preferable for teachers and healthcare providers due to time constraints within the professions. Studies materials and training were developed and presented with the help of medical professionals and experts in various fields, improving collaboration between school personnel and healthcare providers to improve health outcomes.

To improve the educational and healthcare needs of children with CF, an educational intervention to improve knowledge of CF among school personnel is proposed. Based on the evidence, delivery of educational interventions is equally effective if they are computer-based or workshop based. Length of the intervention had no effect on the effectiveness of the intervention, however, short interventions are preferable for teachers. Therefore, the planned CF educational intervention is a 30 to 60-minute online program that will include knowledge about what CF is, how it is treated, complications of CF, specific healthcare needs of students with CF, and those things that school personnel can do to help support students with CF.

Conclusion

The evidence presented suggests that educational programs focusing childhood chronic illnesses for school personnel improves basic knowledge about the illness and care of students with a variety of chronic illnesses. The evidence provides data to show that educational programs aimed at school personnel do improve health outcomes of students and demonstrate that the interventions can be successfully delivered in an online format. Although no evidence was specific to CF, it can be assumed, based on the evidence presented on other chronic conditions, that education about CF presented to school personnel will increase basic knowledge about CF among school personnel leading to improved health outcomes, school attendance among this population.

As the treatment of CF continues to improve, so does the life expectancy rate among this population, indicating that schools may have students with CF. Without knowledge of how to care for students with CF, teachers may unknowingly be putting this population at risk for poor health outcomes. Though evidence demonstrates that improving chronic illness knowledge among school personnel can improve student health outcomes, there exists no standard practice to educate school personnel about CF.

Chapter 2

The purpose of this chapter is to discuss the processes and outcomes that were utilized in an evidence based Cystic Fibrosis (CF) educational project. Evidence suggests that teachers play a big role in the management of students with chronic illnesses. However, current literature indicates that teachers lack basic knowledge about childhood chronic illnesses and how to manage students with a chronic illness. Synthesis of evidence gathered on improving knowledge about childhood chronic illnesses among school personnel indicates that an online CF educational intervention will improve knowledge and self-efficacy among school personnel.

Based on the evidence, a CF educational intervention for school personnel was planned. Within the manuscript, a detailed description on how outcome measures were selected based on Rosswurm and Larrabee (1999) Evidence-Based Practice Model and the Social Cognitive Theory are discussed. Implementation of the evidence-based CF educational project is intended to improve knowledge and self-efficacy among school personnel, but also is intended to improve educational and health outcomes among students with CF and improve healthcare associated costs of CF.

Conceptual Framework

Albert Bandura's Social Cognitive Theory (SCT) posits that self-efficacy beliefs operate together with an individual's goals, outcome expectations, perceived impediments, motivation, behavior and well-being to influence health (Bandura, 2004). It is one's self-efficacy beliefs that affect personal change and influence personal habits (Bandura, 2004). According to Bandura, these personal habits heavily influence the quality of health.

The core determinants of this theory include knowledge, perceived self-efficacy, outcome expectations, perceived facilitators, and perceived impediments to behavior change (Bandura, 2004). According to the SCT, knowledge of health risks and benefits of a behavior creates the need for change. If there is a lack of knowledge about how personal habits affect health, there is little reason or understanding on how or why the individual should change these habits (Bandura, 2004). The SCT proposes that personal knowledge operates with the individual's perceived self-efficacy. Self-efficacy is the belief that one can produce a desired effect by their actions; and with the desired outcome expectations of those actions (Bandura, 2004). Perceived facilitators (i.e., those things that facilitate health habits) and impediments (i.e., those things that impede health actions) are factors that influence the adoption of health behaviors (Bandura, 2004). The

principles of the SCT will serve to guide the structure of the CF educational intervention for elementary school personnel.

School personnel's lack of knowledge about CF may give school personnel little reason to change how they currently manage students with CF. This can negatively influence the quality of health for students with CF. If unaware of the basic care needs of children with CF, teachers have little reason to change classroom policies that can improve both educational and health outcomes among these children. The SCT theorizes that knowledge about CF and educational and healthcare needs of students with CF, will create a reason for school personnel to change the way these students are currently managed in school. A theoretical model (Appendix D) shows how providing an educational program about CF will improve school personnel knowledge about CF, thereby improving their perceived self-efficacy for managing students with CF. According to the SCT, increased self-efficacy will lead to the adoption of new habits that will influence the quality of health for students with CF.

The Rosswurm and Larrabee (1999) Evidence-Based Practice Model was used to guide the development and implementation of the CF educational program for school personnel. This practice model proposes that an early assessment is required to show a need for practice change in a particular setting. Once the problem or practice deficit is identified, the problem is linked with evidence-based intervention development and selection of measured outcomes. The model includes a step to synthesize the best evidence in order to design a change in practice. Once the design of the intervention is completed, implementation of the practice change and evaluation of the practice change follows. The model also includes guidance that focuses on maintaining the practice change after the initial implementation.

Project Intervention

The planned intervention is an online CF educational program for elementary school personnel. Approval from the Arizona State University Institutional Review Board was obtained on 09/29/2015. Recruitment of all participants occurred between October 1, 2015 and March 31, 2016. Participants were asked to create a unique identification number that consisted of the first two letters of their mother's name and the last two digits of their birth year. The identification number was used to identify participants on pre and post surveys. The consent to participate for parent and school personnel was made available on the online pre-surveys. Completion of the online pre-survey was the participants consent to participate in the project.

Parent Recruitment and Participation

Parents were identified through the University of Arizona Pediatric Pulmonary Center (UAPPC) Cystic Fibrosis Clinic (See Introductory Letter, Consents and Surveys Appendix F). Parents of children with CF were mailed a recruitment letter from the UAPPC which included project leader contact information if they wanted to participate. Parents were recruited for data collection of 504 plan use and school absences related to CF exacerbations. Upon recruitment, parents of students with CF were mailed all project materials. Parents were asked to complete an online survey to determine the use of 504 plans and were given a home absence tracking tool. The absence tracking tool was used to track student absences related to CF exacerbations. School absence data was collected upon recruitment through the end of March, 2016 and was mailed by the parent after completion, to the project coordinator in a pre-paid envelope. Upon completion of the tracking tool, parents were also asked to complete a post-survey to determine if there has been an increase in the use of 504 plans.

School Personnel Recruitment and Participation

After obtaining permission from school administration at the various school districts (See Appendix F), school personnel were recruited from elementary schools in Tucson, AZ and surrounding communities. The CF educational program was presented to school personnel in a voiced over PowerPoint® presentation and consisted of basic information about what CF is, how it is managed medically, and how school personnel can support students with CF at school. Prior to viewing the educational presentation, school personnel were asked to complete a pre-survey which included demographics and questions about CF knowledge and self-efficacy. After completing the pre-survey, school personnel were able to access and view the educational presentation online. Listening to and viewing the PowerPoint presentation took approximately 15-20 minutes. Upon completion of the educational presentation, participants were asked to complete a post survey within one week of viewing the educational presentation. Participants were provided the website to the UAPPC where they were able to access all project surveys and the educational presentation. The educational presentation and surveys were made available to participants upon recruitment through March 31, 2016.

Outcomes Measurement

The goal of the CF educational program was to improve knowledge about CF among school personnel. Therefore, school personnel knowledge about CF was the first measureable outcome of the project. School personnel knowledge about CF was measured utilizing a pre- and post-survey developed for the project. The survey contained 10 questions that evaluated knowledge about CF and was scored on a numerical scale where 1 point was given for a correct answer and 0 was given for a wrong answer. Content validity for the knowledge survey was determined by three CF experts at the UAPPC.

The second measurable outcome was school personnel self-efficacy. Self-efficacy of school personnel regarding school management of students with CF was evaluated utilizing two questions on the pre- and post- surveys mentioned above. The two self-efficacy questions were scored on a 5-point Likert scale where 1 was not knowledgeable or not comfortable and 5 was very knowledgeable or very comfortable. Content validity was determined by three pulmonary health care experts from the UAPPC.

Based on the SCT, improving knowledge and self-efficacy will lead to behavior changes among school personnel in how they manage students with CF, thereby improving health outcomes and educational attainment of students. Based on this theory, the third and fourth measurable outcomes that were measured for this project were CF exacerbations and the use of 504 plans among students with CF. CF exacerbations were measured utilizing an absence tracking form to be completed by parents, and the use of 504 plans will be measured utilizing a parent pre and post-survey developed for the project. Ratio scales were used to score CF exacerbations and use of 504 plans. Content validity was determined by three CF experts from the UAPPC.

Results

Elementary School Personnel

Of the 11 elementary school participants who completed the pre-survey, 10 (100%) were female. Two (20%) were school nurses, 3 (30%) were teachers, and 5 (50%) were front office staff. Four (40%) had at least a high school education, 2 (20%) held a bachelor's degree, and 4 (40%) held a graduate degree. Participants' experience varied from less than 1 year to greater than 15 years. Eight (80%) of participants taught or worked in public schools, and 2 (20%) in private schools. Two (20%) of participants had a student with CF in their classroom, 4 (40%) had

a past student in their class with CF, and 2 (20%) indicated that the students with CF in their class did have a 504 plan in place (Appendix G, Table G1).

Knowledge.

Knowledge about CF among elementary school personnel was one of the primary outcomes of interest. Total pre-survey scores varied among participants and ranged from 50% to 80% (mean = 62%). Post-survey scores varied from 80% to 100% (mean = 76%). Although test scores showed an average score improvement between pre-survey and post-survey total scores ($p = .212$), it was not statistically significant (Appendix G, Table G2). A McNemar test was conducted to evaluate whether statistical improvements were seen between individual questions. Percentage improvement were seen in questions 2, 3, 8, and a statistically significant improvement was seen on question 10 ($p = .016$) (Appendix G, Table G3). Participants were asked to rate their knowledge level before and after the intervention (Appendix G, Table G4). The Wilcoxon signed test suggested a significant improvement in perceived knowledge scores among school personnel after the educational intervention ($p = .024$).

Self-efficacy.

Participants were asked to rate their self-efficacy in caring for students with CF before and after the intervention (Appendix G, Table G4). The Wilcoxon signed test suggested a statistically significant improvement in perceived self-efficacy scores among school personnel after the educational intervention ($p = .034$).

Online education evaluation.

Of the 11 participants who completed the post-survey, 8 (88.9%) indicated that the education was helpful, and 7 (77.8%) indicated the education will help them care for students

with CF. Eight (88.9%) felt the education was presented in a way that facilitated their learning, and 9 (100%) indicated they learned something new. Six (66.7%) of the participants who completed the post-survey prefer the online format of the presentation, and 3 (33.3%) indicated they would have preferred a live presentation (Appendix G, Table G5).

Absence and 504 Plan Results

Measurement of CF related absences and 504 plan use could not be determined due the lack of parental participation in this project. Parent participation was done by mail and may have contributed to the lack of participation among parents. Discussion on how to potentially remedy the lack of parent participation is discussed in chapter three.

Discussion

The goal of this project was to improve elementary school knowledge and self-efficacy related to students with CF and to determine if this improved the health and educational attainment outcomes among these students. Although the data was not statistically significant, it does suggest that when provided education about CF, knowledge and self-efficacy about this disease was improved among elementary school teachers. Evidence synthesis on improving knowledge about childhood chronic illnesses among school personnel, indicates that educational programs aimed at this population, focusing on childhood chronic illnesses, improves basic knowledge about these illnesses, improves care of students with a variety of chronic illnesses, and improves health outcomes among these students (Kawafha & Tawalbeh, 2015; Kieckhefer et al., 2014; Cicutto, To, & Murphy, 2013; Johnston et al., 2013; Jones, Owens & Pham, 2012; Smith, Chen, Plake, & Nash, 2012; Brown, Bolen, Brinkman, Carreira, & Cole, 2011; Rae, Mckenzie, & Murray, 2011; White et al., 2011; Chao, Gow, Akintola, & Pauly, 2010; Ryan & Williams, 1996), Compared to the evidence synthesis, this project showed similar results and

adds to this current body of literature. This project also adds to current literature specific to improving school personnel knowledge and self-efficacy related to CF.

Conclusion

Current evidence suggests that there is a lack of knowledge about chronic childhood illnesses, which leads to the ineffective management of educational needs and the healthcare needs of these children while in school. Synthesis of current literature about the most effective way to deliver the CF educational intervention and about the most common measureable outcomes for the intervention and SCT guided the CF educational intervention for elementary school personnel. In order to improve the educational and healthcare needs of children with CF, an educational intervention to improve knowledge of CF among school personnel was implemented. Results of the project show an overall improvement in CF knowledge and self-efficacy among elementary school personnel. Improving knowledge and self-efficacy about CF among school personnel through the implementation of an educational intervention has the potential to improve the educational needs of students with CF, but may also decrease the number of CF exacerbations, thereby reducing the healthcare costs associated with treatment of exacerbations.

Chapter 3

Evidence-based guidelines for the treatment of CF include oral and inhaled medications, airway clearance therapies, chest physiotherapy, and exercise (Mogayzel et al., 2013). The most recent care guidelines and the development of new medications have increased both the quality of life and life expectancy for those affected by CF. As the life expectancy of individuals affected by CF increases, so does the likelihood of having a child with CF attending school. Despite the increase in life expectancy among children with CF, education provided for school

faculty who spend most time with these children outside of the home is minimal. Within the school setting, teachers spend most time interacting with students (Hinton & Kirk, 2014). It is, therefore, important to provide them with the tools necessary to understand the health care needs of students with chronic illnesses, the effect of symptoms and medications on the child's cognitive function, how to adapt classroom activities to accommodate the needs of the child, and how to effectively manage long-term absence and school re-entry of students with CF. Failure to provide schools with training, education and support of children with chronic diseases such as cystic fibrosis, can put these students at increased health risk (Hinton & Kirk, 2014).

Results from the project show that education provided to school personnel in Southern Arizona improved their knowledge and self-efficacy about CF, which can improve the health and educational outcomes among students with this chronic disease. This project was supported by the University of Arizona Pediatric Pulmonary Center (UAPPC) and the educational program will be maintained on their website for future use. The results of this project indicate that an educational CF program for schools that have students with CF should be provided for school personnel. Providing education for schools should become a standard practice among CF clinics. Future work on this topic should include evaluation of CF related absences and the use of 504 plans after implementation of the education to determine improvements in healthcare and educational outcomes of students with CF.

Barriers and Facilitators

Barriers encountered for this project included obtaining school district administration approval and parent participation. Obtaining school administration approval to conduct research within school districts took longer than expected. Advice for replication of this project includes obtaining approval at the end of the school year so that an education program can be given at the

beginning of the next school year. Providing education at the beginning of the school year may have a bigger impact on the reduction of CF exacerbations throughout the school year and improve the use of 504 plans among this population of students.

Acquiring parent participation for this project was difficult and resulted in no parental participation. Identification and recruitment of parents was done by the CF clinic director due to clinic policies regarding participant recruitment. Advice for replication of the project includes finding a clinic that will grant permission to conduct parent recruitment or finding an ongoing champion at the clinic to recruit parent participants. In addition to the clinic director's recruitment attempt, study information was sent out in the monthly CF clinic newsletter. Further recruitment of parents could potentially be done by CF organizations such as local CFF chapters. Lack of parent data negatively affected the ability to obtain measurement on 504 plan use and CF related absences among students with CF.

Cost Benefit Analysis

In 2012, the estimated number of hospital admissions in the United States for children between the ages of 1-17 years with CF was 4,260 (Agency for Healthcare Research and Quality [AHRQ], 2012). The mean length of stay was 10.1 days, and the mean charge for each hospital admission was \$81,791. The aggregate annual charges to the national health bill was estimated to be \$373,841,971 (AHRQ, 2012). Implementation of the educational program may help to reduce the number of CF related exacerbations for students with CF during the school year, thereby decreasing the number of CF related hospital admissions and reducing the healthcare costs associated with these hospital admissions.

The total cost to implement the educational project is minimal and should not exceed \$620.00. Software fees to create the CF educational presentation for the outpatient pulmonary

clinic totaled \$413. Correspondence with school administration and school personnel was done primarily through email. After agreeing to participate, school administration emailed consents and directions about participation to school personnel. Twenty-five dollars was used on printed materials for schools that wanted printed copies of project information. Monthly online survey fees for this project were \$26. Several options for software and online survey programs were available and varied in pricing. In order to obtain access to the online survey service, an account was created for the project. After creating an account, a plan was chosen for the project and payment was made to access the survey services. The online survey program used for this project was chosen for its ease of use and moderate pricing. (See Appendix D for table of costs).

Limitations and Implications

Limitations

Limitations of this project include a small school personnel sample size, lack of parent participation, and a small time frame to complete post-surveys. Due to the lack of parent participation, this project was unable to measure the effect the educational intervention had on the health and educational outcomes among students with CF. Participants were asked to complete the post-survey within one week of viewing the educational intervention. Because of the short follow-up, this project is unable to determine whether the intervention will have a long-term effect on knowledge and self-efficacy among elementary school personnel.

Implications for Sustainability

Compared to the cost of hospital admissions for CF exacerbations and the economic impact placed on families, the cost to implement this project is minimal. Implementation of the educational program would include a one-time cost to create the online education. The online education can be placed on existing clinic websites and provided to schools. Providing teachers

with information and/or education about a CF increases their ability to manage the healthcare of students with this chronic illness and to accommodate their academic needs. Based on the results of this project, both knowledge and self-efficacy about caring for students with CF were increased among elementary school personnel. Educating school personnel about CF can be helpful to students with this chronic illness in several ways. First, students with CF are prone to repeated infections. Education for school personnel can help to improve infection control in classrooms with CF students. Second, teachers can help to ensure that students take required daily medications and get necessary snacks while in school. Third, students with CF may be embarrassed about coughing, mucus production, and the need for frequent bathroom breaks. Education for teachers will provide them with ways to make these students feel comfortable in the classroom. Finally, students with CF may have long periods of absence due to CF exacerbations. Teachers and school personnel can work closely with parents and healthcare providers to ensure that these students are staying on track with schoolwork, that 504 plans are in place, help reintegrate students after long periods of absence, and ensure healthcare needs are being met during school.

Implication for Personal Practice

As pediatric healthcare providers, we provide care for wide range of patient illnesses, but we also promote health by educating our patients and families (Davis, Jones, Logsdon, Ryan, & Wilkerson-McMahon, 2013). We educate about disease management and preventions, medication administration, child development, and many other health topics so that parents, the primary caretakers of children, have the information they need to improve the health of their children (Davis et al., 2013). As children enter the school setting, teachers and school personnel are entrusted to meet the needs of our children. However, based on evidence presented in this

project, teachers lack knowledge related to common childhood chronic illnesses and may, therefore, be putting these students at risk for poor health outcomes. Providing education for those who care for children, including but not limited to babysitters, daycare centers, and teachers is necessary to promote the health of children with chronic illnesses.

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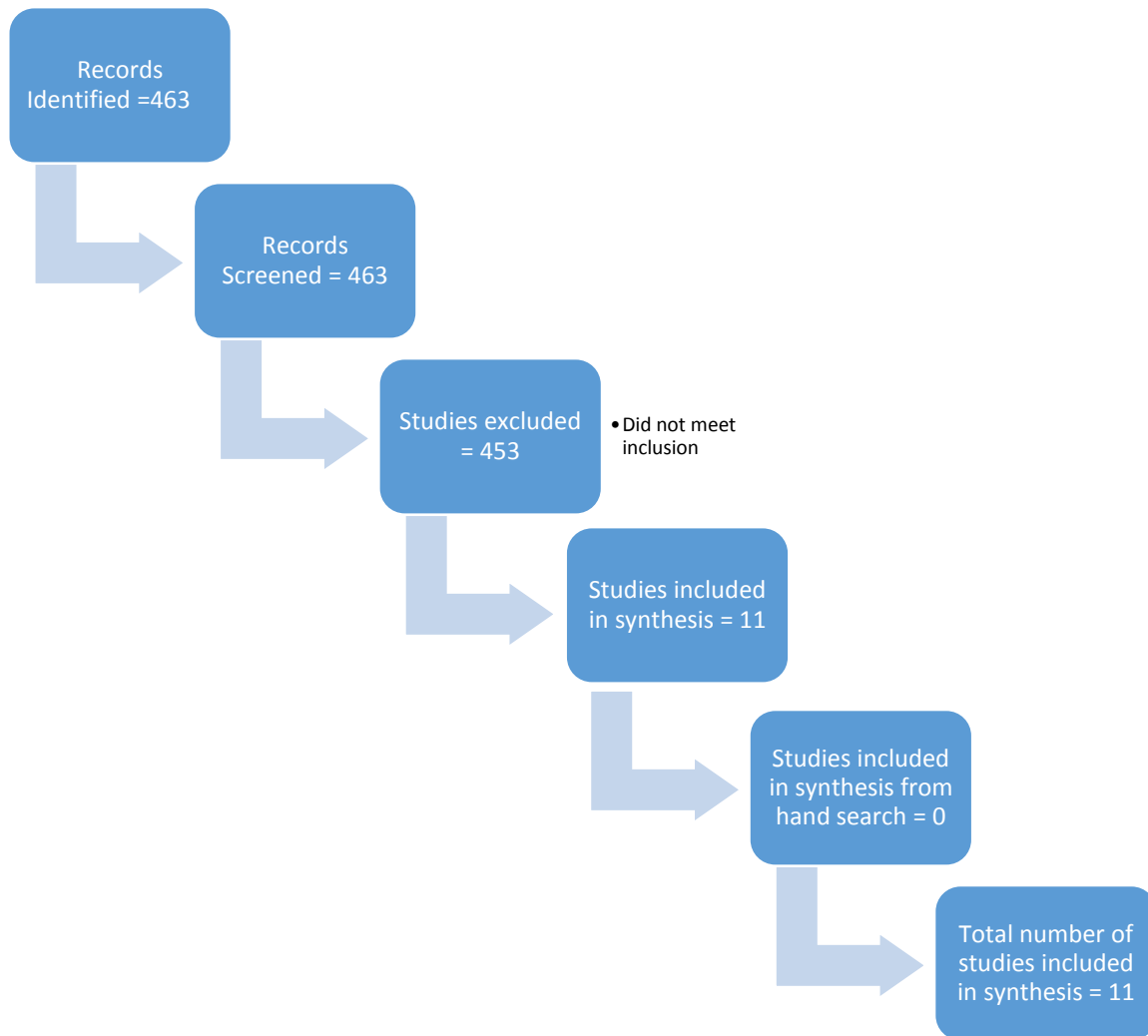
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Appendices

Appendix A

Figure 1.

Literature Search Results



Appendix B

Table 1.
Evidence Table

Author/Title	Theoretical Framework	Study Design	Sample/Setting	Variables	Measurement	Data Analysis	Findings	Application to Practice
<p>Kawafha, M. M. (2015). The effect of asthma education program on knowledge of school teachers: a randomized controlled trial.</p> <p>Country: Jordan</p> <p>Funding: None disclosed.</p> <p>Bias: None declared.</p>	SCT	<p>RCT</p> <p>Purpose: Evaluate the effect of an asthma education program on school teachers' knowledge.</p> <p>Level of Evidence: II</p>	<p>n=80 n, IG=36 n, CG=38</p> <p>Demographics: F=80 R=Muslim BD=68% D= 12% SE=10% PE=10%</p> <p>Setting: School conference rooms.</p> <p>Inclusions: Jordanian school teachers, > 18 yrs., no diagnosis of asthma, did not attend an asthma educational program in the past.</p>	<p>DV: Asthma knowledge</p> <p>IV: asthma education program for school teachers (power point & lecture)</p>	Knowledge pre & post test.	<p>SPSS: descriptive statistics, t-test, Mann-Whitney U test, chi-square, paired t-test.</p>	<p>Knowledge of asthma increased in the IG after intervention (p < 0.001).</p> <p>Knowledge retention after intervention (p < 0.001).</p>	<p>Chronic disease educational programs for teachers increase their knowledge, thereby increasing QOL for students with chronic illnesses.</p>

Note. A = Asian; AA = average age; ADHD = Attention Deficit Hyperactivity Disorder; AFS = asthma friendly school; AIDS = acquired immune deficiency syndrome; BD = bachelor degree; B = black; BMI = body mass index; C = colored; CAFSRK = creating asthma friendly schools resource kit; CF = Cystic Fibrosis; CG = control group; CP = clinical psychologist; D = diploma; DV = dependent variable; ED = education; ER = emergency room; F = female; HIV = human immunodeficiency virus ; HS = high school; hr. = hour; HP = health professional; IG = independent group; IV = independent variable; M = male; MD = master degree; mos. = months; MYE = mean years of experience; n = number; N = nurse; NS = number of students; OCD = Obsessive Compulsive Disorder; OD = other degree; PE = primary education; PO = physician office; PS = pilot study; PSG = Psychological Service Group; PR = primary researcher; QOL = quality of life; R = race; RAP = Roaming Adventures of Puff; RCT = randomized controlled trial; RS = research staff; SA = school absences; SC = school counselor; SE = secondary education; SLP = speech language pathologist; SCT = Social Cognitive Theory; SLT = Social Learning Theory; SP = school personnel; T = teacher; TS = Tourette Syndrome; UD = university degree; UC = urgent care; W = white; yrs.= years

			Attrition: 5% lost on second day of education.					
Kieckhefer, G. M., (2014). A randomized clinical trial of the building on family strengths program: an educational program for parents of children with chronic health conditions. Country: United States Funding: Agency for Health Care Research and Quality Bias: None declared.	SCT	RCT Purpose: Test the efficacy of a 7 session parent education curriculum. Level of Evidence: II	n=100 n, IG=67 n, CG=33 Demographics: AA=38 yrs. F=92 Setting: Classroom setting. Inclusions: Parents with children between 2-11 yrs. of age. Child with at least 1 chronic health condition. Attrition: IG had 12% loss at the 6 mos. follow-up CG had 4% loss at 6 mos. follow-up.	DV 1: Self-efficacy of care management DV 2: Coping strategies IV: 7 session parent education curriculum.	Pre & post survey	Chi-square, t-tests, linear regression.	Increase in participant's self-efficacy to manage the child's condition (p = 0.049) Increase in participant's ability to cope with childhood chronic illness (p < 0.001)	Education and support programs increase caregiver's management and coping of childhood chronic illnesses.
Cicutto, L. (2013). A randomized controlled trial	SCT	RCT with a 1 yr. follow-up Purpose: To	n=170 n, IG=85 n, CG=85	DV 1: Health service use DV 2: School	Reported use of UC or ER, or unscheduled visit to PO or	Chi-square, unpaired t-test, descriptive	Use of urgent health services	Activities to create supportive schools for

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of a public health nurse-delivered asthma program to elementary schools. Country: United States Funding: Ontario Ministry of Health & Long Term Care Bias: None declared.		develop and implement asthma related elementary school-based programs and recommendations and resources for creating supportive schools for children with asthma. Level of Evidence: II	Demographics: Public School: n=170 Setting: School Inclusions: Schools with grades 1-5 Schools with > 10 students with asthma. Attrition: 11%- student withdrawal	absenteeism DV 3: Creating AFS IV 1: RAP, an asthma self-management education program=six 45-60 min. sessions. IV 2: CAFSRK	clinics. Tracking sheets/diary. Questionnaire	statistics	(p < 0.0001). School absence related to asthma (p < 0.01) Schools that addressed a plan for creating AFS (29-45% increase)	students with a chronic illness resulted in improved management and morbidity of students. School personnel reported improvement in practice and support of students with chronic illness.
Johnston, C. A., (2013). Impact of a school-based pediatric obesity prevention program facilitated by health professionals. Country: United States	SLT	RCT Purpose: Evaluate a school-based intervention for elementary school children where health professionals assist teachers. Level of evidence: III	Schools=7 Schools, IG=4 Schools, CG=3 Students=835 Students, IG=509 Students, CG=326 Demographics: Students (7-9yrs) Setting: Elementary school classrooms. Students in 2 nd	DV1: BMI IV: professional assisted health education intervention.	BMI scores	SPSS 19.0: t-tests, chi-square, binary logistic regression.	BMI reduction in the health assisted education program (p < 0.001).	Health care assisted education in schools improves health outcomes in children. Assisting and training teachers and school staff is effective to implement

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<p>Funding: None disclosed.</p> <p>Bias: None declared.</p>			<p>grade.</p> <p>Inclusions: Elementary schools of independent school district in Houston, TX.</p> <p>Attrition: 21% of the overweight or obese students lost to incomplete surveys or no longer enrolled in school.</p>					<p>successful school-based health interventions.</p>
<p>Jones, C., (2012). Can a brief educational intervention improve parent’s knowledge of health children’s sleep? A pilot test.</p> <p>Country: United States</p> <p>Funding: Amgen</p>	<p>SCT</p>	<p>PS</p> <p>Purpose: Design and test an educational tool to increase caregiver’s knowledge of healthy children’s sleep.</p> <p>Level of Evidence: III</p>	<p>n=95</p> <p>Demographics: Parents >HS ED Level=55 <HS ED Level=45</p> <p>Setting: Primary care office.</p> <p>Inclusions: Parents with at least one child 3mos.-12 yrs.</p> <p>Parents who</p>	<p>DV 1: Knowledge DV 2: behavior changes in child’s sleep practice</p> <p>IV: Short informational brochure</p>	<p>Knowledge pre & post survey</p>	<p>Chi-square, t-test.</p>	<p>Increase in sleep knowledge among parents (p < 0.001)</p> <p>Increase in the number of parents who planned to change the child’s sleep habits.</p>	<p>Simple educational interventions can improve knowledge of children caregivers.</p>

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Foundation grant. Bias: None declared.			complete pre & post test Attrition: No loss					
Smith, C. T. (2012). Evaluation of the impact of a diabetes education curriculum for school personnel on disease knowledge and confidence in caring for students. Country: United States Funding: None disclosed Bias: None declared	SCT	PS Purpose: Provide school personnel with an introduction to diabetes and confidence in caring for students with diabetes. Level of Evidence: III	n=81 n, IG-1=44 (basic program) n, IG-2=37 (expanded program) Demographics: SP=81 Setting: School (after hours) Inclusions: SP Attrition: No loss	DV 1: Knowledge DV 2: Confidence in caring for students IV 1: Standard Program: 60-minute educational session IV 2: Expanded Program=3 hr. educational session	Pre & post knowledge survey Confidence levels	SPSS: McNemar test, t-paired test, Chi-square analysis.	Knowledge increase of both programs (P < 0.001) Confidence level for both programs (p < 0.001)	Education programs offered for school personnel can increase knowledge and confidence in caring for children.
Rae, H., (2011). The impact of training on teacher	SLT	Cohort Study Purpose: Examine the impact of a short	n=40 n, IG=40 Demographics: AA=44 yrs.	DV: Knowledge IV: short educational	Pre & post questionnaire	ANOVA	Increase in teaching staff knowledge after	Short training sessions improve basic knowledge about

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<p>knowledge about children with an intellectual disability.</p> <p>Country: Scotland</p> <p>Funding: None disclosed.</p> <p>Bias: None declared.</p>		<p>training session on the knowledge of teaching staff about children with intellectual disabilities.</p> <p>Level of Evidence: IV</p>	<p>MYE=9.03 yrs.</p> <p>Setting: Schools</p> <p>Inclusions: Education staff in primary schools</p> <p>Attrition: 47.5% follow up response rate.</p>	training session			<p>intervention (p < 0.0005)</p>	<p>childhood chronic illness.</p>
<p>Brown, M. B., (2011). A collaborative strategy with medical providers to improve training for teachers of children with cancer.</p> <p>Country: United States</p> <p>Funding: None declared.</p> <p>Bias: Not</p>	SLT	<p>PS</p> <p>Purpose: Illustrate the collaborative development of a teacher training program for teachers who have a child with cancer in the classrooms.</p> <p>Level of Evidence: III</p>	<p>n=28 n, T=25 n, SC=2 n, SLP=1</p> <p>Demographics: F=22 M=6</p> <p>Setting: Computer-based.</p> <p>Inclusions: Participants had to be teachers.</p> <p>Attrition: No loss.</p>	<p>DV 1: Teacher knowledge</p> <p>DV 2: Teacher preparedness</p> <p>IV: 6 computer based training modules</p>	<p>Pre & Post knowledge questionnaire</p> <p>Pre & Post preparedness questionnaire</p>	t-test, Pearson's correlation.	<p>Increase in teacher knowledge after intervention (p < 0.001).</p> <p>Increase in teacher preparedness in the classroom (P < 0.01).</p>	<p>School personnel knowledge about chronic illness was increased after computer based educational modules.</p> <p>School personnel preparedness for caring for children in the classroom increased</p>

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disclosed.								after education.
White, S. W., (2011). Elementary school teacher knowledge of Tourette syndrome, obsessive-compulsive disorder, & attention-deficit/hyperactivity disorder: effects of teacher training. Country: United States Funding: None declared. Bias: None disclosed.	SLT	Cohort Study Purpose: Examine teachers' knowledge before and after a 2 hr. teacher training workshop. Level of Evidence: IV	134 teachers surveyed n=134 n, IG 1=134 n, IG 2=52 (teachers who were retested at 6 weeks) Demographics: F=116 M=18 BD=27 MD= 79 OD=20 AA=44 MYE=15 yrs. Settings: School Inclusions: Elementary school teachers Attrition: None	DV: Teachers' knowledge. IV: 2-hour workshop consisting of power point presentation.	Knowledge pre & post-test.	PASW 17.0: ANOVA, paired t-test.	Teacher knowledge increased after the training workshop for TS & ADHD (p < 0.001). Teacher knowledge decreased after the training workshop for OCD (p < 0.03)	Educational teacher training workshop improve teacher knowledge for some childhood chronic illnesses.
Chao, L. (2010). A comparative evaluation of	SLT	Comparative Study Purpose:	n=119 n, IG 1=54 n, IG 2=65	DV 1: Educator knowledge.	Pre & post knowledge and self-efficacy surveys.	SAS 9.0: T-test, Shapiro-Wilk test, Kolmogorov-	Knowledge increase with the use of CD-	Computer based and live educational interventions

Note. A = Asian; AA = average age; ADHD = Attention Deficit Hyperactivity Disorder; AFS = asthma friendly school; AIDS = acquired immune deficiency syndrome; BD = bachelor degree; B = black; BMI = body mass index; C = colored; CAFSRK = creating asthma friendly schools resource kit; CF = Cystic Fibrosis; CG = control group; CP = clinical psychologist; D = diploma; DV = dependent variable; ED = education; ER = emergency room; F = female; HIV = human immunodeficiency virus ; HS = high school; hr. = hour; HP = health professional; IG = independent group; IV = independent variable; M = male; MD = master degree; mos. = months; MYE = mean years of experience; n = number; N = nurse; NS = number of students; OCD = Obsessive Compulsive Disorder; OD = other degree; PE = primary education; PO = physician office; PS = pilot study; PSG = Psychological Service Group; PR = primary researcher; QOL = quality of life; R = race; RAP = Roaming Adventures of Puff; RCT = randomized controlled trial; RS = research staff; SA = school absences; SC = school counselor; SE = secondary education; SLP = speech language pathologist; SCT = Social Cognitive Theory; SLT = Social Learning Theory; SP = school personnel; T = teacher; TS = Tourette Syndrome; UD = university degree; UC = urgent care; W = white; yrs.= years

<p>two interventions for educator training in HIV/AIDS in South Africa.</p> <p>Country: Africa</p> <p>Funding: None disclosed.</p> <p>Bias: None declared.</p>		<p>Compare two different methods to teach educators about HIV/AIDS.</p> <p>Level of Evidence: III</p>	<p>Demographics: IG1, F=41 IG2, M=13 IG1, F=45 IG2, M=13 IG1, B=51 IG2, B=44 IG1, A=3 IG2, A=8 IG2, W=5 IG2, C=1 IG1, UD=11 IG2, UD=12</p> <p>Setting: Central location.</p> <p>Inclusions: Educators from primary and secondary schools.</p> <p>Attrition: 6% loss to incomplete survey response.</p>	<p>DV 2: Self-efficacy. IV 1: Educational CD-ROM Intervention.</p> <p>IV2: 2-day life skill training program.</p>		<p>Smirnov test, Mann-Whitney test.</p>	<p>ROM (p <0.15, P < 0.10, P < 0.001), after skill training program (p < 0.10, p < 0.05, p < 0.01).</p> <p>Increase in self-efficacy of educators in the classroom with the CD-ROM and life skill program (p < 0.05, p < 0.01).</p>	<p>improve educators' knowledge and self-efficacy of caring for children with a chronic disease.</p>
<p>Ryan, L.L. (1996). A Cystic Fibrosis Handbook for Teachers.</p> <p>Country:</p>	CMLT	<p>PS</p> <p>Purpose: Develop a CF handbook for elementary school teachers and nurses.</p>	<p>n=20</p> <p>Demographics: T=12 N=8</p> <p>Setting: Schools</p>	<p>DV: Knowledge</p> <p>IV: CF Handbook for teachers.</p>	Knowledge pre & post test.	Repeated measures ANOVA.	Use of CF handbook improved knowledge of teachers (p. < 0.005).	CF Education for teachers improves their knowledge about the disease.

Note. A = Asian; AA = average age; ADHD = Attention Deficit Hyperactivity Disorder; AFS = asthma friendly school; AIDS = acquired immune deficiency syndrome; BD = bachelor degree; B = black; BMI = body mass index; C = colored; CAFSRK = creating asthma friendly schools resource kit; CF = Cystic Fibrosis; CG = control group; CP = clinical psychologist; D = diploma; DV = dependent variable; ED = education; ER = emergency room; F = female; HIV = human immunodeficiency virus ; HS = high school; hr. = hour; HP = health professional; IG = independent group; IV = independent variable; M = male; MD = master degree; mos. = months; MYE = mean years of experience; n = number; N = nurse; NS = number of students; OCD = Obsessive Compulsive Disorder; OD = other degree; PE = primary education; PO = physician office; PS = pilot study; PSG = Psychological Service Group; PR = primary researcher; QOL = quality of life; R = race; RAP = Roaming Adventures of Puff; RCT = randomized controlled trial; RS = research staff; SA = school absences; SC = school counselor; SE = secondary education; SLP = speech language pathologist; SCT = Social Cognitive Theory; SLT = Social Learning Theory; SP = school personnel; T = teacher; TS = Tourette Syndrome; UD = university degree; UC = urgent care; W = white; yrs.= years

United States		Level of Evidence: III	Inclusions: Primary school k-6 Attrition: No loss.					
Funding: None disclosed								
Bias: None declared								

Note. A = Asian; AA = average age; ADHD = Attention Deficit Hyperactivity Disorder; AFS = asthma friendly school; AIDS = acquired immune deficiency syndrome; BD = bachelor degree; B = black; BMI = body mass index; C = colored; CAFSRK = creating asthma friendly schools resource kit; CF = Cystic Fibrosis; CG = control group; CP = clinical psychologist; D = diploma; DV = dependent variable; ED = education; ER = emergency room; F = female; HIV = human immunodeficiency virus ; HS = high school; hr. = hour; HP = health professional; IG = independent group; IV = independent variable; M = male; MD = master degree; mos. = months; MYE = mean years of experience; n = number; N = nurse; NS = number of students; OCD = Obsessive Compulsive Disorder; OD = other degree; PE = primary education; PO = physician office; PS = pilot study; PSG = Psychological Service Group; PR = primary researcher; QOL = quality of life; R = race; RAP = Roaming Adventures of Puff; RCT = randomized controlled trial; RS = research staff; SA = school absences; SC = school counselor; SE = secondary education; SLP = speech language pathologist; SCT = Social Cognitive Theory; SLT = Social Learning Theory; SP = school personnel; T = teacher; TS = Tourette Syndrome; UD = university degree; UC = urgent care; W = white; yrs.= years

Appendix C

Table 1.
Synthesis Table

Author	Kawafha	Kieckhefer	Cicutto	Johnston	Jones	Smith	Rae	Brown	White	Chao	Ryan
Theoretical Framework											
SCT	X	X	X		X	X					
SLT				X			X	X	X	X	X
Intervention											
Computer-based education								X		X	
Lecture	X	X	X			X	X				
Printed Material					X						X
Training				X					X	X	
Length of Education	1hr. x 3 sessions	10 hrs.	45-60 min x 6 sessions	100 hrs.	N/A	60min/3hr	½ day	N/A	2 hrs.	2-day training	N/A
Education provided by	PR	Professional & parent	Public Health Nurse	HP	RS	RS	CP/RS	N/A	Experts in TS, OCD, ADHD	PSG & RS	N/A
Measurement Tool	Knowledge pre/post-test	Self-efficacy pre/post-test	UC/ER use, SA, management/practice survey	BMI scores	Knowledge pre/post-test	Knowledge/confidence pre/post-test	Knowledge pre/post-test	Knowledge/preparedness pre/post-test	Knowledge pre/post-test	Knowledge Self-efficacy pre/post-test	Knowledge pre/post-test
Knowledge/Self-efficacy Improvement	+	+	+	+	+	+	+	+	+/-	+	+

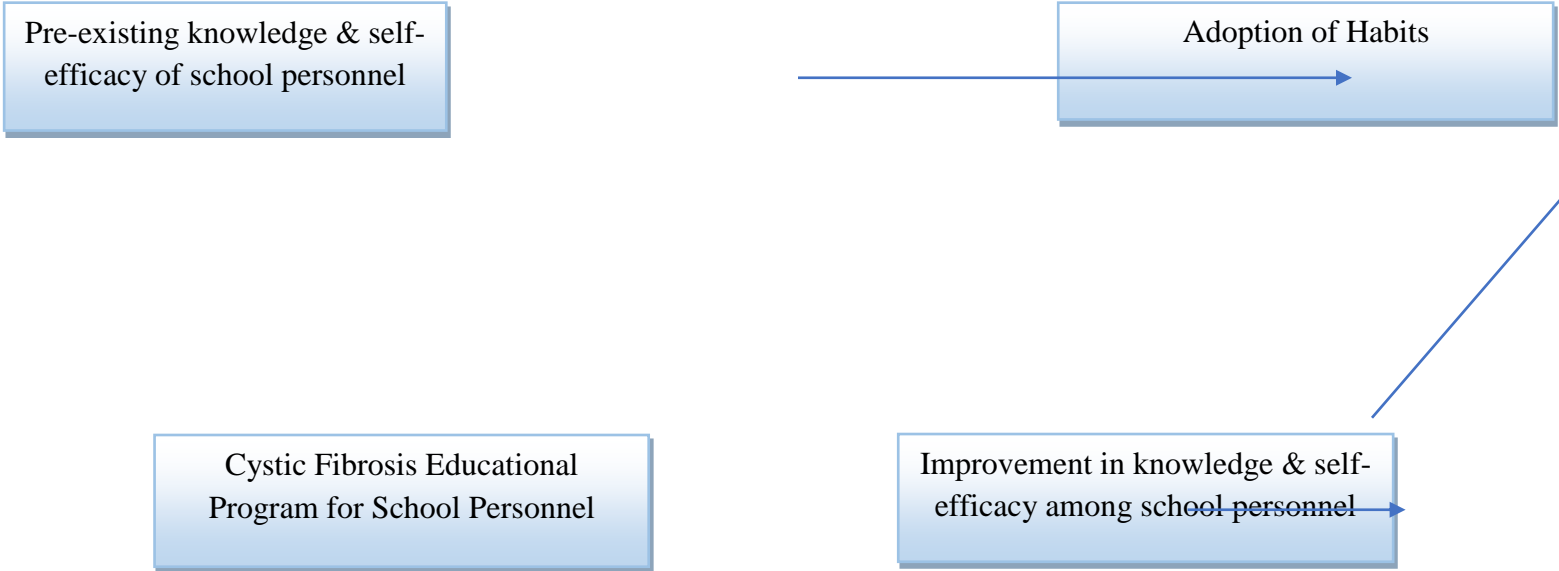
Note. A = Asian; AA = average age; ADHD = Attention Deficit Hyperactivity Disorder; AFS = asthma friendly school; AIDS = acquired immune deficiency syndrome; BD = bachelor degree; B = black; BMI = body mass index; C = colored; CAFSRK = creating asthma friendly schools resource kit; CF = Cystic Fibrosis; CG = control group; CP = clinical psychologist; D = diploma; DV = dependent variable; ED = education; ER = emergency room; F = female; HIV = human immunodeficiency virus ; HS = high school; hr. = hour; HP = health professional; IG = independent group; IV = independent variable; M = male; MD = master degree; mos. = months; MYE = mean years of experience; n = number; N = nurse; NS = number of students; OCD = Obsessive Compulsive Disorder; OD = other degree; PE = primary education; PO = physician office; PS = pilot study; PSG = Psychological Service Group; PR = primary researcher; QOL = quality of life; R = race; RAP = Roaming Adventures of Puff; RCT = randomized controlled trial; RS = research staff; SA = school absences; SC = school counselor; SE = secondary education; SLP = speech language pathologist; SCT = Social Cognitive Theory; SLT = Social Learning Theory; SP = school personnel; T = teacher; TS = Tourette Syndrome; UD = university degree; UC = urgent care; W = white; yrs.= years

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Appendix D

Figure 1.

Social Cognitive Theory Conceptual Framework Diagram



Note. Adapted from “Changes in Self-efficacy and Health Behavior in Response to a Minimal Contact Community Health Campaign,” by E. Maibach, A., J. Flora, and C. Nass, 1991. In Bandura, A. (2004). Health promotion by social cognitive means. *Health Education & Behavior*, 31(2), p.149.

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Appendix E

Figure 1.

School District and School Approvals and Denials

School Districts	Approval Date	Denial Date
Sunny Side Unified School District		11/18/2015
Tucson Unified School District	11/24/2015	
Amphitheater Unified School District		12/04/2015
Marana Unified School District	11/23/2015	
Catalina Foothills School District		8/10/2015
Vail School District		10/28/2015
Sierra Vista Public Schools	12/22/2015	
Private/Charter Schools		
Desert Christian		11/18/2016
Saints Peter and Paul Catholic School		11/17/2015
St. Cryil Catholic School		11/05/2015
Basis Tucson		11/16/2015

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Appendix F

Figure F1.

IRB Approval

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL



APPROVAL: EXPEDITED REVIEW

Diana Jacobson
 CONHI - Research Faculty and Staff
 602/496-0863
 DIANA.JACOBSON@asu.edu

Dear Diana Jacobson:

On 9/18/2015 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Cystic Fibrosis Education for School Personnel
Investigator:	Diana Jacobson
IRB ID:	STUDY00002991
Category of review:	(7)(a) Behavioral research
Funding:	Name: University of Arizona, Funding Source ID: T72MC00012
Grant Title:	
Grant ID:	
Documents Reviewed:	<ul style="list-style-type: none"> • Absence Tracking Form, Category: Participant materials (specific directions for them); • School Personnel Instructions Sept 15, Category: Recruitment materials/advertisements /verbal scripts/phone scripts; • Demographics, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Parent Directions Sept 21, Category: Recruitment materials/advertisements /verbal scripts/phone scripts; • School Personnel Information Letter, Category: Recruitment materials/advertisements /verbal scripts/phone scripts; • Scripts for Parent and School Personnel Sept 21, Category: Recruitment Materials; • Recruitment Letter to Parents Sept 28, Category: Recruitment Materials; • Parent Consent Sept 28, Category: Consent Form;

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Documents Reviewed:	<ul style="list-style-type: none"> • Absence Tracking Form, Category: Participant materials (specific directions for them); • School Personnel Instructions Sept 15, Category: Recruitment materials/advertisements /verbal scripts/phone scripts; • Demographics, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Parent Directions Sept 21, Category: Recruitment materials/advertisements /verbal scripts/phone scripts; • School Personnel Information Letter, Category: Recruitment materials/advertisements /verbal scripts/phone scripts; • Scripts for Parent and School Personnel Sept 21, Category: Recruitment Materials; • Recruitment Letter to Parents Sept 28, Category: Recruitment Materials; • Parent Consent Sept 28, Category: Consent Form; • Protocol Sept 25, Category: IRB Protocol; • School Personnel Consent Sept 15, Category: Consent Form; • School Personnel Pre-Survey, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Online Education Script, Category: Technical materials/diagrams; • Parent Pre-Survey, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • School Personnel Post-Survey, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Parent Post-Survey, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • UAPPC Letter of Support, Category: IRB Protocol;
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The IRB approved the protocol from 9/18/2015 to 9/17/2016 inclusive. Three weeks before 9/17/2016 you are to submit a completed Continuing Review application and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 9/17/2016 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the "Documents" tab in ERA-IRB.

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Figure F2.

Parent Consent



PARENT CONSENT

Dear Parent:

I am a Doctor of Nursing Practice student under the direction of Dr. Diana Jacobson at the College of Nursing and Health Innovation (CONHI) at Arizona State University (ASU). I am conducting an on-line Cystic Fibrosis educational program for elementary school personnel.

I am inviting you to participate in this project. Your involvement will include keeping track of your child's Cystic Fibrosis related school absences, and completing a short pre and post-survey (a written set of questions). Your total time commitment will be approximately 60 minutes. You will be called/emailed one week after recruitment to address any questions that may arise. You will also be called/emailed once in the months of October, November and December.

Your participation in this program is voluntary. If you choose not to participate and not to have your child participate or to withdraw your child from the program at any time, there will be no penalty and it will not change the treatment your child receives.

The Cystic Fibrosis Education Program may help school personnel better respond to your child's health and education needs. There are no foreseeable risks or discomforts associated with your participation.

Your personal information will not be given to anyone outside of ASU CONHI and the University of Arizona Pediatric Pulmonary Center. You will be assigned a program number to protect your identity. This number will only be available to program team members, Mrs. Sofia Ytuarte and Dr. Diana Jacobson. The results of this program may be used in reports, presentations, or publications but your name nor your child's name will be used.

If you would like to participate or have any questions concerning the program or your participation in this program, please call, Sofia Ytuarte, RN, BSN at (520) 909-3209 or Diana Jacobson at (602) 496-0863.

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788,

Your participation and completing the pre-survey will be considered your consent to participate. Upon agreeing to participate, you will receive a packet in the mail with directions, and the absence tracking form.

Sincerely,

Sofia Ytuarte, RN, BSN
Diana Jacobson PhD, RN, PPCNP-BC, PMHS, FAANP

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Figure F3.

Parent Surveys

Cystic Fibrosis Education for School Personnel

Please check the best response to the following questions

1. Create your four digit identification number using the first two letters of your mother's name and the last two digits of your birth year. This number will be used as your identification number on both the pre and post-surveys.

2. What type of school does your child attend?

Public School

Private School

Charter School

3. What grade is your child in?

Kindergarten

First Grade

Second Grade

Third Grade

Fourth Grade

Fifth Grade

Sixth Grade

4. Do you feel that an education program to teach school personnel about Cystic Fibrosis would benefit your child?

Yes

No

If not, why?

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

5. Do you feel that an education program to teach school personnel about Cystic Fibrosis should be available for school personnel?

Yes

No

If not, why?

6. Do you feel that your child's classmates should also be educated on Cystic Fibrosis?

Yes

No

If not, why?

7. As of today, does your child have a 504 plan?

Yes

No

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Cystic Fibrosis Education for School Personnel

Please check the best response to each of the following questions and provide comments when necessary.

1. Create your four digit identification number using the first two letters of your mother's name and the last two digits of your birth year. his number will be used as your identification number. This should be the same number used for the pre-survey.

2. Do you feel that an education program to teach school personnel about cystic fibrosis would benefit your child?

Yes

No

If not, why?

3. Do you feel that the educational program to teach school personnel about cystic fibrosis should be available for school personnel?

Yes

No

If not, why?

4. Do you feel that your child's classmates should also be educated on Cystic Fibrosis?

Yes

No

If not, why?

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

5. Overall, do you feel the education program that was presented to your child's school was beneficial for you and your child, and why?

Yes

No

If yes or no, how has the program benefited or not benefited you and your child?

6. Was the tracking form easy to use?

Yes

No

If not, why?

7. As of today, does your child have a 504 plan?

Yes

No

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Figure F4.

Absence Tracking Form

CF Absence Tracking Sheet
 Observation Period: August, 2015-December, 2015
 ID:
 Date:



CF Absence Tracking Tool

Please write down the date of school absences related to CF exacerbations and the date of return to school. Examples are provided below. Please include dates if the absence is due to a tune-up. Please indicate whether a change in the plan of care was made (e.g. increasing airway clearance, new antibiotic ordered, etc.) and when an unscheduled call or visit was made to the clinic.

Date	Absent from school/Date returned to school	Hospitalization Required	Tune-up	Change in plan of care made	Unscheduled Visit/Call to clinic	Change to care plan
Example: 8/25/15	Yes No Date: 8/28/15	Yes No	Yes No	Yes No	Yes No	antibiotic ordered
Example: 9/2/15	Yes No Date:	Yes No	Yes No	Yes No	Yes No Call to clinic	Increased airway clearance, antibiotic ordered
	Yes No Date:	Yes No	Yes No	Yes No	Yes No	
	Yes No Date:	Yes No	Yes No	Yes No	Yes No	
	Yes No Date:	Yes No	Yes No	Yes No	Yes No	

Please write down the number of school absences your child had last year for the Fall 2014 school semester _____.

Four Digit ID number _____

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Figure F5.

School Personnel Consent



Dear Participant,

My name is Sofhia Ytuarte and I am a Doctor of Nursing Practice (DNP) student under the direction of Dr. Diana Jacobson in the College of Nursing and Health Innovation at Arizona State University.

I am inviting you to participate in an educational program to determine if cystic fibrosis education for school personnel will improve your knowledge about cystic fibrosis. In addition, improved knowledge about cystic fibrosis may improve infection rates of children with cystic fibrosis and improve the use of 504 plans among children affected with cystic fibrosis.

Your involvement will include listening to an on-line educational program regarding cystic fibrosis and the healthcare needs for these children while they attend school. You will be asked to complete a survey before and after listening to the program, and completing a program evaluation survey. The total time required to participate in this educational DNP project will be approximately 30-45 minutes.

Your participation in the educational program is voluntary. If you choose not to participate or to withdraw from participating at any time, there will be no penalty. Responses to the surveys will be used to evaluate the effectiveness of the education program. There is no known risk for your participation. The benefit you may receive from participating in the educational program may include improving your knowledge about Cystic Fibrosis.

Your responses on the surveys will be anonymous. You will be identified only by a number that will not be connected to your name or other personal identifying information. The results of this DNP project may be used in reports, presentations, or publications, but your name will not be known or used.

If you have any questions concerning this program, please contact the following team members:
Dr. Diana Jacobson 602-496-0863 or diana.jacobson@asu.edu
Sofhia Ytuarte 520-909-3209 or sofia.ytuarte@asu.edu

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788.

Your participation and completing the pre education survey will be considered your consent to participate.

Sincerely,
Sofhia Ytuarte

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Figure F6.

School Personnel Surveys

School Personnel Pre-Survey

Demographics

For questions 1-10, please check the best response that describes you and your school.

1. Create your four digit identification number using the first two letters of your mother's name and the last two digits of your birth year. This number will be used as your identification number on both the pre and post-survey's.

2. Profession

- School Nurse
- Teacher
- Counselor
- Other (please specify)

3. Gender

- Female
- Male

4. Highest Level of Education

- High School
- Bachelor's Degree
- Master's Degree
- Doctorate Degree

5. Years of experience in your profession

- < 1 year
- 1-5 years
- 5-10 years
- 10-15 years
- > 15 years

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6. Grade you teach

- Kindergarten
- First
- Second
- Third
- Fourth
- Fifth
- Sixth
- N/A

7. School Type

- Public
- Private
- Charter

8. Do you currently have a student with Cystic Fibrosis in your class?

- Yes
- No
- N/A

9. In the past have you had a student with Cystic Fibrosis in your class?

- Yes
- No
- Unsure
- N/A

10. If you currently have a student with Cystic Fibrosis in your class, do they have a 504 plan?

- Yes
- No
- N/A

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School Personnel Pre-Survey

Pre-Survey

For questions 11-22, please check the best response to each of the statements.

11. Cystic Fibrosis is a

- a. Contagious disease
- b. Curable disease
- c. Genetic disease
- d. A & C
- e. B & C
- f. A, B, & C

12. Cystic Fibrosis can affect the

- a. Respiratory system
- b. Digestive system
- c. Immune system
- d. A & B
- e. A & C
- f. A, B, & C

13. Children with Cystic Fibrosis that are pancreatic insufficient require a

- a. High calorie diet
- b. Low calorie diet
- c. High fat diet
- d. Low fat diet
- e. A & C
- f. B & D

14. Most children with Cystic Fibrosis require daily medications.

- True
- False

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

15. Most children with Cystic Fibrosis are at risk for obesity.

True

False

16. Children with Cystic Fibrosis are at risk for repeated infections.

True

False

17. Children with Cystic Fibrosis will often require hospitalization when ill or will need to stay home taking antibiotics when they get sick.

True

False

18. Children with Cystic Fibrosis are at risk for poor educational attainment.

True

False

19. Children with Cystic Fibrosis can participate in all school activities such as PE, recess, music, field trips, etc.

True

False

20. Children with Cystic Fibrosis can be in the same class as another student with Cystic Fibrosis.

True

False

21. On a scale from 1 (not knowledgeable) to 5 (very knowledgeable), please rate your knowledge of Cystic Fibrosis.

1 Not Knowledgeable 2 Minimal Knowledge 3 Some Knowledge 4 Moderate Knowledge 5 Very Knowledgeable

22. On a scale from 1 (Not comfortable) to 5 (Very comfortable), please rate your level of comfort in caring for students with Cystic Fibrosis.

1 Not Comfortable 2 Minimal Comfort 3 Some Comfort 4 Moderate Comfort 5 Very Comfortable

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Post-Survey

Please check the best response to each of the following statements and provide comments when necessary.

1. Create your four digit identification number using the first two letters of your mother's name and the last two digits of your birth year. This number will be used as your identification number. This should be the same number used on the pre-survey.

2. Cystic Fibrosis is a

- a. Contagious Disease.
- b. Curable Disease
- c. Genetic Disease
- d. A & C
- e. B & C
- f. A, B, & C

3. Cystic Fibrosis can affect the

- a. Respiratory System
- b. Digestive System
- c. Immune System
- d. A & B
- e. A & C
- f. A, B, & C

4. Children with Cystic Fibrosis that are pancreatic insufficient require a

- a. High calorie diet
- b. Low calorie diet
- c. High fat diet
- d. Low fat diet
- e. A & C
- f. B & D

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

5. Most children with Cystic Fibrosis require daily medications.

True

False

6. Most children with Cystic Fibrosis are at risk for obesity.

True

False

7. Children with Cystic Fibrosis are at risk for repeated infections.

True

False

8. Children with Cystic Fibrosis will often require hospitalizations when ill or will need to stay at home taking antibiotics when they get sick.

True

False

9. Children with Cystic Fibrosis are at risk for poor educational attainment.

True

False

10. Children with Cystic Fibrosis can participate in all school activities such as PE, recess, music, field trips, etc.

True

False

11. Children with Cystic Fibrosis can be in the same class as another student with Cystic Fibrosis.

True

False

12. On a scale from 1 (not knowledgeable) to 5 (very knowledgeable), please rate your knowledge of Cystic Fibrosis.

1 Not Knowledgeable

2 Minimal Knowledge

3 Some Knowledge

4 Moderate Knowledge

5 Very Knowledgeable

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

13. On a scale from 1 (not comfortable) to 5 (very comfortable), please rate how comfortable you are with caring for students with Cystic Fibrosis.

1 Not comfortable	2 Minimal Comfort	3 Some Comfort	4 Moderate Comfort	5 Very Comfortable
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Presentation Evaluation
<p><i>Please check the best response to each of the following statements and provide comments when necessary.</i></p>
<p>14. Overall, was the educational presentation on Cystic Fibrosis helpful?</p>
<p><input type="radio"/> Yes</p>
<p><input type="radio"/> No</p>
<p><input type="radio"/> Unsure</p>
<p>If not or unsure, why?</p>
<input type="text"/>
<p>15. Overall, do you feel that the Cystic Fibrosis Education Program will help you care for students with Cystic Fibrosis?</p>
<p><input type="radio"/> Yes</p>
<p><input type="radio"/> No</p>
<p><input type="radio"/> Unsure</p>
<p>If not or unsure, why?</p>
<input type="text"/>
<p>16. Was the Cystic Fibrosis Educational Program presented in a way that facilitated your learning?</p>
<p><input type="radio"/> Yes</p>
<p><input type="radio"/> No</p>
<p><input type="radio"/> Unsure</p>
<p>If not or unsure, what method would have facilitated your learning better?</p>
<input type="text"/>
<p>17. Did you like the online format of the Cystic Fibrosis Educational Program or would you prefer a live presentation of the education?</p>
<p><input type="radio"/> Yes</p>
<p><input type="radio"/> No</p>
<p><input type="radio"/> Prefer live presentation</p>

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18. Did you learn anything new about Cystic Fibrosis? If yes, what?

Yes

No

Comment

19. Was there anything that you felt was not discussed in the educational program or needed to be discussed further? If so, what?

Yes

No

Comment

20. For you, what was the most beneficial part of the Cystic Fibrosis Educational Program?

21. Do you feel that classmates of students with Cystic Fibrosis would benefit from an age appropriate presentation about Cystic Fibrosis?

Yes

No

Unsure

If not or unsure, why?

22. Do you have any suggestions to change or make the Cystic Fibrosis Educational Program better?

23. Additional Comments

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Appendix G

Table G1.

Demographics (n=10)

DEMOGRAPHICS	N	%
PROFESSION		
SCHOOL NURSE	2	20
TEACHER	3	30
COUNSELOR	0	0
OTHER	5	50
GENDER		
MALE	0	0
FEMALE	10	100
EDUCATION		
HIGHSCHOOL	4	40
BACHELOR DEGREE	2	20
GRADUATE DEGREE	4	40
EXPERIENCE IN YEARS		
<1	1	10
1-5	0	0
5-10	1	10
10-15	2	20
>15	6	60
GRADE TAUGHT		
4 TH	1	10
5 TH	1	10
N/A	8	80
SCHOOL TYPE		
PRIVATE	2	20
PUBLIC	8	80
CHARTER	0	0
STUDENT WITH CF IN CLASS		
YES	2	20
NO	6	60
N/A	2	20
PAST STUDENT WITH CF IN CLASS		
YES	4	40
NO	3	30
UNSURE	1	10
N/A	2	20
504 PLAN IN PLACE		
YES	2	20
N/A	8	80

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Table G2.

Pre-Survey and Post-Survey Scores

SURVEY SCORES	% OF PARTICIPANT PRE SURVEY SCORES	% OF PARTICIPANT POST SURVEY SCORES	P VALUE
50%	9.1	0	
60%	18.2	0	
70%	45.5	0	
80%	18.2	9.1	
90%	0	36.4	
100%	0	36.4	
MEAN	62	76	.212

*p < .05

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Table G3.

Correct Answers by Question

QUESTION	% CORRECT		% CORRECT		P VALUE
	N	PRE-SURVEY	N	POST-SURVEY	
N	11		11		
MISSING	1		2		
TOTAL	10		9		
1. CYSTIC FIBROSIS IS A?	10	100	9	100	
A. CONTAGIOUS DISEASE					
B. CURABLE DISEASE					
C. GENETIC DISEASE					
D. A & C					
E. B & C					
F. A, B, & C					
2. CYSTIC FIBROSIS CAN AFFECT THE?	2	20	6	66.7	.453
A. RESPIRATORY SYSTEM					
B. DIGESTIVE SYSTEM					
C. IMMUNE SYSTEM					
D. A & B					
E. A & C					
F. A, B, & C					
3. CHILDREN WITH CF THAT ARE PANCREATIC INSUFFICIENT REQUIRE A?	4	40	8	88.9	.063
A. HIGH CALORIE DIET					
B. LOW CALORIE DIET					
C. HIGH FAT DIET					
D. LOW FAT DIET					
E. A & C					
F. B & D					
4. MOST CHILDREN WITH CF REQUIRE DAILY MEDICATIONS? TRUE OR FALSE	10	100	8	88.9	1
5. MOST CHILDREN WITH CF ARE AT RISK FOR OBESITY? TRUE OR FALSE	8	80	9	100	.5
6. CHILDREN WITH CF ARE AT RISK FOR REPEATED INFECTIONS? TRUE OR FALSE	10	100	9	100	
7. CHILDREN WITH CF WILL OFTEN REQUIRE HOSPITALIZATION WHEN ILL OR WILL NEED TO STAY HOME TAKING ANTIBIOTICS WHEN THEY GET SICK? TRUE	10	100	9	100	

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

OR FALSE					
8. CHILDREN WITH CF ARE AT RISK FOR POOR EDUCATIONAL ATTAINMENT? TRUE OR FALSE	5	50	9	100	.125
9. CHILDREN WITH CF CAN PARTICIPATE IN ALL SCHOOL ACTIVITIES? TRUE OR FALSE	8	80	9	100	1
10. CHILDREN WITH CF CAN BE IN THE SAME CLASS AS ANOTHER STUDENT WITH CF? TRUE OR FALSE	1	10	8	88.9	.016*

*p<0.05

Table G4.

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

School Personnel Perceived Knowledge and Self-Efficacy

QUESTION	% ON PRE SURVEY	% ON POST SURVEY	P VALUE
11			.024*
NOT KNOWLEDGEABLE	20	0	
MINIMAL KNOWLEDGE	30	11.1	
SOME KNOWLEDGE	20	33.3	
MODERATE KNOWLEDGE	30	44.4	
VERY KNOWLEDGEABLE	0	11.1	
12			.034*
NOT COMFORTABLE	20	0	
MINIMAL COMFORT	10	11.1	
SOME COMFORT	30	11.1	
MODERATE COMFORT	20	44.4	
VERY COMFORTABLE	20	33.3	

*P <0.05

Table G5.

CYSTIC FIBROSIS EDUCATION FOR SCHOOL PERSONNEL

Evaluation of Educational Presentation

EVALUATION OF EDUCATION	N	%
N	11	
MISSING	2	
TOTAL	9	
WAS THE EDUCATION HELPFUL		
YES	8	88.9
NO	0	0
UNSURE	1	11.1
WILL THE EDUCATION HELP YOU CARE FOR STUDENTS WITH CF		
YES	7	77.8
NO	1	11.1
UNSURE	1	11.1
WAS THE EDUCATION PRESENTED IN A WAY THAT FACILITATED YOUR LEARNING		
YES	8	88.9
NO	0	0
UNSURE	1	11.1
PREFERRED FORMAT OF PRESENTATION		
ONLINE PRESENTATION	6	66.7
LIVE PRESENTATION	3	33.3
DID YOU LEARN ANYTHING NEW ABOUT CF		
YES	9	100
NO	0	0
WAS THERE ANYTING THAT WAS NOT DISCUSSED		
YES	1	11.1
NO	8	88.9
WOULD CLASSMATES BENEFIT FROM CF EDUCATION		
YES	8	88.9
NO	0	0
UNSURE	1	11.1