

International Journal of Nursing and Health Care Research

Krause CI, et al. Int J Nurs Res Health Care: IJNHR-106.

DOI: 10.29011/IJNHR-106.100006

Research Article

Integrative Approach to Asthma Education in a School Based Health Center: A Pilot Test

Christine I. Krause¹, Carol Perenchio², Shannon K. Lizer^{1*}

¹Saint Anthony College of Nursing, USA

²Advanced Practice Nurse, Washington Regional Eureka Springs Family Clinic, USA

*Corresponding author: Shannon K Lizer, Dean, Graduate Affairs and Research, Saint Anthony College of Nursing, 5658 E. State Street, Rockford, IL 61108, USA. Tel: +18152272444; Fax: +18152272730; Email: shannon.k.lizer@osfhealthcare.org

Citation: Krause CI, Perenchio C, Lizer SK (2018) Integrative Approach to Asthma Education in a School Based Health Center: A Pilot Test. Int J Nurs Res Health Care: IJNHR-106. DOI: 10.29011/IJNHR-106.100006

Received Date: 30 April, 2018; **Accepted Date:** 15 May, 2018; **Published Date:** 21 May, 2018

Abstract

Background: Asthma is a chronic illness that results in significant disability and increased mortality, affecting 13.4% of households in Winnebago County [1]. “Kickin Asthma” has been shown to improve outcomes for adolescent children in the school-based setting but replications of these studies are needed to further evaluate outcomes [2].

Methods: This study used a prospective, quasi experimental pilot study using a convenience sample of five school age children, ages 11 to 12 at the University School Based Health Center-South Beloit.

Results: There was an increase in the number of written asthma action plans [3] or updated existing asthma action plans, improved scores on Asthma Control Test (ACT), an increase in knowledge from the pre to the initial post - survey, decreased missed school days from 3.5 days to just over ½ of a day, decreased acute visits to health center or school nurse, and effective maintenance of excellent grades in school.

Conclusion: In this study, “Kickin Asthma” demonstrated improved outcomes in children with asthma and supports previous research. Efforts by school districts to advance their growth through programs such as “Kickin Asthma” could further reduce health access inequities and provide an opportunity to influence health care outcomes.

Keywords: Asthma Education; Impact of Asthma; Pediatric Asthma; School Based Health

Introduction

Asthma is a chronic illness that results in significant disability and increased mortality which may affect the entire community. It affects the number of missed school days, decreased quality of life, increased emergency room visits, hospitalizations, and even death. Since the child spends the majority of their day at school, poorly controlled asthma may also have an impact on their school performance. For instance, in 2010 asthma caused 10.5 million missed school days and 1.8 million hospitalizations [4].

Although asthma is a global burden it disproportionately affects the inner city population and minorities [5]. It is believed that numerous socioeconomic and environmental factors trigger asthma and contribute to this statistic. Children who live in urban areas are at an increased risk due to poverty, exposure to environmental allergens and irritants, and encounter more barriers to healthcare access [6]. The national incidence for the diagnosis of asthma in children is 9.3% [6]. In 2012, there were 6.8 million children in the US who had asthma [4]. In Illinois in 2012, according to the Illinois Behavior Risk Factor Surveillance System (BRFSS), 13.2% of children had asthma. Children seem to be affected disproportionately in Illinois compared to Wisconsin (Table 1).

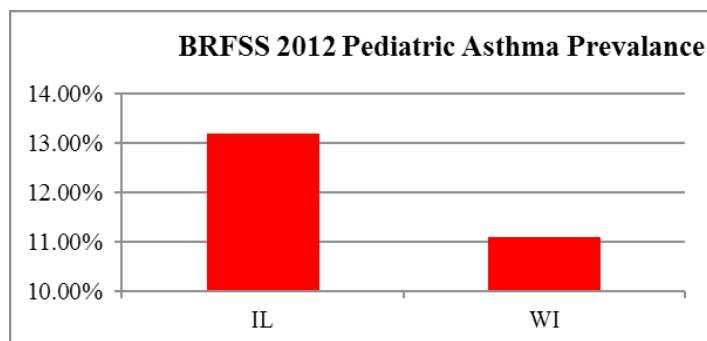


Table 1: Asthma Prevalence in Illinois and Wisconsin [7].

Local statistics show that pediatric asthma affects 13.4% of households [1]. In Winnebago County the poverty level percentage of children is higher than that of the Illinois state average (24.13% versus 19.25%). Winnebago County is also located in a health professional shortage area which means that limited access to healthcare may play a role in caring for the child's asthma [1]. The South Beloit Community Unit School District 320 (also known as County of Winnebago School District 320) located in South Beloit, Illinois along the Illinois-Wisconsin border on the Rock River. Population of South Beloit was listed as 7,719 in 2014 [8]. The city has an industrial base with equipment manufacturing and food processing operations as the chief industries.

Demographic information retrieved from United States Census Bureau, 2014, indicates that the racial makeup of the city was 87.16% white, 5% African-American, 0.63% Native American, 1.01% Asian, 0.07% Pacific Islander, 3.48% from other races, and 1.83% from two or more races. Hispanic or Latino of any race was 7.49% of the population. The median income for a household in the city was \$35,597, and the median income for a family was \$41,154. The per capita income for the city was \$18,363. About 8.2% of families and 10.0% of the population were below the poverty line, including 15.4% of those under age 18 and 7.6% of those age 65 or over [8].

The South Beloit school district has five schools and serves approximately 1,100 students in grades pre-kindergarten to twelfth grade. There are approximately 150 children diagnosed with either reactive airway disease, exercise induced bronchospasm, or asthma, at the onset of the school year 2015- 2016. At the South Beloit School Based Health Center, the number of children diagnosed with asthma was 51 and 6 students with reactive airway disease. Approximately 300 students are registered at the South Beloit School Based Health Center (personal communication, 10-7- 16). Approximately 17% of students at the School Based Health Center have asthma which is higher than the national average of 9.3%. Interventions for asthma are available to improve quality of life and improve outcomes for these children [9]. It is important that

this problem is addressed through culturally centered approaches at the child's school. School-based programs have been proven to have high participation rates. The school system has a stake in the success of these programs since ultimately this type of intervention may favorably impact attendance rates [5].

"Kickin Asthma" was designed by the American Lung Association of California as a school-based curriculum that addresses the needs of children ages 11 to 16 with asthma [2]. The program promotes individual responsibility, self-management and early action among adolescents. The program involves a pre- and post- test about what the child knows about asthma. The topics that are covered include: (1). asthma basics and lung physiology; (2). symptoms, triggers and warning signs; (3). medications; and (4). problem solving, emergencies and review. The goal of this project is fewer asthma flares in students who received this educational program from the ALA [10], found that after implementing a similar program in 990 students over a 3-year period, students experienced fewer days with activity limitations, decreased number of sleep disturbance, fewer emergency room visits, and fewer hospitalizations.

"Kickin Asthma" has been shown to improve outcomes for adolescent children in the school-based setting but replications of these studies are needed to further evaluate outcomes [2]. Research question: Does the implementation of the ALA's "Kickin Asthma" program in the school setting improve the following: number of written asthma action plans, asthma control, asthma knowledge, visits to school nurse, visits to school based health center, school absences and grades?

The purpose of this study was to improve knowledge of the effectiveness of an educational asthma intervention, "Kickin Asthma, developed by the American Lung Association [2] in the South Beloit school district. Specific outcome measures for this study include:

- Outcome 1. Increase the number of written asthma action plans or updated existing asthma action plans;
- Outcome 2. Improve the scores on Asthma Control Test (ACT) [11];
- Outcome 3. Improve the scores on Asthma Knowledge Questionnaire by ten percent [12] from pre-intervention to the post-intervention questionnaires;
- Outcome 4. Decrease acute case visits to School Based Health Center (SBHC) or school nurse for asthma-related visits;
- Outcome 5. There will be less missed school and;
- Outcome 6. Evaluate the role the program plays in improving school grades.

Review of the Literature

For this study on school-based asthma education, the Cumulative Index to Nursing and Allied Health Literature (CINAHL) database was utilized and search terms included: Asthma and Pathophysiology, which yielded 2,628 articles. Combining these with additional search terms: Therapy and Education - yielded a total of 1,061 results. After adding the search term: School, a total of 144 articles were retrieved. Abstracts were then hand-searched for topics relevant to outcomes of missed school days, grades, and asthma symptom scores. Ten articles were reviewed and synthesized. Information was extracted regarding the research design, sample size, demographic characteristics of the study population, location, type of intervention, setting, type(s) of health professional(s) providing the intervention, the duration of the intervention, and the population that received the intervention (eg, children, children and parents).

Strong evidence from a systematic review [13], and meta-analysis [14], support the use of school-based education programs in children and adolescents. Their findings, which include earlier studies from previous twenty years, support collaborative efforts combined between school-based asthma management programs and conventional disease management.

Gaps in Literature

Although gaps exist on findings regarding school-based asthma education programs in relation to quality of life, school absences, and days and nights with symptoms, the majority of the literature suggested that school-based asthma education does demonstrate positive outcomes. These outcomes include improved knowledge of asthma, self-efficacy, and self-management behaviors. Difficulties encountered in the synthesis of findings across these studies can be attributed to the wide variation in characteristics of interventions and target population and the assessed outcomes.

Methods

A single center, non-randomized, quasi experimental prospective pilot study.

Participants

using a convenience sample with a cohort of children, ages 11 to 12, diagnosed with asthma in a school based located in South Beloit. Inclusion Criteria. Students in grades five and six with a diagnosis of asthma who attended South Beloit Junior High and obtain health services through the University School Based Health Center - South Beloit were eligible for the study. All children in the University School Based Health Center - South Beloit database with a diagnosis of asthma were eligible and the nurse practitioner at the University School Based Health Center - South Beloit also

identified other children as having asthma. Students were required to speak and read English. Exclusion Criteria. Parents or guardians not giving consent to participate, served as exclusion criteria. Students who were not in the fifth or sixth grade were not eligible. Students attending other schools in the district were not eligible. Students who did not have asthma were not eligible.

Instrumentation

A pre-/posttest design was utilized to implement the “Kickin Asthma” program, with participants serving as their own control group was used for this prospective program evaluation study. The independent variable was the educational program developed by the [2].

Procedure

The “Kickin Asthma” program was implemented at the University School Based Health Center in South Beloit. The listing of activities for this project is arranged chronologically as follows:

1. The nurse practitioner at the University School-Based Health Center - South Beloit selected potential participants for the study by reviewing the schools’ records for students who have asthma and who met the inclusion criteria.
2. During the month preceding the educational activity, the nurse practitioner at the University School-Based Health Center - South Beloit contacted the parents or guardians of the students eligible for the study and briefly described the study. If the parent was interested, a home visit was arranged. At this visit, the nurse practitioner presented the information about the study (Appendix A) and the consent forms (Appendix B). The completed consent forms were returned to the principle investigator. The consent for the University School-Based Health Center - South Beloit were retained by the Health Center. Copies of Appendix B were given to the principle investigator.
3. Recruitment continued until the beginning of the scheduled sessions. The sessions were held in April 2016 at the University School-Based Health Center - South Beloit, inside the South Beloit Junior High in South Beloit CUSD 320.
4. Program was presented by Principal Investigator (PI) for students.
5. On the first day of the activity, the student was presented with the Assent form (Appendix C). After the principle investigator reviewed the entire form, the student was asked if they gave assent to participate. If they declined to participate, they left the room and returned to the cafeteria. The consent form signed by the parent was shredded. For those students who chose to continue, they completed the Pre-Program Questionnaire

created by the American Lung Association (Appendix D). This took 10 minutes. The student completed the Asthma Control Test (ACT), [11] (Appendix E). that included information about asthma control during the past one month. This took 5 minutes. The program met once a week for four weeks. Each one of the weekly classes was one ½ hours.

6. During the fourth and last session, the students completed the Post-Program Questionnaire, [12] (Appendix F) at the last session along with another Asthma Control Test, [11] (Appendix E). These were the same tests administered at the beginning of the first class. This took 15 minutes. At this time, the students who completed all four sessions were told that they qualified for the incentive provided by the American Lung Association, Spirit Wear.
7. In September, 2016, the students took the Post-Program Questionnaire, [12] (Appendix F) and repeated the Asthma Control Test, [11] (Appendix E). These tests took about 15 minutes. No further education was given in September. The investigator provided the sealed packet with the students' name on the envelope to the school nurse. The school nurse called the student to the nurse's office to fill out the information. The student placed the completed information back into the envelope. The investigator went to the school to pick up the de-identified information from the nurse.
8. The baseline, pre-intervention data was retrospectively collected for the students who completed all four of the "Kickin Asthma" courses [2]. Baseline data was collected for the month of August through September 2015 (six weeks) and included: missed school days, acute visits to health center or school nurse, and grades in school. The missed school days were collected by the secretary at the School Based Health Center. Data was collected for the outcome measures from August-September 2016 (six weeks) and included missed school days, acute visits to health center or school nurse, and grades in school.
9. As soon as all information was collected and collated, the participants' names were removed. All the data was de-identified.
10. De-identified data from the ALA forms was provided to the ALA at the completion of the research and added to their national database.

Data Analysis

Demographics

For this pilot study, there were four male student participants

and one female student. All of the students were in grades five or six and ranged from age 10-12. The sample size was based on convenience selection and all children met inclusion criteria. Initially there were six children enrolled but one Hispanic child decided to drop out voluntarily after one session. The remaining six children included three African American males; one Caucasian female and one Caucasian male student. The demographic data was analyzed using SPSS version 19.0.

Outcome 1

There will be an increase in the number of written asthma action plans or update the existing asthma action plans. At the commencement of the study there were three students who had an asthma action plan already in place. However, their actions plans were not updated with the student's most recent information. Two students did not have an asthma action plan. During the course of the "Kickin Asthma" classes, two of the students had new asthma action plans created with their current medications and peak flow zones. The nurse practitioner was present and was able to access the student's records in order to achieve this information. Three students who had asthma action plans did receive updated plans by the end of the course. Each student performed peak flow meter readings and these were reflected in each of their asthma action plans.

Outcome 2

There will be improved scores on the Asthma Control Test (ACT). The initial measurement of ACT was obtained at baseline prior to the intervention, at which time the average score was 18.8 which indicates uncontrolled asthma. At the end of four weeks of classes, the mean post test score was 19.5. (A score of 20 indicates controlled asthma). Five months later, the average score was 20, significant for controlled asthma. This study showed an improvement with the scores trending upward which reflects improved asthma control. However, the paired t test did not show any statistically significant improvement.

Outcome 3

There will be a ten percent improvement in knowledge about asthma as measured by improvement from the pre-program questionnaire to the post-program questionnaire. The initial measurement of the asthma knowledge scores was 70% at baseline (Table 2). At the end of the four weeks of classes it was 92.5% which indicated an improvement in their asthma knowledge. Five months later, the average score was 80%. When comparing the knowledge post- test after completion of the program with five months after completion there was found to be a decrease of their scores by 12.5%.

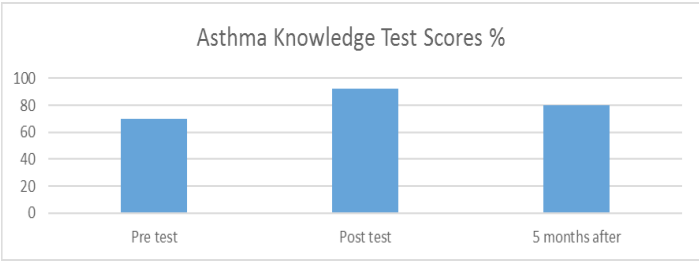


Table 2: Asthma Knowledge Test Scores [15].

However, there was a significant improvement of 10% from the baseline to five months after completion of the study.

Objective 1

There will be less missed school. When assessing attendance comparing from fall 2016 (six weeks) compared with baseline data from fall (six weeks), the mean was 3.5 days (SD=4) at baseline with a mean of .6 days (SD=0.9) at post program. Although this was not statistically significant, it did show that as a group, the children missed fewer school days after attending the program (t=2.021, df=4, p=.113).

Objective 2

There will be decreased acute case visits to the University School Based Health Center-South Beloit or school nurse for asthma related events during fall 2016 (six weeks) compared with baseline data from fall 2015(six weeks). This data was unable to be analyzed on SPSS due to the small numbers of visits to both the School Based Health Center (SBHC) and to the school nurse. There was only one visit in the pre-time period of fall 2015 (six weeks) at the SBHC and none in the post time period for the School Based Health Center of fall 2016. There were two visits in the pre-time period of from fall 2015 (six weeks) at the school nurse and one in the post time period for the school during from fall 2016 (six weeks). Of note, this measurement only included acute visits to the nurse and nurse practitioner and well child exams were not included. The raw data did show that there were decreased visits to both the School Based Health Center and the nurse at the school.

Objective 3

There will be improved grades in school. The mean grades at baseline were 91.7% with the mean score being 90.1% post. This was not statistically significant. The grades pre and post remained similar with a less than one percent difference noted (t=0.990, df=4, p=.378) (Table 3). Data were scored using the Statistical Package for the Social Sciences 19.1 for the [16] (Appendix G), the Asthma Knowledge Questionnaire (Appendix H), and school-based recorded information on number of written asthma action plans or updated asthma action plans, missed school days, number of acute school-based health center visits, and grades (grade-point

average).A t-test for dependent samples was used to evaluate the differences since the population was assumed to be normally distributed. Data were paired and came from the same population. The level of significance of p = 0.005 was used for all tests for statistical significance.

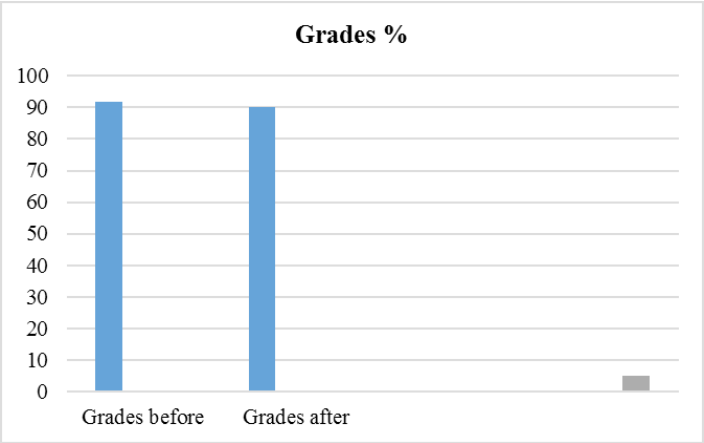


Table 3: Grades Pre and Post program [15].

Results

The results in the 5-month follow-up post-intervention knowledge survey indicate that the educational intervention resulted in higher scores for retained knowledge about asthma, and suggests that the “Kickin Asthma” educational intervention program was effective in improving outcomes, as measured by improved knowledge and improved asthma symptom scores. When analyzing each individual test score from pre, post and 5 months after, it appears that students had the most trouble with question number five. Question five (“My quick relief medicine should help me start feeling better in what amount of time”). Question number 7 was found to be the easiest for them: (“You should visit the doctor if your symptoms get worse after you have already taken your medication”). One of the students, subject number four, struggled in general with the testing throughout the spectrum. Interestingly, his grades still remained in the A range academically.

Discussion

“Kickin asthma” was not found to be statistically significant in this pilot group. However, the children did show an improvement in the asthma knowledge test scores after immediately completing the course. The children did have an improvement in their asthma knowledge test scores after immediately completing the course. After five months their knowledge was improved from baseline but they were unable to retain all of the new information that was obtained from the program. As a group, the children did miss less school after attending the program, but there were few absences due to asthma at either the pre assessment or the post assessment.

There was a decrease in the number of visits to both the School Based Health Center and the school nurse. The grades did not change significantly throughout the program and remained in lower “A” range for these students, suggesting that participation in this program, although it replaced study hall time, did not adversely impact their Grade Point Average (GPA). Although children missed fewer school days, it did not have an effect on their grade point average at this point. Further research may show an association between fewer missed school days with improved GPA’s, after the “Kickin Asthma” program. Since the post-intervention scores were slightly higher than those measured at week 20 (5 months), educational interventions scheduled slightly more often than once a semester may be needed to meet desired outcomes. For this study, it was challenging to get consent from both the child and the parents which ultimately influenced the number of children enrolled in the study. It would have been ideal to have separate education conducted for the parents while the children were in class.

Conclusion

The results of this pilot study indicate that education performed in a school based health center did reflect an increase in the number of asthma action plans created. This is consistent with the current guidelines that support that each child with asthma needs to have an asthma action plan. After completion of the study, the children had improvements noted in their asthma control test, which is a reflection of their current asthma control. School-based asthma educational interventions with personalized Asthma Action Plans (AAP) should reduce the episodic healthcare resources utilization rate in school-age children with asthma which was reflected in a small scale in this study. The decreased # of acute

school-based health center visits corresponded to the presence of AAP and the educational intervention.

Limitations

The limitations of this study included its non-randomized, open-label design and the lack of a control group as a pilot study. There were only five subjects in the study and one of the subjects was female. Also, there was only a short period of observation. The program only lasted four weeks, and the follow up data was obtained five months after the completion of the study. Which could contribute to bias.

Implications for School Health

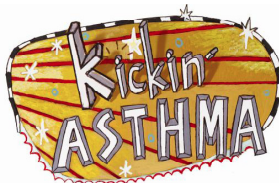
- Practice: APNs and elementary school systems can have successful partnerships to further health care models in childhood chronic disease management.
- Policy: Encourage school officials and community groups to work together for the benefit of the children and remove barriers that prevent collaboration.
- Research: Capture all outpatient services used; implement in diverse school districts and measure longitudinal sustainability & results.

Education: This model of education for children with asthma can be applied to ongoing care. Expansion to include student nurses and APN faculty should be a priority.

Acknowledgments

American Lung Association.

Appendix A: Letter to Parents



SAINT ANTHONY
COLLEGE OF NURSING

Dear Parent/Guardian,

Your child has been chosen to take the Kickin' Asthma education program, developed by the American Lung Association. The Kickin' Asthma program may help your doctor, nurse practitioner, or school nurse to assess your child's asthma control and knowledge. Kickin' Asthma is a program which meets once a week for one hour. It is held during the school day over the lunch and study hall periods. The program will run for four weeks in April 2016. About 10 students may attend.

During the program, your child will take a pre-and post-survey to assess their understanding of asthma. Your child will also fill out a survey about their asthma control. The class will be taught by a certified nurse practitioner/asthma educator. There is no charge for this program. If you choose not to participate, it will not change your child's relationship with their school or the South Beloit School Based Health Center. This program is voluntary. The surveys pose no risk to your child.

All students who finish all four classes will take a final survey to see what was learned. When your child returns to school in the fall of 2016, they will complete another survey. This will tell us if their health has changed. Students who come to all four classes will receive FREE SPIRIT WEAR provided by the American Lung Association. None of the Spirit Wear will say that your child has have asthma.

Sincerely,

Christine Krause APN/CNP

Certified Asthma Educator

Appendix B: Consent form

CONSENT TO ATTEND KICKIN' ASTHMA

TITLE: Kickin' Asthma: A School Based Program

TEACHER AND RESEARCHER: Christine Krause, MSN, PNP-BC, FNP-BC

WHY IS THIS STUDY BEING DONE?

I invite your child to take part in a series of four, one hour classes developed by the American Lung Association. These classes will give your child information on how to deal with their asthma to improve their health. The class will be taught by a nurse with a specialty in asthma. There is no charge for this program. This is a research study.

WHAT HAPPENS IN THE STUDY?

Kickin' Asthma is a program which meets once a week for one hour and is held during the school day over the lunch hour and study hall. The program will run for four weeks in April 2016. About 10 students may attend. During the program, your child will take a pre-and post-test to assess their knowledge about asthma. This test takes about ten minutes.

- 1) Your child will also fill out a survey about their asthma control. This survey will be taken at the first and last class and takes about five minutes.
- 2) An Asthma Action Plan will be developed to help control your child's asthma.
- 3) When your child returns to school in the fall of 2016, they will complete another survey to see if their asthma has changed. This survey takes about five minutes.
- 4) Missed school days, your child's grades, and the number of sick visits to the South Beloit School Based Health Center and the school nurse will be collected for August 2015-September 2015 and then again for August 2016-September 2016. It is hoped that taking better care of your child's asthma may help them succeed in school.

WHAT ARE THE POSSIBLE RISKS?

Your child will not be missing classes since the program will be held over the lunch hour and study hall. It is possible that other people will know that your child has asthma. This could make your child uncomfortable.

WILL YOUR INFORMATION BE PRIVATE?

All the surveys and tests will be given a code. This code replaces your child's name. After all the information is collected, the list that links their name and code will be shredded. No one will know your child's answers except for the people conducting the study. The tests and surveys will be given to the American Lung Association for their national database but will not have your child's name on them. When this study is made into a report, your child's name will not be in the report. Information will be grouped so no person can be identified.

WHAT ARE THE POSSIBLE BENEFITS OF GOING TO THESE CLASSES?

If your child finishes all four classes, they will earn free Spirit Wear provided by the American Lung Association. None of the Spirit Wear will say that your child has asthma. Your child may learn more about their asthma.

WHAT IF YOU DECIDE NOT TO HAVE YOUR CHILD GO TO THE CLASSES?

If you choose not to have your child come to these classes, it will not change your relationship with your school or the South Beloit School Based Health Center or the school nurse. This program is voluntary.

WHAT DO I DO IF I HAVE QUESTIONS?

If you have questions, please talk to the class teacher, Christine Krause. This is Ms. Krause's project and she will answer any question you have. You may also reach Ms. Krause by phone (815-395-5413) or email (Christine.Krause@OSFhealthcare.org). If you have concerns about the study, you can talk with the Board at Saint Anthony Medical Center who reviewed this study (815-227-2700).

YOUR RIGHTS

I have read this information and I have been given a chance to ask questions. All my questions have been answered. By signing this form, I am agreeing to have my child attend the Kickin' Asthma program. If I do not sign this form, my child will not be going to the classes.

Printed name of student

Printed Name of Parent/Guardian

Signature of Parent/Guardian

Date

Appendix C: Assent form

ASSENT TO ATTEND KICKIN' ASTHMA

TITLE: Kickin' Asthma: A School Based Program

TEACHER AND RESEARCHER: Christine Krause, MSN, PNP-BC, FNP-BC

WHY IS THIS STUDY BEING DONE?

I invite you to take part in a series of four, one hour classes developed by the American Lung Association. These classes will give you information on how to deal with your asthma to improve your health. The class will be taught by a nurse with a specialty in asthma. There is no charge for this program.

WHAT HAPPENS IN THE STUDY?

Kickin' Asthma is a program which meets once a week for one hour and is held during the school day over the lunch hour and study hall. The program will run for four weeks in April 2016. About 10 students may attend. During the program, you will take a pre- and post-test to assess your knowledge about asthma. This test takes about ten minutes.

- 1) You will also fill out a survey about your asthma control. This survey will be taken at the first and last class and takes about five minutes.
- 2) An Asthma Action Plan will be developed to help control your asthma.
- 3) When you return to school in the fall of 2016, you will complete another survey to see if your asthma has changed. This survey takes about five minutes.
- 4) Missed school days, your grades, and the number of sick visits to the South Beloit School Based Health Center and the school nurse will be collected for August 2015-September 2015 and then again for August 2016-September 2016. It is hoped that taking better care of your asthma may help you succeed in school.

WHAT ARE THE POSSIBLE RISKS?

You will not be missing classes since it will be over the lunch hour. It is possible that other people will know that you have asthma. This could make you uncomfortable.

WILL YOUR INFORMATION BE PRIVATE?

All the surveys and tests will be given a code. This code replaces your name. After all the information is collected, the list that links your name and code will be shredded. No one will know your answers except for the people conducting the study. The tests and surveys will be given to the American Lung Association for their national database but will not have your name on them. When this study is made into a report, your name will not be in the report. Information will be grouped so no person can be identified.

WHAT ARE THE POSSIBLE BENEFITS OF GOING TO THESE CLASSES?

If you finish all four classes, you will earn free Spirit Wear provided by the American Lung Association. None of the Spirit Wear will say that you have asthma.

WHAT IF YOU DECIDE NOT TO GO TO THE CLASSES?

If you choose not to come to these classes, it will not change your relationship with your school or the South Beloit School Based Health Center. This program is voluntary. If you choose not to go to the classes, your surveys will be shredded.

WHAT DO I DO IF I HAVE QUESTIONS?

If you have questions, please talk to the class teacher, Christine Krause. This is Ms. Krause's project and she will answer any question you have. You may also reach Ms. Krause by phone (815-395-5413) or email (Christine.Krause@OSFhealthcare.org). If you have concerns about the study, you can talk with the Board at Saint Anthony Medical Center who reviewed this study (815-227-2700).

YOUR RIGHTS

I have read this information and I have been given a chance to ask questions. All my questions have been answered. By signing this form, I am agreeing to attend the Kickin' Asthma program. If I do not sign this form, I will not be going to any more classes and my surveys will be shredded.

Printed name of student

Signature of student

Date

Time

I have explained the study to the student and answered all questions. I believe that the student understands the information and gives assent to attend the classes.

Signature of person getting consent

Date

Time

Appendix D: Pre-Program Questionnaire



2/12/2016

Saint Anthony College of Nursing

5658 E. State St.

Rockford, IL 61108

Dear Madam/Sir:

Ms. Christine I. Krause has requested permission to conduct the American Lung Association (ALA) program entitled "Kickin' Asthma" for her doctoral research project which includes data collection in conjunction with Saint Anthony College of Nursing. The results of her research would be beneficial to the ALA and the well-being of the children of the South Beloit community. In addition, it will assist in completing deliverables for a statewide asthma grant through the CDC and Illinois Department of Public Health.

As part of our participation in this project, the ALA will contribute \$600 towards any needed incentives for students to complete the entire program. In addition, the ALA will contribute peak flow meters to the University School Based Health Center – South Beloit to help in their mission to improve the health of students. The ALA will allow the researchers to use the following forms for the project: Pre and Post Program Questionnaire, Asthma and You, Asthma Control Test. In return, Ms. Krause will provide the completed forms (de-identified) to the ALA in order to analyze the data and report to our funders.

All information will be kept in our secure offices in downtown Chicago and only further used to request additional funding and to retrospectively analyze the program's effectiveness.

I hereby endorse this project and am anxiously awaiting the results of her diligent research.

A handwritten signature in cursive script, appearing to read "Felicia Fuller".

Felicia Fuller, Dr. PH

Director, Lung Health

American Lung Association

55 W. Wacker Drive, Suite 800

Chicago, IL 60601

312-445-2503

Appendix E: Asthma Control Test





Post-Program Questionnaire

Name: _____ School: _____ Date: _____

Grade: _____ Age: _____ ☐ Male ☐ Female

1. What happens in the airways when you have an asthma episode?
A) muscles tighten
B) airways swell
C) thick mucous develops
D) all of the above
2. Can asthma be cured?
A) yes
B) no, but it can be controlled
3. People with asthma can participate in exercise when their asthma is under control?
A) true
B) false
4. The thing that measures the amount of air you can force out of your lungs is called a
A) spacer/holding chamber
B) peak flow meter
C) game boy
D) nebulizer
5. My "quick relief" medicine should help me to start feeling better in
A) one minute
B) 30 minutes
C) 5-10 minutes
D) one hour
6. Common asthma triggers may include: cats & dogs, smoke, and emotions.
A) true
B) false
7. You should visit the doctor if your coughing and wheezing gets worse after you have taken your medicine.
A) true
B) false
8. You should visit the doctor if your asthma symptoms have lasted a week or more.
A) true
B) false

Appendix F: Post-Program Questionnaire.



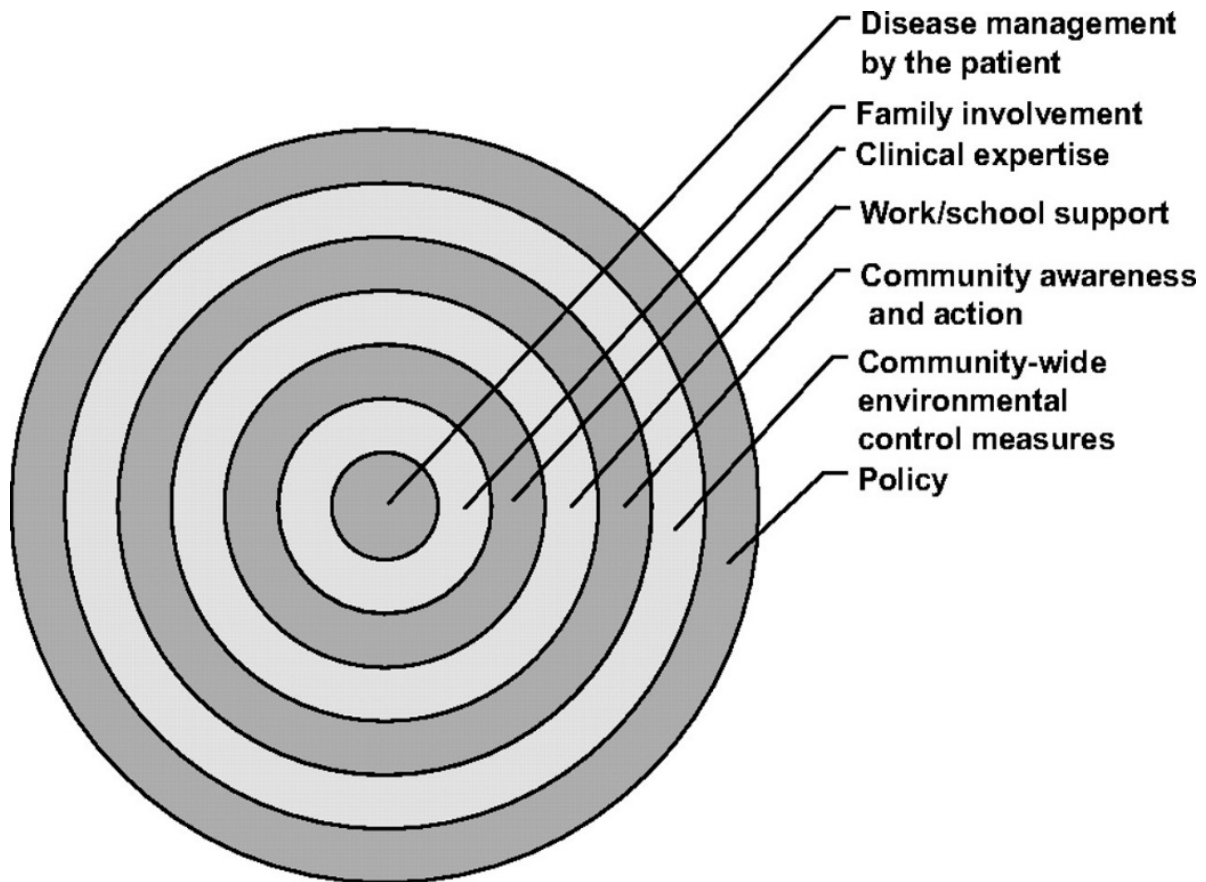
Pre-Program Questionnaire

Name: _____ School: _____ Date: _____

Grade: _____ Age: _____ ☐ Male ☐ Female

1. What happens in the airways when you have an asthma episode?
A) muscles tighten
B) airways swell
C) thick mucous develops
D) all of the above
2. Can asthma be cured?
A) yes
B) no, but it can be controlled
3. People with asthma can participate in exercise when their asthma is under control?
A) true
B) false
4. The thing that measures the amount of air you can force out of your lungs is called a
A) spacer/holding chamber
B) peak flow meter
C) game boy
D) nebulizer
5. My "quick relief" medicine should help me to start feeling better in
A) one minute
B) 30 minutes
C) 5-10 minutes
D) one hour
6. Common asthma triggers may include: cats & dogs, smoke, and emotions.
A) true
B) false
7. You should visit the doctor if your coughing and wheezing gets worse after you have taken your medicine.
A) true
B) false
8. You should visit the doctor if your asthma symptoms have lasted a week or more.
A) true
B) false

Appendix G: Circles of influence



Permission obtained through Rights Link at the American Academy of Pediatrics [17].

Appendix H: IRB Approval Letter



SAINT ANTHONY MEDICAL CENTER

March 14, 2016

Christine Krause, MSN, PNP-BC, FNP-BC, AE
Andrea Doughty, PhD

Dear Ms. Krause:

This is to advise you that I have granted expedited approval for the Integrative Approach to Asthma Education in a School Based Health Center Study which will be reported at the April 18, 2016 IRB meeting.

As the principal investigator of an approved IRB protocol you are required to submit the following to the IRB committee:

1. Annual updates – **calendar for the February 2017 meeting. The Committee will terminate its acceptance of the study in the event you fail to timely submit any annual report. The report needs to be submitted using our format (if you don't have a copy of this contact Debby Peterson).**
2. **Prompt Safety Reports from the company n/a**
3. **Prompt reports of any injuries to human subjects n/a**
4. **Inform the IRB Committee via the Chairman or his/her designee, of any deaths, unfavorable outcomes, unanticipated problems or other changes in research activity at the time of occurrence. (Note: changes in research may not be initiated unless they are necessary to eliminate apparent immediate hazards to the subject).**
5. **Promptly notify the FDA, the IRB Committee and other authorities when an unanticipated problem is identified regarding risks to subjects or others.**

In addition it is your responsibility to maintain a list of all study participants and their signed consent forms.

If you have any questions, please contact me.

Sincerely,

A handwritten signature in blue ink, appearing to read "James E. Tuschen".

James E. Tuschen, M.D.
Chairman IRB Committee

References

1. Rockford Health Council (2014) 2014 Healthy community study.
2. American Lung Association (2016) Improve asthma management in schools.
3. Center for Disease Control (2012) Asthma action plan.
4. Center for Disease Control (2013) Asthma facts.
5. Li P, Guttman A (2009) Recent innovations to improve asthma outcomes in vulnerable children. *Current Opinion in Pediatrics* 21: 783-788.
6. U.S. Department of Health and Human Services (2007) Summary health statistic for US children. National health interview study. Hyattsville, Maryland.
7. Center for Disease Control (2012) BRFSS survey data and documentation.
8. United States Census Bureau (2014).
9. Clark N, Housle C, Partridge M (2007) Educational interventions to improve asthma outcomes in children. *Journal of Clinical Outcomes Management* 14: 554-562.
10. Magzamen S, Patel B, Davis A, Edelstein J, Tager I (2008) Kickin asthma: School Based asthma education in an urban community. *Journal of School Health* 78: 655-665.
11. Schatz M, Sorkness C, Li J, Marcus P, Murray J, et al. (2006) Asthma Control Test, reliability validity and responsiveness in patients not previously followed by asthma specialists. *J Allergy Clin Immunol*.
12. Fitzclarence C (1990) Validation of an asthma knowledge questionnaire. *Journal of Paediatric Child Health* 26: 200-204.
13. Friend M, Morrison A (2015) Interventions to improve asthma management of the school age child. *Clinical Pediatrics* 54: 534-542.
14. Guevara J, Wolf F, Grum C, Clark N (2003) Effects of educational interventions for self-management of asthma in children and adolescents: systematic review and meta-analysis. *British Medical Journal* 326: 1308-1309.
15. Morricca M, Grasska M, Marthaler M, Weismuller P, et al. (2016) School asthma screening and case management: Attendance and learning outcomes. *The Journal of School Nursing* 29: 104-112.
16. Asthma Control Test (2015).
17. Clark N, Herman M, Rand C (2009) The effectiveness of asthma and behavioral interventions. *Pediatrics* 123: S185-S192.