

# Asthma Exacerbation in School Age Children

Doris Ezomo MSN,RN.

# Conceptual Phase

- Review of Project Model
- Review of the vulnerability of School-Age Children to asthma
- Causes of Asthma
- Symptoms of Asthma

# Introduction

- Asthma is a respiratory condition marked by spasms in the bronchi of the lungs, causing difficulty in breathing, obstruction, reversible airflow and bronchospasm. It usually results from an allergic reaction or other forms of hypersensitivity.
- Characterized by variable and recurring symptoms that includes wheezing, coughing, chest tightness, and shortness of breath

# Problem Identification

- For School-Age Children, does the Physical Effect of Asthma exacerbation lead to increased absenteeism and emergency room visit?
- P - School-Age Children with Asthma
- I - Asthma action plan
- C - No Asthma action plan
- O - reduces school absenteeism and emergency room visits

# Literature Review

- The leading chronic illness among children in the US under the age of 18 is asthma, amounting to \$5 million (Shaw, 2005).
- The leading cause of school absenteeism and emergency room admission is asthma (Shaw, 2005).
- Poor compliance with Rx has been found to be a major problem for school age children with asthma (Shaw, 2005).

# Lit Review Cont'd

- Review of records reveals that emergency room visits were highest after activities like exercise, gym & bowling in school age children.
- New Jersey Code, NJSA 18A:40-12.8 states that each pupil authorized to use asthma medication or a nebulizer at school must have an asthma treatment plan prepared by the physician of the pupil, which shall identify, at a minimum: asthma triggers, the treatment plan, & such other elements as shall be determined by the state Board of Education. (The pediatric/Adult asthma Coalition of New Jersey). [WWW.PACNJ.ORG](http://WWW.PACNJ.ORG)

# Lit Review Cont'd

- As enacted by the Senate and General Assembly of the State of New Jersey Section 1 of P.L. 1993, c.308 (C.18A:40-12.3):
- A Board of Education or Chief School administrator shall permit the self-administration of medication by a pupil for asthma or other life threatening illnesses provided that:
- The parents/guardians will provide a written certification from the Physician of the student that the student has asthma, and is capable of; and, has been instructed in the proper method of self-administration of medication

# Lit Review Cont'd

- The Parents/guardians provide to the school Principal a written authorization for the self-administration of medication.
- The permission shall be effective for the school year and be renewed for each subsequent school year. [www.njdoe.com](http://www.njdoe.com).
- Each school shall be required to have a nebulizer in school.



# Lit. Review Cont'd

- Each School Nurse or designee authorized to administer asthma medication shall receive training in airway management and in the use of nebulizer and inhaler consistent with nationally recognized standards

# Theoretical Framework: Dorothea Orem

- Orem's Self Care theory served as a conceptual framework for this study
- Orem's theory can be applied to the three levels of prevention: primary, secondary, and tertiary. This study was based on the primary level of care.
- Primary - when nursing care is aimed at developmental or universal self-care and when they are therapeutic
- Secondary or tertiary - when nursing care is aimed at health-deviation self-care

# Hypothesis

- School age Children under 18yrs of age are at higher risk of developing asthma exacerbation during school activities.
- A combination of two or more dimensions of vulnerability increases the likelihood of negative consequences to the outcome of exacerbation

# Research Design

- Quantitative Design
- Non-experimental
- Correlational Design
- Convenience Sample

Define population specifications:

- School age children under 18yrs of age diagnosed with asthma

# Sampling Plan

- Meetings were held with the school staff and Parents/guardians to explain the purpose of the study, methods of data collection, and provide opportunities for questions and answers.
- Re-enforcing participation is voluntary and will not impact on their employment status or the parent/guardian's relationship with the school.

# Population Specification and Sampling Plan:

- The target population consists of school age children diagnosed with Asthma
- For inclusion into the study, the school age child will have been diagnosed for one or more years.
- Power analysis was conducted using the variables of years diagnosed, and type of school activity
- Results of power analysis demonstrated that 160 participants were required for significance

# Data Collection Plan:

- Reliability and Validity:
- The study required participants to complete a self-administered questionnaire developed by the investigator based on Zapka et.al's 2009 study
- Multiple research studies have used this instrument, increasing reliability and validity.

# Threats to Internal and External Validity

- Some participants did not complete the questionnaire honestly
- While others consulted with families or friends to answer questions
- Attrition through those who changed their minds and those who refused to participate



# Ethics Procedures

Participants were assured of confidentiality and HIPPA compliance.

Once IRB approval was received, meetings with school board were held for final review and Q&A opportunities. Study to begin within 30 days of IRB and School Board approval.

All research members have earned certification from NIH and CITI to perform research on human subjects

Proposal was made to, and approved by, the IRB of Kean University and the DCF School Board.

# Ethics Procedures Cont'd

- Consent forms were explained, signed, and obtained from all participants
- Participation in the study was voluntary.
- Participants were informed that confidentiality and anonymity will be protected.
- Participation in the study will not impact on any participants' report card nor diminished involvement in school activities

# Finalization of Plans

- All research team members met and agreed to all aspects of plan
- Initiation of research plan to begin in 2 weeks
- Follow-up meeting with the School Board was comprised of the Principal, VP, Teachers, Parents/Guardians, and the Ethics Committee.

# Empirical Phase

- Data and questionnaires were collected by all team members from each classroom teachers 30 days after meeting with the School Principal and the school's Parent Teachers Association (PTA)
- Data Preparation:
- Questionnaires were reviewed for completeness – those questionnaires with incomplete information were omitted from statistical analysis
- Coding:
- Completed questionnaires were reviewed and answers were coded utilizing SPSS statistical package for social sciences version 20 for data entry

# Analytic Phase

- Data analysis:
  - 350 questionnaires were distributed
  - 255 questionnaires were returned (about 90%)
  - 33 questionnaires were omitted from statistical analysis related to incomplete forms
  - 222 questionnaires were included in statistical analysis, which is above the 160 required for significance as calculated by power analysis

# Data Analysis Cont'd

- Data was entered into SPSS software and data analysis calculated
- Descriptive and frequency statistics were calculated
- Although statistically significant the results are only generalizable to the DCF Regional School as participants were recruited only from this School

# Interpretation of Results

- *t*-test statistics were calculated using a one-sample test with the following results:
- $t(221) = 24.63, p = .001$
- The 95% confidence interval was calculated at 2.05 at the lower and 2.41 at the upper

The statistical analysis supports the hypothesis that:

- School-Age Children in elementary through high school are at an higher risk of developing symptoms of asthma exacerbation.
- Lack of Parental knowledge increases asthma exacerbation in school age children which adversely affects the rate of school absenteeism and emergency room visits.



# Dissemination Phase

## Clinical Significance:

- Data analysis reveals a significant number of students diagnosed with asthma at the DCF School, demonstrating indicators of school absenteeism due to asthma exacerbation
- This finding has the potential to adversely affect academic outcomes, decrease students' participation in school activities, increase emergency room visit and cost of health care services.

# Dissemination Phase

- Meetings were held among the researchers; the school staff; and the Principal to discuss findings of the study
- Findings from this study were presented at the National Research Day at Kean University on June 27, 2013.
- Study to be submitted to a peer-reviewed scholarly journal for publication

# Quality Improvement

Students need to be assessed for symptoms of asthma

- Interventions, both at home and the school levels need to be developed to prevent asthma exacerbation
- Interventions need to be developed to assist students in coping with the stressors of asthma exacerbation and environmental allergens
- Recognizing the prevalence of asthma in school age children at the DCF Schools will assist Educators and Parents/Guardians throughout the school district to re-examine the home environment, and minimize the risk for asthma exacerbation .

# Evidence Based Practice

- Further research on asthma in other clinical settings is recommended to increase generalizability to the educational system.
- Disseminate the results of the research study into the world of academia for inclusion in the curriculum.

# Recommendations:

- Further research needs to be conducted to determine the prevalence of this identified problem as this study is generalizable to the School Age Children at the DCF Regional School only
- Research will need to be conducted to determine appropriate preventative intervention and treatment of asthma exacerbation in School Age Children.
- Local Educators/Parents/Guardian need to be educated regarding the symptoms, interventions and treat of asthma and the result of this study.

# References

- Horner, S.D. (2008). "Improvement of rural children's asthma self management by lay health educators". *The Journal of School Health, Vol. 78, Issue 9, Sept. 2008, 506-513.*, ProQuest Educational Journals, American School Health Association
- Shaw, S.F. et al. (Name all authors) (2005). "Effects of a classroom-based Asthma education curriculum on asthma knowledge, attitudes, self-efficacy, quality of life, and self-management behaviors among adolescents. *American Journal of Health Education, Vol. 36, Issue 3, ADD page #'s.*

# References

- The Pediatric/Adult Asthma Coalition of New Jersey  
[WWW.PACNJ.org](http://WWW.PACNJ.org) retrieved 3/18/09
- The New Jersey Department of Education  
[WWW.njdoe](http://WWW.njdoe)
- Zapka, J. M.; Lemon, S. C.; R. P.; & Hale, J. (2009). Lifestyle behaviors and weight among hospital-based nurses. *Journal of Nursing Management*, 17, 853 – 860.