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A Study of Emergency Room Utilization Related to Poorly Controlled Asthma in Pediatrics

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Gardner-Webb University

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A Study of Emergency Room Utilization
Related to Poorly Controlled Asthma in Pediatrics

By

Leistey T. Wortman, RN, BSN

A scholarly thesis submitted to the faculty of
Gardner-Webb University School of Nursing
in partial fulfillment of the requirements for the
Degree of Master of Science in Nursing.

Boiling Springs, North Carolina

2012

Submitted by:

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Date

Approved by:

Vickie Walker, RN, DNP

Date

Abstract

Asthma is a disease of the respiratory system, which causes swelling and narrowing of the airways. Asthma is commonly seen in children. It is the leading cause of hospital stays and school absences. Hospitalization accounts for the single largest portion of the direct health care costs for asthma, estimated at nearly \$18 billion a year (Everage, et al, 2010). Children with asthma may be able to breathe normally most of the time but when they encounter a substance that can cause problems (a “trigger”); an asthma attack (exacerbation) can occur (PubMed Health, 2011). The purpose of this study is to show evidence that asthma action plans and parent education can reduce emergency room visits. Also this study will explore if the parents are using these asthma action plans provided by their medical provider prior to going to the emergency room. A survey for emergency room utilization related to poorly controlled asthma in pediatric patients was used in this research study. The participants were parents of asthmatic children in a health care clinic.

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Chapter I

Introduction

Background

Asthma is the most common chronic condition among children under the age of eighteen, affecting 6.3 million children. Twenty four percent of children between the ages five and seventeen have some limited activity due to asthma. Asthma rates are sharply on the increase, according to the Centers for Disease Control and Prevention, which reports that United States asthma rates rose more than 12 % in 2001 to 2009. Now one in twelve residents have asthma, or about 8 % (CDC, 2011). The 1998 Asthma in America survey indicated that misunderstandings about asthma symptoms and treatment were widespread among patients and that care often fell short of National Asthma Education and Prevention Program (NAEPP) guidelines. Lacking proper information, families may restrict the activities of asthmatic children unnecessarily (PediatricAsthma.org, 2007). Much of the risk of asthma in minority children can be attributed to local irritants, including secondhand cigarette smoke, mold, cockroaches, dust mites, rats, mice, pets and air pollution. Almost 44 % of all asthma hospitalizations are for children (PediatricAsthma.org, 2007). Asthma in children is the cause of almost five million physician visits and more than 200,000 hospitalizations per year (PediatricAsthma.org, 2007).

While all demographic groups showed “significant” increases in asthma rates, the disease still affects children, especially underprivileged children, and particularly underprivileged black children, more than any other group. Among children, boys are more likely to have asthma than girls, but as adults, women are more likely to have

asthma than men (CDC, 2011). Asthma disproportionately affects low-income, minority and inner city populations with higher morbidity and mortality rates. African-American children are more likely to be hospitalized due to asthma complications than Caucasian children, and are four times as likely to die from asthma (PediatricAsthma.org, 2007).

The significance of this study is to determine if individualized asthma action plans along with asthma education help in controlling pediatric asthma for parents thus reducing emergency room visits of asthmatic children. Asthma has been an ongoing condition that tends to be over looked a lot in the medical field causing patients chronic problems. Once completed, the data from this study will enhance parents of pediatric patients overall satisfaction with their asthma control as well as reduce unwanted emergency room visits for the parents of asthmatic children due to uncontrolled asthma.

Theoretical Framework

This study will follow the conceptual framework of Pender's Health Promotion Model, designed by Nola J. Pender. The health promotion model (HPM) proposed by Nola J Pender (1982; revised, 1996) was designed to be a "complementary counterpart to models of health protection."

Pender's Model defines health as a positive dynamic state rather than simply the absence of disease (Nursing-Theory.org, 2011). Health promotion is directed at increasing a patient's level of well-being. The health promotion model describes the multidimensional nature of persons as they interact within their environment to pursue health (Nursing-Theory.org, 2011).

Pender's model focuses on three areas: individual characteristics and experiences, behavior-specific cognitions and affect, and behavioral outcomes. The theory notes that

each person has unique personal characteristics and experiences that affect subsequent actions. The set of variables for behavior specific knowledge and affect have important motivational significance. The variables can be modified through nursing actions.

Health promoting behavior is the desired behavioral outcome, which makes it the end point in the Health Promotion Model. These behaviors should result in improved health, enhanced functional ability and better quality of life at all stages of development. The final behavioral demand is also influenced by the immediate competing demand and preferences, which can derail intended actions for promoting health (Nursing-Theory.org, 2011).

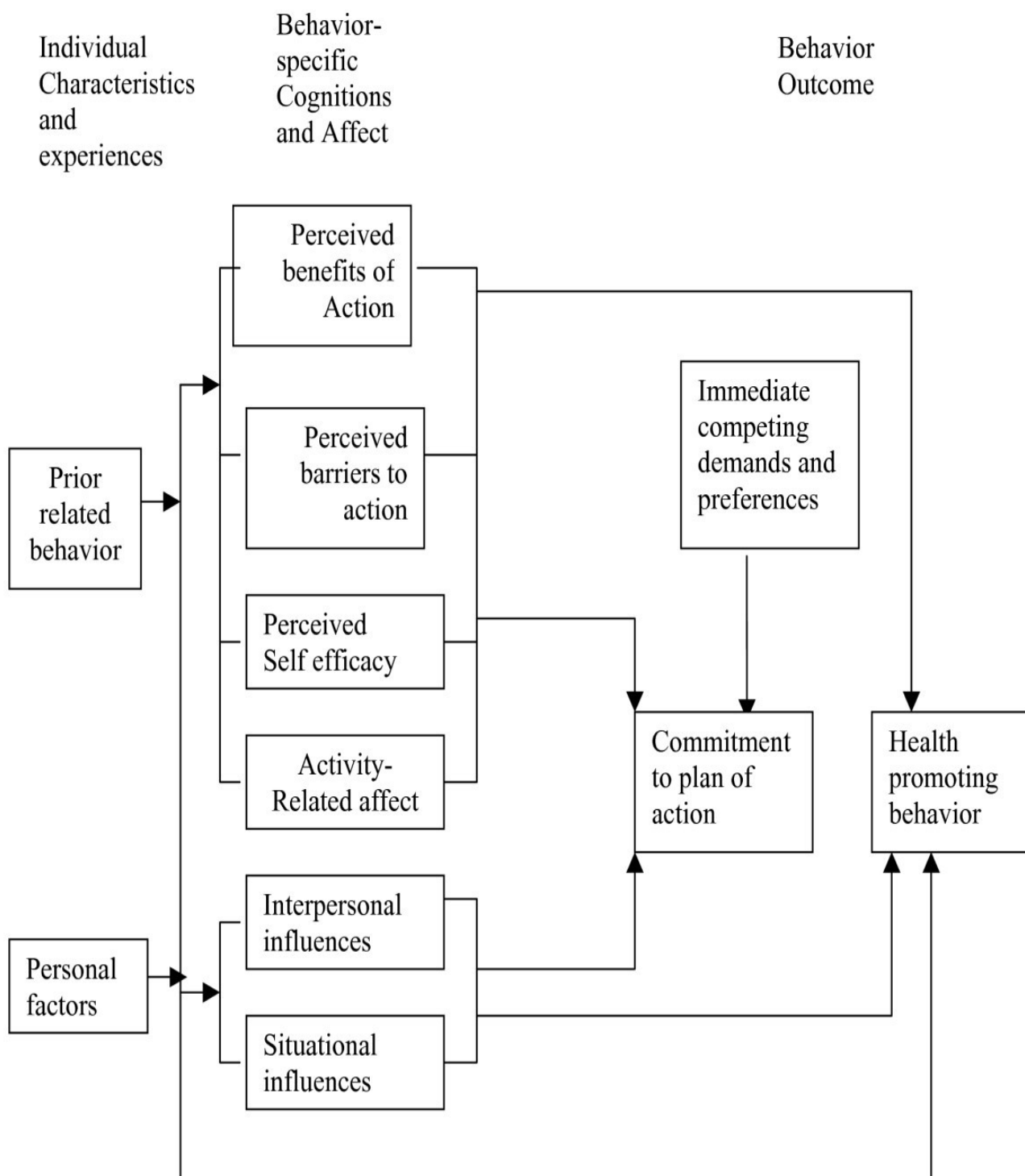
The Health Promotion Model makes four assumptions:

- 1) Individuals seek to actively regulate their own behavior.
- 2) Individuals, in all their bio psychosocial complexity, interact with the environment, progressively transforming the environment as well as being transformed over time.
- 3) Health professionals, such as nurses, constitute a part of the interpersonal environment, which exerts influence on people through their life span.
- 4) Self-initiated reconfiguration of the person-environment interactive patterns is essential to changing behavior (Nursing-Theory.org, 2011).

Purpose and Rationale

The purpose and rationale of this study is to explore parents of asthmatic children's views and their understanding of asthma in the pediatric population. The following research questions were considered for this study: Can emergency room visits

and frequent pediatrician visits be decreased with the use of an asthma action plan and parental education?

Figure 1: *Health Promotion Model Diagram*

Chapter II

Review of the Literature

A literature review of eight studies was completed to investigate pediatric asthma and ways of controlling it. The literature review will provide possible solutions in aiming to control asthma in pediatric patients.

A cross-sectional study conducted by Flores, et al. (2009) on urban minority children with asthma: substantial morbidity, compromised quality and access to specialist, and the importance of poverty and specialty care. The study examined African American and Latino children ages two to eighteen years old with a primary diagnosis of asthma who resided in Milwaukee, Wisconsin. Through questionnaires the researchers gathered data. Of the 648 candidates assessed for eligibility 220 were eligible. The study findings revealed urban children with asthma experience substantial morbidity, averaging one asthma symptom daily, one exacerbation monthly, and seven missed school days, six missed parental workdays, three emergency department visits, and one hospitalization yearly. The study recommends using a written asthma action plan because they are associated with significantly reduced odds of asthma exacerbations (Flores et al., 2009).

A study was conducted by Chan, Sitaraman, and Dosanjh (2009) on asthma control test and peak expiratory flow rate as independent pediatric asthma management tools. Several visits to a pediatric respiratory clinic in an underserved area in a San Diego County with a predominantly Hispanic population were reviewed. Asthma control test and peak flow measurements were used for data collection. Based on forty-five visits the results showed the average asthma control test score was 21 and the average peak flow measurement was 87.4%. Recommendations were peak flow measurements and

asthma control tests are independent tools and should be used in asthma management (Chan, et al. 2009).

A study was conducted by Magzamen, Patel, Davis, Edelstein, and Tager (2008) on school based asthma education in pediatric children in an urban community. Low income sixth grade and ninth grade students with reported doctor's diagnosis of asthma were studied in addition to a report of asthma symptoms or a recent emergency room visit were reviewed. Data collection was collected through surveys. The results showed that of the 8488 students during the first three years of the intervention 15.4% were identified as asthmatic. The study recommended a school based curriculum be designed for urban students due reduction in symptoms, activity limitations, and health care utilization for intervention participants (Magzamen, et al. 2008).

A longitudinal, population based study was conducted by Bacopoulou, et al. (2009) to examine the prevalence and natural course of asthma from childhood to adolescence in a population based, Greek birth cohort and to identify associated factors. Longitudinal information on asthma symptoms, physician diagnosed and treated, was gathered from 2133 children between the ages of seven and eighteen years of age. The findings of current asthma were 9 % and 5 % at seven and eighteen years of age, respectively. The lifetime asthma was 26.3% at eighteen years of age. The prevalence of asthma symptoms at seven and eighteen years of age was low throughout Greece. The recommendation suggests that nutrition is an important correlate of asthma in Greek children (Bacopoulou, et al. 2009).

A preliminary study conducted by Bruzzese, et al. (2010) investigated the knowledge, prevention and management behaviors, and communication regarding asthma

of teachers of low income, ethnic minority students. Participants were 320 pre-kindergarten through fifth grade classroom teachers who had at least one student with asthma in their class. Data for this study was collected through surveys. The findings revealed asthma knowledge varied among teachers. Most could identify potential triggers, yet few knew that medication taken prior to exercise could prevent symptoms and treat students with asthma thus avoiding exercise. Communication between teachers and school nurses, and teachers and parents was lacking. Teacher's knowledge about asthma and asthma management is limited, especially among those whose students did not have active asthma. Teachers respond reactively to students who have symptoms in class by increasing prevention steps and communication with parents and nurse as a recommendation of the study. A more proactive approach to managing asthma in school is warranted (Bruzzese, et al. 2010).

A retroactive study by Kwong, et al. (2009) was conducted to determine if inner city children lost asthma control when taken off controller medications. Data collection for this study was conducted through surveys. The results revealed patients who had been taken off all inhaled controllers probability of maintaining asthma control was significantly lower compared to patients kept on inhaled controllers. The study concluded that cessation of all asthma controllers in previously well controlled asthmatic children resulted in a loss of asthma control by a significant number. Data supports recommendations from national asthma guidelines to step down controller therapy, but clinical monitoring is important to reduce impairment due to loss of control (Kwong, et al. 2009)

In a study conducted by Ko, et al. (2009) identifying parameters that accurately

assess asthma control will reveal benefits in treatment decisions. The study evaluated its correlation with the treatment decisions made by asthma specialists in an outpatient clinic setting, and compared its performance with other convention parameters including spirometry, peak expiratory flow rate, fractional exhaled nitric oxide and bronchial hyper responsiveness. The 383 study subjects completed a one month dairy of symptoms and peak expiratory flow rate before assessment. All subjects then completed the asthma control test together with same day spirometry and FeNO measurement. Bronchial hyper responsiveness to methacholine was performed in 73 subjects in the week before assessment. The findings found that asthma control tests less than twenty best correlated with uncontrolled asthma. When compared with FeNo, spirometry, peak expiratory flow rate and bronchial hyper responsiveness parameters the asthma control test score was highest for changing asthma therapy. The study recommended the asthma control test correlated best with treatment decisions made by asthma specialists (Ko, et al, 2009).

In a longitudinal study conducted by Zuidgeest, et al. (2010) evaluated asthma medication use and first results regarding the prevalence and incidence of medication use. This study is a prospective birth cohort study among 3963 Dutch children. Prescription information of family members was used to determine whether medication histories were complete from birth until age eight. The study was based on children with established medical histories. A first prescription for asthma medication was filled before age eight by 280 children, with 88% starting therapy before age five Zuidgeest, et al. (2010). The results shown for all the children who started therapy, 91% received short-acting b2 agonists and 61.1% inhaled corticosteroids Zuidgeest, et al. (2010) . The applied method of data collection rendered a data set including 777 children with complete medication

histories for their first eight years of life. Recommendations from this study included families to keep complete and accurate records along with age it was prescribed and medications they are on or have taken (Zuidegeest, et al, 2010).

Summary

In summary of the literature review for the above eight studies the researcher felt that a study on pediatric asthma is well warranted. Asthma is such a growing disease in children. The researcher warrants that asthma action plans and asthma education provided at the doctors office to the parent of the asthmatic child/children will reduce asthma attacks, asthma flares, frequent pediatrician visits, and unwanted emergency room visits.

Chapter III

Methodology

Design, Setting, and Sample

This study was based on quantitative research. Quantitative research is a formal, objective, systematic process in which numerical data are used to obtain information about the world. This research method was used to describe variables, examine relationships among variables, and determine cause and effect interactions between variables. Currently, the predominantly used method of scientific investigation in nursing is quantitative research (Burns & Grove, 2009).

The research was conducted on random low poverty asthmatic children's parents. The population that was studied was the parents of children diagnosed with asthma ages birth to eighteen years of age both male and female. The research took place in a child health clinic.

Instruments

The instruments used to collect data included a demographic questionnaire and survey developed by the researcher related to emergency room utilization in pediatric asthma for parents to complete. Data gleaned from the demographic questionnaire included age, gender, marital status, ethnicity, and education level. The survey was composed of Likert-type scale questions rating the asthmatic child's parent's opinions regarding asthma action plans. The survey was reviewed by three professionals in asthma for face validity. A Family Nurse Practitioner specializing in pediatrics and certified in Asthma. Child health clinic Supervisor specializing in asthma care for pediatric patients. A Registered Nurse in the child health clinic that specializes in asthma

care where she performs all asthma sick and well visits. Recommendations were given and corrections were made to the survey accordingly. Collection of data is reviewed and analyzed. Coded data was entered into a personal computer for analysis utilizing Excel.

Ethical Consideration

Permission to complete this study was obtained from the Institutional Review Board (IRB) of Gardner-Webb University (Appendix A). Participants agreeing to take part in the study received a consent form assuring anonymity and voluntary participation (Appendix B), and a copy of the Demographic Questionnaire and Asthma Survey (Appendix C).

Procedure

I received permission for the study from the university Institutional Review Board (IRB), and permission from the Supervisor of the child health clinic to perform the study. The demographic questionnaire and survey with consent form was distributed to the clinic for distribution to participants. Completion of the questionnaires occurred in the child health clinic and adequate time was allowed for each participant. The researcher was not present during the completion of the surveys.

Chapter IV

Results

The participants of this study consisted of parents of asthmatic children at a child health clinic. The research sample consisted of participants which were all mothers. Of the participants participating in the study, the mean age of the mothers was 31.55 years of age with participants ranging in age from 17 to 44 years of age. The majority of the study sample was married African American women and education levels vary from 8th grade to college/university level. Tables 1 and 2 give the frequency and percent of all the demographic data for the study. Tables 3-14, include the descriptive data obtained by the Asthma Survey Questionnaire.

Table 1

Demographic Data

		<i>Frequency</i>	<i>Valid Percent</i>
Gender	Male	0	0
	Female	9	100
Race/Ethnic	African American	7	77.8
	Caucasian	2	22.2
Marital Status	Single	2	22.2
	Married	5	55.6
	Separated	2	22.2

Table 2

Educational Level

<i>Educational Level</i>	<i>Frequency</i>	<i>Valid Percent</i>
8th Grade	1	11.1
11th Grade	2	22.2
12th Grade	1	11.1
2 Years College/University	2	22.2
6 years College/University	1	11.1
7 years College/University	2	22.2

Table 3

Frequencies and Percentages: Parent Expectations: Has your child's doctor told you your child has asthma?

	<i>Frequency</i>	<i>Valid Percent</i>
Yes	9	100
No	0	0

Table 4

Frequencies and Percentages: Parent Expectations: Has your child's doctor given you an asthma action plan?

	<i>Frequency</i>	<i>Valid Percent</i>
Yes	9	100
No	0	0

Table 5

Frequencies and Percentages: Parent Expectations: Has a copy of the asthma action plan, with medication permission form, been given to your child's school?

	<i>Frequency</i>	<i>Valid Percent</i>
Yes	7	77.7
No	2	22.2

Table 6

Frequencies and Percentages: Parent Expectations: My doctor explained to me how to use my child's asthma action plan?

	<i>Frequency</i>	<i>Valid Percent</i>
Strongly Disagree	2	22.2
Agree	1	11.1
Strongly Agree	6	66.6

Table 7

Frequencies and Percentages: Parent Expectations: As a parent of a child with asthma, I understand how to use the asthma action plan?

	<i>Frequency</i>	<i>Valid Percent</i>
Strongly Disagree	2	22.2
Agree	1	11.1
Strongly Agree	6	66.6

Table 8

Frequencies and Percentages: Parent Expectations: As a parent does your child's asthma action plan assist you in management of your child's asthma?

	<i>Frequency</i>	<i>Valid Percent</i>
Strongly Disagree	2	22.2
Agree	1	11.1
Strongly Agree	6	66.6

Table 9

Frequencies and Percentages: Parent Expectations: I will refer to the asthma action plan prior to taking my child to the emergency room.

	<i>Frequency</i>	<i>Valid Percent</i>
Strongly Disagree	2	22.2
Neither Agree/Disagree	2	22.2
Agree	1	11.1
Strongly Agree	4	44.4

Table 10

Frequencies and Percentages: Parent Satisfaction: As a parent of a child with asthma, I am fully satisfied with the asthma action plan to treat my child's asthma.

	<i>Frequency</i>	<i>Valid Percent</i>
Strongly Disagree	2	22.2
Agree	2	22.2
Strongly Agree	6	66.6

Table 11

Frequencies and Percentages: Parent Satisfaction: My doctor explained the use of the asthma action plan to me, so that I was comfortable with its use.

	<i>Frequency</i>	<i>Valid Percent</i>
Strongly Disagree	2	22.2
Agree	1	11.1
Strongly Agree	6	66.6

Table 12

Frequencies and Percentages: Parent Satisfaction: I trust the instructions given by my doctor regarding my child's asthma action plan.

	<i>Frequency</i>	<i>Valid Percent</i>
Strongly Disagree	2	22.2
Agree	3	33.3
Strongly Agree	4	44.4

Table 13

Frequencies and Percentages: Parent Satisfaction: I trust the asthma action plan enough to try all the instructions listed on the plan prior to taking my child to the emergency room.

	<i>Frequency</i>	<i>Valid Percent</i>
Strongly Disagree	2	22.2
Neither Agree/Disagree	2	22.2
Agree	2	22.2
Strongly Agree	3	33.3

Table 14

Frequencies and Percentages: Parent Satisfaction: How many times have you taken your child to the emergency room since using the asthma action plan?

	<i>Frequency</i>	<i>Valid Percent</i>
Unsure	1	11.1
Zero	3	33.3
Once	1	11.1
Three	3	33.3
Four	1	11.1

Chapter V

Discussion

Interpretation of Findings

The purpose of this study was to explore asthmatic children's' parents and their understanding of asthma in the pediatric population. The following research questions were considered for this study: Can emergency room visits and frequent pediatrician visits be decreased with the use of an asthma action plan and parental education? The sample ($n=9$) completing the survey resulted in substantiate benefits of having an asthma action plan for parents with asthmatic children. The results of this study suggested that although an asthma action plan is a great option to help control pediatric asthma for parents; all study participants are not completely satisfied with the use of an asthma action plan for their child/children asthma control.

Limitations

Generalization of the findings of the study is limited due to the small sample size and short amount of research time. In addition, the use of a health department resulted in lack of diverse participant representation. The majority of participants were married, female and African American. Data regarding socioeconomic status was not determined.

Implications of Nursing

This research study will be beneficial to pediatric providers and nurses as well as parents of asthmatic children. It is very difficult to manage asthma in a pediatric population in this modernized society with the expectation of only treating asthma when a flare occurs.

Implications for Further Research

This research study was conducted using participants at only one health department for a period of one week and a half. In, addition, all asthma action plans provided within this particular facility were written by the same provider.

A limitation of this study was due to the small sample size, and the use of convenient sampling. It would be beneficial to repeat this research study using a larger population of participants, thus creating a larger sample size. A larger range of participants could be obtained by surveying parents of asthmatic children throughout all pediatrician offices at a specified county during a longer amount of time. In addition, all study participants were female. It would be beneficial to view any differences which may exist in the expectations of a father and mother.

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Appendix A

Gardner-Webb University IRB Approval Letter



THE INSTITUTIONAL REVIEW BOARD
of
GARDNER-WEBB UNIVERSITY

This is to certify that the research project titled
Emergency Room Utilization related to Poorly Controlled Asthma in Pediatrics

being conducted by Leistey Wortman

has received approval by the Gardner-Webb University IRB.

Date 6-19-12

Exempt Research

Signed [Signature]
Department/School/Program IRB Representative

[Signature]
Department/School/Program IRB Member

Expedited Research

Signed _____
Department/School/Program IRB Representative

Department/School/Program IRB Member

IRB Administrator or Chair or Institutional Officer

Non-Exempt (Full Review)

Signed _____
IRB Administrator

IRB Chair

IRB Institutional Officer

Expiration date _____

IRB Approval:

Exempt Expedited Non-Exempt (Full Review)

Revised 09-09

Appendix B

Participant Consent Form

Study Title: Emergency Room Utilization related to Poorly Controlled Asthma in Pediatrics

Investigator: Leistey Wortman RN, BSN

You are being asked to participate in a research study on emergency room utilization related to poorly controlled asthma in pediatrics.

Your involvement in this study will consist of answering a survey that includes demographic data that relates to your child's asthma. Participation in this study is voluntary; you are under no obligation to participate. You have the right to withdraw at any time. Your care will not be affected by your agreement or disagreement to participate in this study, nor will it affect the relationship with the health care team. There are no foreseeable risks associated with this study, nor should you experience any discomforts. Although this study will not benefit you directly, it will provide information that might enable healthcare providers to more efficiently educate, assist, and care for pediatric asthma patients. Upon completion of the survey that is your consent to participate in this research study.

The study data involves a survey in which you will choose the response that best describes your thoughts and experiences regarding the use of an asthma action plan in your child's asthma care. In addition some demographic data will be needed in terms of age, race, education level, employment status, and marital status. Your identity will be anonymous; at no time will your name need to be given to the researcher. The survey will take approximately 10 minutes to complete.

After completing the survey, you will be asked to place it in the preprinted envelope provided and seal the envelope and give it to the child health nurse who will then turn all envelopes into the investigator.

You are free to ask any questions about the study. You may call the researcher Leistey Wortman RN, BSN at (704) 685-0168 or Dr. Vickie Walker at (704) 406-4384 if you have any further questions.

Appendix C

Demographic Questionnaire and Asthma Survey

Thank you for taking the time to assist with research regarding the use of asthma action plans in your child's asthma well visit.

Demographics (Please fill out the following)

1. Age of mother _____ or age of father _____

2. Race: (Please circle one)

White/Caucasian African American Latino Asian
Other _____

3. Educational Level: (Please circle highest grade completed)

6 7 8 9 10 11 12

College number of years: 1 2 3 4 5 6 7 8

Did you graduate college with a degree: Yes

No

4. Are you employed? (Please circle)

Yes No If yes, please list type of
employment _____

5. Marital Status: (Please circle one)

Single Married Divorced Widowed Separated

Parent expectations in the care of their child with asthma (Please circle the response that best fits your feelings regarding the care of your child/children with asthma.)

Question 1: Has your child's doctor told you your child has asthma?

Yes No

Question 2: Has your child's doctor given you an **asthma action plan**?

Yes No

Question 3: Has a copy of the **asthma action plan**, with medication permission form, been given to your child's school?

Yes No

Question 4: My doctor explained to me how to use my child's **asthma action plan**.

1. Strongly Disagree 2. Disagree 3. Neither Agree/Disagree 4. Agree 5. Strongly Agree

Question 5: As a parent of a child with asthma, I understand how to use the **asthma action plan**.

1. Strongly Disagree 2. Disagree 3. Neither Agree/Disagree 4. Agree 5. Strongly Agree

Question 6: As a parent does your child's **asthma action plan** assist you in the management of your child's asthma?

1. Strongly Disagree 2. Disagree 3. Neither Agree/Disagree 4. Agree 5. Strongly Agree

Question 7: I will refer to the **asthma action plan** prior to taking my child to the emergency room.

1. Strongly Disagree 2. Disagree 3. Neither Agree/Disagree 4. Agree 5. Strongly Agree

Parent Satisfaction with asthma action plans with their child/children (Please circle the response that best fits your experience.)

Question 1: As a parent of a child with asthma, I am fully satisfied with the **asthma action plan** to treat my child's asthma?

1. Strongly Disagree 2. Disagree 3. Neither Agree/Disagree 4. Agree 5. Strongly Agree

Question 2: My doctor/provider (explained) the use of the **asthma action plan** to me, so that I was comfortable with its use.

1. Strongly Disagree 2. Disagree 3. Neither Agree/Disagree 4. Agree 5. Strongly Agree

Question 3: I trust the instructions given by my doctor/provider regarding my child's **asthma action plan**.

1. Strongly Disagree 2. Disagree 3. Neither Agree/Disagree 4. Agree 5. Strongly Agree

Question 4: I trust the **asthma action plan** enough to try all the instructions listed on the plan prior to taking my child to the emergency room?

1. Strongly Disagree 2. Disagree 3. Neither Agree/Disagree 4. Agree 5. Strongly Agree

Question 5: How many times have you taken your child to the emergency room since using the **asthma action plan**? Have you taken your child's AAP with you to the ER?
