# DEVELOPMENT OF AN ASTHMA SCREENING INSTRUMENT TOOL FOR USE WITH PARENTS OF CHILDREN WHO PRESENTED WITH ALLERGY SYMPTOMS

**Ms. Neena Mathew***

**MSN, FNP-BC, PMHNP-BC*

DOI: http://doi.org/10.47211/idcij.2022.v09i02.003

***ABSTRACT***

*Studies have shown that in general parents may not be familiar with the early symptoms of asthma in children. The purpose of this project was to develop a screening questionnaire for parents of children who presented to care with symptoms of allergy and asthma. The theoretical framework used was Ernestine Weidenbach's theory titled, "The helping Art of Clinical Nursing". An asthma symptom screening questionnaire tool was developed by this researcher and was evaluated by three professional specialists for content validity. A five item Likert scale was used to determine usefulness of the asthma screening questionnaire. The results were presented in both narrative and table format.*

***Keywords**: Allergy symptoms, screening, asthma.*

**ABOUT AUTHOR:**

Author Ms. Mathew is a Board Certified Nurse Practitioner who is qualified to practice in both primary care and psychiatry; diagnose, treat, and prescribe medication for across the life span including children, adolescents, adults and older adults. She is currently working as a Lead Nurse Practitioner with Park Place Behavioral Healthcare, since 2016, which is a community mental health care facility in Orlando Florida. Some of her practice specialties include (but not limited to) ADHD, Depression, Anxiety and Bipolar. Mathew's style of practice can be traditional (prescribing up to date psychiatric medications) or alternative medicine (natural treatments including but not limited to vitamins, supplements, lifestyle modification, nutrition, exercise and stress management). She believes in the mind/body/spiritual connection, and we are made up as a whole person and not a series of parts, just as Hippocrates "The Father of Medicine."

**INTRODUCTION**

Asthma is the most common chronic disease of childhood, affecting more than 6 million children in the United States (US) (Sawicki & Dovey, 2009). Establishing a diagnosis of asthma involves a careful process of history taking, physical examination, and diagnostic studies. Many recent studies have indicated a high incidence of asthma and asthma-like conditions among school-aged children. Asthma, takes a toll on children in terms of school attendance and performance, and asthma is given as the reason for a school absence in a high percentage of children (Raoul et al., 2003).

Allergen exposure is a significant trigger of asthma exacerbation for many patients with asthma (Platts-Mills et al., 2007). The National Asthma Education and Prevention Program Expert Panel guidelines for the management of asthma recommends that patients who require daily asthma medications have allergy testing for perennial indoor allergens. The guidelines propose that when triggers are found, exposure to allergens and pollutants should be controlled through avoidance and abatement (Platts-Mills et al., 2007). Patients whose symptoms are not well controlled with these interventions are candidates for treatment by an allergist. However, the data supporting the recommendations to asthma-allergy specialist are not consistent. Although there is evidence that simply using allergen avoidance measures are ineffective, there is good evidence for the effectiveness of a comprehensive approach to allergen control based on known sensitization (Platts-Mills et al., 2007). Thus, allergen avoidance may include removal of pets, use of high-efficiency particulate air filtration and vacuum cleaners, use of allergen-impermeable mattress and pillow covers, cockroach extermination, smoking cessation, and measures to control mold growth in the home (Platts-Mills et al., 2007). According to Platts-Mills et al in a population with severe asthma, moderate to severe allergic rhinitis, is a strong predictor for greater severity of asthma. Development of allergen-specific treatment plan is dependent on defining sensitization. Raoul states that this process can be achieved through serum assays of immunoglobulin E (IgE) antibodies or skin tests with aeroallergens also known as radioallergosorbent test (RAST), which is a blood test, testing allergen-specific IgE antibody test used to screen for an allergy to a specific substance or substances, if a person presents with acute or chronic allergy-like symptoms. This is especially true if symptoms are recurrent and appear to be tied to triggers, such as exposures to particular foods or environments, and if other family members are known to have allergies. Information on sensitization can be used to educate patients about the role of allergens in their symptoms, to provide avoidance advice (Platts-Mills et al., 2007).

**Statement of Purpose**

The purpose of this project was to develop a brief screening tool to assist parents of children in recognizing the early signs of allergy, which can trigger asthma and promote early intervention to control symptoms. This tool was also designed to provide information about treatment options for children affected by allergies and asthma.

**Conceptual Framework**

Ernestine Wiedenbach developed a theory called The Helping Art of Clinical Nursing (Sitzman & Eichelberger, 2004). Wiedenbach believed that there were four main elements to clinical nursing. They included: a philosophy, a purpose, a practice and the art. Nurse's philosophy is defined as the attitude and belief about life and how that affects reality. Wiedenbach believed that the philosophy is what motivates nurses to act in a certain way.

Wiedenbach's philosophical components included: reverence for life, respect for the dignity, worth, autonomy and individuality of each human being and resolution to act on personally and professionally held beliefs (Sitzman & Eichelberger, 2004).

The purpose of this theory can be explained as something the nurse wants to accomplish through what she does. It is all of the activities directed towards the overall good of the patient. Wiedenbach states that practices are those observable nursing actions that are affected by beliefs and feelings about meeting the patient's need for help (Sitzman & Eichlberger, 2004).

The fourth element, the art of nursing includes understanding patient's needs and concerns, developing goals and actions intended to enhance patient's ability and directing the activities related to the medical plan to improve the patient's condition. The nurse also focuses on prevention of complications related to reoccurrence or development of new concerns (Sitzman & Eichlberger, 2004).

Wiedenbach concludes nursing as the practice of identification of a patient's need for help through observation of presenting behaviors and symptoms, exploration of the meaning of those symptoms with the patient, determining the causes of discomfort, and determining the patient's ability to resolve the discomfort or if the patient has a need for help from the nurse or other healthcare professionals. Nursing primarily

consists of identifying a patient's need for help. The patient's perception of the situation is an important consideration to the nurse when providing competent care (Sitzman & Eichelberger, 2004).

According to Wiedenbach environment is defined as any measure desired by the patient that has the potential to restore or extend the ability to cope with various life situations that affect health and wellness.

Wiedenbach describes health to be the result of disciplined functioning of mind and emotions, which improves with expanded knowledge and increased clarity of professional purpose. In preparing to develop this screening tool, the Helping Art of Clinical Nursing Theory relates to this project in the following ways: (1) the patient is defined as the parent of child affect with allergy or asthma symptoms. By helping the parents of children and their care takers understand the importance of screening for allergy and asthma symptoms, the outcome will be increased recognition of allergy and asthma in children and will be beneficial to the child, (2) The philosophy transcends the relationship between the researcher and the profession of nursing. Observing the need for the parents of children to have information on how to screen asthma and allergy symptoms is the motivation behind the development of the screening tool. (3) The purpose is the connection identified between level of the parent's information related to the signs and symptoms of children's allergy and asthma as well as the compliance of the parents of children to the immunotherapy and other treatment methods. (4) The practice section of Wiedenbach's theory involves the creation of the actual product which this researcher will meet the need of the patients, and (5) The art of nursing, which is a major component of Wiedenbach's theory relates to this project in that the needs and concerns of the patient were assessed and a plan was implemented to address those needs. The final product will assist in improving the recognition of children's allergy and asthma thereby decreasing the co-morbidities associated with this diagnosis.

**Literature Synopsis**

The domains of nursing, medicine, sociology, psychology, and education are included in this initial literature review to provide a complete and detailed understanding of childhood asthma and allergies and the effect that it can have on the child and his or her family. Research included in this review is designed to provide the reader with the ability to develop a better understanding of parent and child development and the effect of a parent's influence on a condition that often involves the entire family unit.

Significance and Justification

Asthma is a chronic inflammatory disorder of the airways that affects 5% to 13% of the pediatric population (Bloom, Dey & Freeman, 2005). Healthcare providers and parents need informational and educational tools to assist them in recognizing the signs and symptoms of allergy and asthma in children. Parents also require resources to help the child adjust to treatment options like the immunotherapy to decrease the co-morbidities resulting from childhood asthma. The public thus need to be made aware that there is a very high prevalence of wheezing symptoms and that a substantial proportion of these children experience severe symptoms and problems with sleep, school absences, and exercise intolerance. Allergy related diseases, should be managed in order to reduce the consequences in these children's lives. Efforts should be made to test interventions to help reduce the disease burden in this population.

**Project Objectives**

The objectives of this project are to:

1. Conduct an in-depth literature review using the key terms allergy, asthma, seasonal allergy, asthma and atopy and asthma and children review the best guidelines for diagnosing child or children with asthma.
2. To develop an allergy screening questionnaire for parents of children who presented with allergy and asthma in an effort to assist with early diagnosis and treatment.
3. To determine the content validity of the screening tool based on review by three content experts in the field including a pediatric consultant, a family physician and a family nurse practitioner.

**Definition of Terms**

The following terms are defined theoretically and operationally.

- *Parent/Caregiver*

  Theoretical definition: A person that cares for a child by providing a nurturing a constructive environment that promotes growth and development (Encyclopedia & dictionary of medicine, nursing, and allied health, 2003).

  Operational definition: The person in the child's life that provides care for child and protects the child from coming in contact with the triggering allergens for asthma and manages care of child with asthma.

- *Child*
  Theoretical definition: the human young from infancy to puberty (Dorland's Illustrated Medical Dictionary, 2000).
  Operational definition: Any person from 0-18yrs of age affected by allergy or asthma symptoms visiting the primary health centers for care.

***Allergy***

Theoretical definition: A state of abnormal and individual hypersensitivity acquired through exposure to a particular allergen re-exposure revealing heightened capacity to react (Encyclopedia & dictionary of medicine, nursing, and allied health, 2003).

Operational definition: Any triggering factor that can initiate asthma symptoms.

***Allergen***

Theoretical definition: A substance, protein or nonprotein capable of inducing allergy or specific hypersensitivity (Encyclopedia & dictionary of medicine, nursing, and allied health, 2003).

Operational definition: An allergen is a substance that can cause an allergic reaction.

***Asthma***

Theoretical definition: Asthma is a condition marked by recurrent attacks of dyspnea, with wheezing due to spasmodic constriction of the bronchi (*Encyclopedia & Dictionary of Medicine, Nursing, And Allied Health*, 2003).

Operational definition: Asthma is a condition that makes one hard to breathe.

***Awareness***

Theoretical definition: The ability to receive and differentiate sensory stimuli (Encyclopedia & Dictionary of Medicine, Nursing, and Allied Health, 2003).

Operational definition: Knowledge of allergies that, prompts asthma exacerbation.

***Trigger***

Theoretical definition: That which initiates or causes.

Operational definition: Factors that initiates or exacerbate asthma

***Immunotherapy***

Theoretical definition: Passive immunization of an individual by administration of preformed antibodies actively produced in another individual (Encyclopedia & Dictionary of Medicine, Nursing, and Allied Health, 2003).

Operational definition: Immunotherapy is an allergy shot those fights against allergens, which may trigger allergy symptoms.

***Wheezing***

Theoretical definition: breathing with a rasp whistling sound (Encyclopedia & Dictionary of Medicine, Nursing, and Allied Health, 2003). Operational definition: A common symptom and precursor detector of asthma.

**Limitations**

1. The screening tool was only developed in English and may not be beneficial to non-English speakers.
2. This screening tool was developed to raise awareness of parents who have children with allergy and asthma symptoms, which would not be beneficial for use to the adult population.
3. This screening tool was developed for eventual use with parents whose children attend outpatient clinics of the Greater Toronto Area and may not be beneficial to clients outside this area.

**Procedure for Data Collection**

After permission was obtained from the D'Youville College Institutional Review board (see Appendix A), a letter of interest was hand delivered to 3 content experts, including a Pediatrician with an expertise in the area of asthma and allergy who has worked with children for over 20 yrs, a family physician who has experience of over 30 yrs in outpatient clinics with a practice focused on children having asthma and allergy and a masters prepared nurse practitioner with 10yrs experience in a primary care setting seeing children with asthma. All of the content experts have expert knowledge in the area of asthma and allergy (see Appendix B). Each of the content experts was provided with a copy of the "Allergy-Asthma Screening Questionnaire" (see Appendix C) and the "Allergy-Asthma Screening Questionnaire Evaluation Tool" (see Appendix D) via hand delivery. Each content expert had one-week to complete the evaluation tool provided. They were also given the researcher's phone number and email address for any questions pertinent to the evaluation. A self addressed stamped envelope was provided for the return of the evaluation tool. The researcher reviewed the evaluation tool and suggestions to revise the questionnaire content were considered. A summary of the study results was reported

in aggregate format and will be available to each of the content experts upon the project completion if requested.

**Plan for Protection of Human Rights of the Participants**

Following approval from the D'Youville College Institutional Review Board, three experts in the field of asthma and allergy were approached in person and asked to voluntarily participate in the review of the proposed questionnaire for content validity. The researcher has a collegial, professional relationship with the participants and has no supervisory or evaluative capacity. Participation or non-participation would have no effect on their employment or evaluative status.

Participants were guaranteed confidentiality as identifying information would not be displayed on the evaluation form and all data would be reported in aggregate form. Return of the completed evaluation form would indicate the experts implied consent to participate in this project. Participation was completely voluntary and participants would not be able to withdraw once the completed evaluation forms were returned as there would be no way to identify them.

Completed evaluation forms and all data will be kept in a locked file cabinet in the researcher's home for six years. All records will be destroyed by shredding following this six year period. Participants can receive a summary copy of the project results by mail if requested via email to the researcher.

**Evaluation Plan of the Project**

Five items related to the readability, accuracy, usefulness, literacy and adherence to best practice guidelines will be rated on a 5-point Likert scale by the participants indicating whether they: (1.) strongly disagree (2.) disagree (3.) undecided (4.) agreed or (5.) strongly agreed with the statements.

**LITERATURE REVIEW**

**Childhood Asthma and Allergies**

Asthma is a condition marked by recurrent attacks of shortness of breath and wheezing due to spasmodic constriction of the bronchi (Encyclopedia & Dictionary of Medicine, Nursing, Allied Health, 2003). Asthma is an acute and chronic inflammatory disorder of the airways, affecting about 10% of children and 5-7 % of the adult population. Improved asthma control will not only benefit the patient but may result in reduced financial expenditure in poorly controlled asthma health care.

Atopy Symptoms and Management

According to Dowdee and Ossege (2006) atopic is defined as a hereditary disorder marked by the tendency to develop immediate allergic reactions to substances such as pollen, food, dander, and insect venoms and manifested by hay fever, asthma, or similar allergic conditions. Children with atopic tendencies often develop symptoms that occur in a predictable progression from atopic dermatitis to gastrointestinal disturbances, chronic serous otitis media, rhinitis, and asthma. Evaluation of this variety of symptoms should be based on a standardized tool to determine their chronicity, family history of atopy, and knowledge of how the information will change patient management (Dowdee & Ossege, 2006). Both skin and blood testing are accurate and useful tools in establishing a diagnosis of allergy related to seasonal symptoms, environmental allergies and food allergies.

Management includes avoidance/environmental control, medications, and, when necessary, referral to specialists (Dowdee & Ossege, 2006). As the incidence of allergic disease increases, the human and monetary costs associated with allergies place a major burden on the healthcare system (Dowdee & Ossege, 2006). Early identification of allergies and appropriate interventions are important to prevent progression to more significant disease (Dowdee & Ossege, 2006). The use of objective diagnostic testing aids in implementing appropriate evidence-based medical management.

A study done by Bobb (2009) shows that tailored allergy advice enables people with asthma to take positive steps that can measurably improve their health. Although allergy testing may require extra nursing time, the benefits are likely to outweigh any additional costs in the long-term (Bobb, 2009).

**Pathogenesis of Asthma in Children**

Platts-Mills et al. state that the form of hypersensitivity associated with asthma are described as IgE mediated, or immediate. This is because histamine release from mast cells or a wheal response to a skin test can occur within 10 minutes, and a bronchial challenge with allergens can cause rapid onset of bronchospasm. However, this immediate response is no longer considered to be a good model for the way in which allergens contribute to asthma pathogenesis. After a positive skin test or bronchial challenge, there is often a late reaction (at 6 to 12 hours) that includes an inflammatory response with mediators other than histamine and a cellular infiltrate. Allergen avoidance studies have provided further evidence for the chronicity of the response in the lungs. When allergic patients are completely removed from exposures in their home because of a hospitalization for

example, recovery from symptoms takes several weeks and reversal of hyperactivity in the lungs takes several months.

The effect of allergen exposure may be obvious; for example, experiencing an exacerbation of asthma within minutes of entering a house containing a domestic animal. Asthma symptoms may also coincide with the pollination season of a tree, grass, or weed. However, for most allergic patients, exposure and symptoms are perennial. Consequently, many patients who are allergic to common indoor allergens are not aware of the role of allergen exposure in their disease. The most common perennial allergens come from dust mites, cats, dogs, and the German cockroach. However, less well-known allergens that have a long season such as a fungus can also contribute to asthma.

**History Taking in Patients with Asthma and Allergies**

Evaluation of patients with asthma should include a history with questions about seasonal increases in pulmonary symptoms; other allergic symptoms; exposure to tobacco; and exposure to allergens at home, at work, or outdoors. Symptomatic rhinitis and rhinosinusitis occur in a large proportion of patients with asthma and are often perennial, whereas conjunctivitis is more common in patients who are allergic to pollen. Seasonal eye symptoms may be present in patients who have perennial nasal and pulmonary symptoms. The history typically is not useful for identifying allergies to dust mite or cockroach allergens.

Consistent with the theory for a delayed and persistent response, patients who are allergic to dust mites or cockroaches often are unaware of the effects of perennial exposure on their lungs. Another complicating factor in the identification of allergens is that many patients become allergic to domestic animals without having shared a house with one, reflecting the fact that measurable airborne cat allergen is present in homes without a cat. Conversely, many children who live in a house with a cat become tolerant to cat allergens. The National Asthma Education and Prevention Program (NAEPP) Expert Panel guidelines for the management of asthma recommend that patients who require daily asthma medications have allergy testing for aeroallergens, including perennial indoor allergens.

**Diagnostic Assessment of Childhood Asthma**

According to Strunk, (2002) a physician faces many challenges in making a definitive diagnosis of asthma in young children. Although there are clinical and historical features consistent with asthma, identical features are present in many other diseases such as chronic bronchitis or emphysema, congestive heart failure, gastroesophageal reflux disease, Furthermore, there is no specific test for asthma (Strunk, 2002). Other diseases must often be ruled out before a definitive diagnosis of asthma is made. Determining whether cough or wheeze is the primary symptom is important because asthma is primarily a wheezing disease. Sweat chloride testing, chest radiography, and allergy skin testing should be performed in children with persistent wheezing to rule out disorders such as cystic fibrosis and help support a diagnosis of asthma.

Allergy skin testing provides particularly useful information for making a diagnosis of asthma in the preschool-aged child (Strunk, 2002). A chart review of patients presenting consecutively to the Division of Allergy and Pulmonary Medicine provides insight and information on an approach to make an asthma diagnosis for this population (Strunk, 2002).

Inheritance seems to be of prime significance in the cause of persistent childhood wheeze. Environmental exposure in early life may combine with this tendency to produce an early onset of persistent wheeze (Kurukulaaratchy, Matthews & Arshad, 2004).

New Findings in Childhood Asthma

Recent research has revealed that children suffering from asthma in the United States are under diagnosed and their asthma is poorly controlled (Watts, 2009). Compelling evidence supports that children classified as having persistent asthma following National Asthma Education Prevention Program-Expert Panel 3 (NAEPP-EPR3) guidelines benefit from daily-inhaled corticosteroid therapy, yet many are misclassified and undertreated. Providers should be encouraged to follow current guidelines from NAEPP-EPR3. Nurse Practitioners can more effectively assess, diagnose, treat, and foster a collaborative self-management plan for children age 5-11 years by using a screening tool like that of a questionnaire to elicit the child's allergic symptoms during an interview with the parents. These interventions will result in an improved quality of life and decreased health risks for this young population (Watts, 2009).

A study done by (Santanello et al., 2006) showed that night time symptoms like that of difficulty going to sleep, night time awakenings and nasal congestion on awakening are a valid and relevant clinical measures that provides important information to the health care provider on the impact of allergic rhinitis and its treatment on the patient.

According to Redline, Larkin, Kercsmar, Berger and Siminoff (2003) asthma prevalence among school-aged children is not only high and increasing, but also that large numbers of school-aged children with asthma symptoms are unidentified. The morbidity of asthma may impact school performance by causing school absenteeism or by adversely influencing functional status, including the ability to participate in school activities and that breathing problems are the most common reason for school absences accounting for 10 million missed school days per year. Redline and et al states that administration of a school-based questionnaire is feasible, with a high response rate and excellent internal consistency. A high sensitivity and acceptable specificity was achieved by using one to two questions for asthma, allergic rhinitis and allergic conjunctivitis. Among the children in grades 2 or above, comparable levels of prediction could be achieved with the student or parent version.

A study done by Wood, Cheah, Lim, Ritz, Miller, Stern, and Mallow (2007) concludes the Asthma Trigger Inventory to be a reliable, valid and useful clinical and research tool to assess the type and degree of asthma triggering in a pediatric population of varied gender, race and socioeconomic status.

According to Kaila, Rautava, Holmberg-Marttila, Vahlberg, Aromma and Sillanpaa (2009) parents are and have many concerns about the future health of their atopic infants. Pediatricians and primary care practitioners need to seek knowledge on long-term outcomes in order to cope with the increasing caseload of suspected allergy and the concerns of parents. The aim of the study was to assess suspected and diagnosed allergy in infants as predictors of allergy and asthma in adolescence. It was concluded that an early ascertained diagnosis of allergy, but not suspicions of allergy, predicts prevailing allergy in adolescence. Therefore efforts need to be focused on accurate diagnosis of early childhood allergies.

A study done by Bjerg, Hedman, Perzanowski, Platts,-Mills and Lundback (2007) on influence of development of asthma in children by interactions between genetic and environmental factors, concluded that as risk factors for childhood asthma, there were major differences between parental asthma and parental asthma and parental atopy. Sibling asthma was only a marker of parental disease. Asthma and atopy despite their causal relationship are separate entities and could be inherited differently.

Existing tools used in assessing asthma are useful in different clinical contexts. Intervention and treatment strategies for the individual are subsequently considered. Prevention efforts should be the start of all interventions; especially educating the parents to enhance disease knowledge and avoidance of environmental triggers. Development of a screening tool like that of a checklist can be used to detect asthma at an early stage and hence help in early intervention.

Asthma affects many Americans and each day more people are diagnosed with asthma which makes it a growing concern for the public. There are several triggers for asthma that patients need to be aware of, pollens, animal dander, and dust mites are just a few. The literature reviewed indicates that it is important that allergy and asthma symptoms are detected early and hence taking an appropriate intervention, to prevent progression, to more significant disease. The use of a screening tool for allergy and asthma will thereby aid in implementing appropriate evidence-based medical management. Thus allergy and asthma screening will require further research.

**PROJECT PROCESSES/METHODOLOGY**

**Setting**

The current setting for this project is a community health care center, a primary health care physician's office and a pediatrician's office in the Greater Toronto Area.

Population

A random convenience sample of pediatrician, a family physician and family nurse practitioner working in a primary health care setting were chosen as my population for the project to review the questionnaire.

The pediatrician with an expertise in the area of asthma and allergy who has worked with children for over 20 yrs, a family physician who has experience of over 30 yrs in outpatient clinics with a practice focused on children having asthma and allergy and a masters prepared nurse practitioner with 10yrs experience in a primary care setting seeing children with asthma. All of the content experts have expert knowledge in the area of asthma and allergy.

The future target population for my study will be parents of children affected with asthma and allergy symptoms.

Each of the content experts was provided with a copy of the "Allergy-Asthma Screening Questionnaire" and the "Allergy-Asthma Screening Questionnaire Evaluation Tool" via hand delivery. Each content expert had one-week to complete the evaluation tool provided. They were also given the researcher's phone number and email address for any questions pertinent to the evaluation. Each participant was asked to complete the

evaluation within one week. A self addressed stamped envelope was provided for the return of the evaluation tool. The researcher reviewed the evaluation tool and suggestions to revise the questionnaire content were considered. A summary of the study results was reported in aggregate format and will be available to each of the content experts upon the project completion if requested.

**Plans for Data Analysis**

The data will be analyzed based on the results from the content experts. This data will be presented in graph and narrative format.

**CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS**

Implementation and Evaluation of the Project

The questionnaire was copied to the CD Rom and the researcher hand delivered the disc to each content expert with the evaluation form attached. Upon return of the evaluation tool, the researcher collated the results into graph and summary format. Experts used the evaluation tool to assess the questionnaire on five items including best practice guidelines, adequate and efficient method of explanation, ascertaining good method of explaining signs and symptoms of asthma to parents who presented with allergies, generally interesting, accurate statistical data and overall effectiveness. These 5 factors were presented in a Likert scale (see Appendix D).

There were a total of 3 content experts that participated in the evaluation. All content experts remained anonymous throughout the process. The results of the evaluation tool are presented in Table 1

Table 1

Results of Content Experts Evaluation of Asthma Allergy Screening Tool

| *Areas Assessed* | *Averages (Ranged 1-5)* |
|---|---|
| Best Practice Guidelines Followed | 5 |
| Aid In Recognition of signs and symptoms | 5 |
| Questionnaire is appropriate and easy to follow | 5 |
| Questionnaire may be used by parents of children with allergies | 5 |
| Questionnaire is effective and well formatted | 5 |

*Note:* The scores denote a mean of the scores of the three content experts from the created evaluation tool using the following guidelines: (1-strongly disagree, 2- disagree, 3- undecided, 4-agree and 5 –strongly agree)

The content experts were also asked to respond to open ended questions as an additional part of the evaluation form. This method would allow the content experts to provide information that may not have been addressed in the Likert scale. This gave the experts the opportunity to include their opinions and suggestions regarding the information provided in the questionnaire. All the three experts agreed that they would readily provide this questionnaire to providers as a teaching tool for increasing awareness and recognition of childhood asthma and allergies. They were also agreeable on the issue that they could not think of anything that should be removed or replaced in the questionnaire.

Under the section of the open questions that requested their ideas about the current methods available used to teach healthcare providers about childhood asthma and allergies, the experts responded similarly. One of the content expert remarked that the questionnaire is effective in helping parents getting information about allergy and asthma symptoms and that it should be available to all primary and appropriate specialty offices.

Another content expert added that the questionnaire could include a component on emergency allergic reaction like that of anaphylaxis.

The process of creating this questionnaire was very rewarding and educational for the researcher. It allowed the researcher to use personal knowledge and experience regarding this diagnosis to educate other healthcare providers. It also included new information and methods that the researcher was unaware of prior to this project. It is the hope of the researcher that many children with asthma and allergies will be diagnosed early and many of the co-morbidities will be avoided.

Implications for Advanced Practice

Childhood asthma and allergy is a condition that is widely misunderstood, mismanaged and misdiagnosed. The questionnaire will hopefully aid in the recognition of the most common signs and of this disorder and will help many children grow and develop without incident. Using this questionnaire in primary care settings, would be invaluable in the speed and efficiency of the treatment that the diagnosis entails. It is primarily, the early recognition that allows for the avoidance of the consequences associated with this disease.

This questionnaire will increase the awareness of parents in the recognition of this disorder in their children. They will be knowledgeable and able to share that knowledge with others. Much of the information included

can also be used in providing education regarding adult onset asthma as well. Although some of the information is specific to the pediatric population, many of the symptoms and co-morbidities are interchangeable between the two age groups.

**Recommendations for Future Research**

There were areas of potential future research that were recognized throughout the development of the project. The questionnaire could be created in multiple languages and actually implemented in several healthcare settings to ensure that there is no significant difference in the reported outcome. Another benefit to this questionnaire would be the inclusion of interviews from parents describing what they view in their homes in an effort to develop some symptomatic commonalties among parents. The questionnaire depicts some of the common signs of allergy and asthma but another child may present quite differently.

Areas for future projects include the researcher herself, conducting the actual questionnaire using personal experience. Another area would be creating support group for parents and child diagnosed with childhood asthma and allergies in an effort to provide information, education and assistance. Finally, the development of a coloring book for children explaining their condition and the course of action for treatment would be helpful.

**REFERENCES**


1. Bjerg, A., Hedman, L., Perzanowski, M. S., Platts-Mills, T., Lundbäck, B., & Rönmark, E. (2007). Family history of asthma and atopy: In-depth analyses of the impact on asthma and wheeze in 7- to 8-year-old children. *Pediatrics, 120*(4), 741-748.
2. Bloom, B., Dey, A. N., & Freeman, G. (2005). Summary Health Statistics for U.S. Children: National Health Interview Survey. *National Center for Health Statistics. Vital Health Stat 10*(231), 2006.
3. Bobb, C. (2009). Tailored allergy advice improves lung health. *Practice Nurse, 38*(7), 6.
4. *Dorland's Illustrated Medical Dictionary.* (2000). Philadelphia: Saunders.
5. Dowdee, A., & Ossege, J. (2006). Assessment of childhood allergy for the primary care practitioner. *Journal of the American Academy of Nurse Practitioners, 19*(2), 53-62.
6. *Encyclopaedia & Dictionary of Medicine, Nursing, and Allied Health.* (2003). In Miller B. F. (Ed.), (7th ed. ed.). Philadelphia: Saunders.
7. Gupta,R. S., & Weiss, K. B.(2009) The 2007 national asthma education and prevention program asthma guidelines: accelerating their implementation and facilitating their impact on children with asthma. *Pediatrics 123*(3), 193-198.
8. Kaila, M., Rautava, P., Holmberg-Marttila, D., Vahlberg, T., Aromaa, M., & Sillanpaa, M. (2009). Allergy from infancy to adolescence. A population-based 18-year follow-up cohort. *BMC Pediatrics, 9*.
9. Kurukulaaratchy, R., Matthews, S., & Arshad, S. (2004). Does environment mediate earlier onset of the persistent childhood asthma phenotype? *Pediatrics, 113*(2), 345-350.
10. Platts-Mills, T., Leung, D. Y. M., & Schatz, M. (2007). The role of allergens in asthma. *American Family Physician, 76*(5), 675-680.
11. Redline, S., Larkin, E., Kercsmar, C., Berger, M., & Siminoff, L. (2003). Development and validation of school-based asthma and allergy screening instruments for parents and students. *Annals of Allergy, Asthma & Immunology, 90*(5), 516-528.
12. Santanello, N. C., Demuro-Mercon, C., Shah, S. R., Schenkel, E. J., Ratner, P. H., Dass, S. B., Norquist, J. M., & Philip, G. (2006). Validation of the nighttime symptoms score as a clinically relevant measure of allergic rhinitis. *Allergy and Asthma Proceedings, 27*(3), 231-239.
13. Sawicki, G., & Dovey, M. (2009). Chronic asthma in children younger than 12 years: Evaluation and diagnosis. Retrieved on June 1, 2010 from http://utdonline.com/online/content/topic.do?topicKey=ped_allg/5151&view=print.
14. Sitzman, K., & Eichleberger, L.W. (2004). Understanding the work of nurse theorist: A creative beginning. Sudbury : Jones and Bartlett.
15. Strunk, R. C. (2002). Defining asthma in the preschool-aged child. *Pediatrics, 109*(2 Suppl), 357-361.
16. Watts, B. (2009). Outpatient management of asthma in children age 5-11 years: Guidelines for practice. *Journal of the American Academy of Nurse Practitioners, 21*(5), 261-269.
17. Wolf, R., Berry, C., & Quinn, K. (2003). Development and validation of a brief pediatric screen for asthma and allergies among children.
18. Wood, B. L., Cheah, P. A., Lim, J., Ritz, T., Miller, B. D., Stern, T., & Ballow, M. (2007). Reliability and validity of the asthma trigger inventory applied to a pediatric population. *Journal of Pediatric Psychology, 32*(5), 552-560.

**Appendix**

**Allergy-Asthma Screening Questionnaire**

**ASTHMA-ALLERGY SCREENING QUESTIONNAIRE**

Please circle yes or no to answer the following questions about your child

| | |
|---|---|
| 1. Has your child had any of the following that lasted more than a week? | |
| a. an itchy or runny nose? | No/yes |
| b. itchy, watery or puffy eyes? | No/yes |
| c. frequent sneezing or sneezing attacks? | No/yes |
| d. itchy eyes or sneezing more at certain times of the year? | No/yes |
| 2. Is there any known family history of asthma, allergies, eczema, hay fever, wheezing with cold? | No/yes |
| 3. Do you have pets in the family that live in the household? | No/yes |
| 4. Do you have smokers in the family that live in the house? | No/yes |
| 5. Does your child ever: | |
| a. Wheeze? | No/yes |
| b. Have cough or cold that will not go away? | No/yes |
| c. Cough at night when the child does not have a cold? | No/yes |
| d. Wheeze, cough, or have heavy breathing during or after exercise or play | No/yes |
| e. Wheeze, cough or have heavy breathing after getting upset or excited? | No/yes |
| f. Have trouble keeping up with other children during exercise? | No/yes |
| g. Have breathing problems when the temperature changes? | No/yes |
| h. Have wheezing that limits speech between breaths? | No/yes |
| i. Have had any medical /surgical problems needing hospitalizations? | No/yes |
| j. Has restricted activities like involvement in sports due to respiratory symptoms? | No/yes |
| k. Have interrupted sleep or more symptoms of cough and wheeze during night | No/yes |
| l. Has a throat or chest that feels closed or clogged-up? | No/yes |
| m. Snores at night? | No/yes |
| n. Has skin that feels bumpy, dry or itchy? | No/yes |
| 6. Has your child had a breathing problem so bad that the child had to seen by a doctor? | No/yes |
| 7. Have you ever kept your child home from school due of wheezing, or shortness of breath? | No/yes |
| 8. Has your child used any allergy medicines/puffers in the past? | No/yes |

**Appendix**

**Asthma-Allergy Screening Questionnaire Evaluation Tool**

**ASTHMA / ALLERGY SCREENING QUESTIONNAIRE EVALUATION TOOL**

Please select the response that best applies to each question based on your review of the PARENTAL-CHILD ASTHMA/ALLERGY QUESTIONNAIRE. You may provide comments in the spaces provided below. Please do not place any identifying marks on this form.

| **Please check the box of the response you feel is most appropriate for each statement below** | Strongly Disagree 1 | Disagree 2 | Undecided 3 | Agree 4 | Strongly Agree 5 |
|---|---|---|---|---|---|
| 1. The questionnaire appears to be an accurate guideline for the evaluation and management of children with suspected asthma and allergies. | | | | | |
| 2. The questionnaire is useful for parents of children to recognize some common symptoms of children with allergies and asthma. | | | | | |
| 3. The questionnaire is appropriate and is easy to understand (readability level). | | | | | |
| 4. The questionnaire is likely to be utilized by parents of children who present with allergies. | | | | | |
| 5. The questionnaire is effective and well formatted. | | | | | |

6. The following information should have been included in the checklist.
7. The following information should have been excluded in the checklist.
8. Please include your suggestions to improve the project.

Please return your response to the self-addressed envelope provided in the package within 7 business days. Thank you.