

## **45th Biennial Convention (16-20 November 2019)**

### **Improving Asthma Outcomes With a Community-Based Asthma Specialty Clinic**

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#### **Background and Significance:**

Asthma is a chronic respiratory disease that is characterized by periods of exacerbation and remission. Once a debilitating disease that eluded diagnosis and severely limited daily functioning, asthma is easily diagnosed and treatment regimens that result in increased symptom free days, increased daily life functioning and improved quality of life now exist. However, despite clinical breakthroughs, improved medication, and treatment regimens, asthma remains an intractable disease and disparities in asthma outcomes persist.

Asthma remains a significant burden in the United States (U.S.). There are approximately 19 million people diagnosed with asthma and about 8 million are children under the age of 18 (CDC, 2018). In 2015, asthma accounted for 11 million emergency department (ED) visits, 1.3 million unscheduled primary care and urgent care visits and 479,300 hospitalizations (CDC, 2018). In addition to significant financial burdens (56 billion dollars annually), asthma contributes to significant mortality, about 9,000 deaths annually (CDC, 2018).

In the U.S. minorities are more likely to suffer from uncontrolled asthma symptoms and Minority children are more likely to be adversely affected by this very controllable disease (CDC, 2018). According to findings from the Centers for Disease Control and Prevention, African American and Puerto Rican children are two to three times more likely to die from an asthma attack than Caucasian children (CDC, 2108; Szentpentry, Forno, Canino, Celedon, 2017). This may be due in part to the fact that these children are more likely to live in poverty, have decreased access to asthma specialty care, and are less likely to receive evidence based asthma care (Szentpentry, Forno, Canino, Celedon, 2017, Gong, Ludholm, Rejno, Mood, Langstrom and Almgvist, 2014)

Poor access to asthma care negatively affects asthma outcomes. Other factors that negatively affect asthma outcomes include poor socioeconomic status and exposure to asthma triggers such as air pollution, roaches, rodents, tobacco smoke and dust (Gautier and Chapin, 2017; Janssen and Ritz, 2014). Minority children have decreased access to asthma specialty care thus receiving state of the art asthma care remains elusive to many minority children. As a result, these children have higher rates of ED use, hospitalizations and poor lung function as measured by spirometry (Mitchell, Bilderback, Okelo, 2016).

Evidence based guidelines exist to assist healthcare providers with the proper diagnosis, classification and treatment recommendations for asthma (GINA, 2018). The Global Initiative for Asthma Guidelines recommend that individuals with asthma receive step-wise treatment and regular visits with an asthma specialist for care and monitoring. Providing asthma specialty care in a community based setting could be an effective means of positively impacting asthma outcomes in minority children with asthma.

*Breathing Easy in the Brick City* was funded by the Robert Wood Johnson Foundation Nurse Faculty Scholars Program. The purpose of the study was to test the effectiveness of a tailored, pediatric asthma specialty care program delivered in a community based setting. We hypothesized that participants who received asthma specialty care in a primary care setting would demonstrate improved outcomes compared to those who receive usual asthma care in a SBHC.

**Intervention:**

This quasi-experimental, within subject, intervention study utilized a convenience sample of 30 children between the ages of 8 and 18 years with poorly controlled, moderate to severe persistent asthma. Data were collected from August 2015 through December 2017. Upon enrollment, baseline measurements (spirometry, quality of life, knowledge of disease, and medication use) were collected and reassessed every three months throughout the one-year study period.

Participants were recruited from a federally qualified health care center (FQHC). They were either self-referred due to poorly controlled asthma and several missed school days due to asthma or they were referred by their primary provider to take part in this year-long intervention. Outcomes measured included pulmonary function, asthma symptoms, asthma quality of life, and asthma knowledge. Information regarding asthma related school absenteeism, emergency department use, unscheduled primary care visits, and medication use for asthma exacerbation were also collected. Data were collected at baseline and every three months following. Participants were seen by a pediatric nurse practitioner who specialized in asthma care. Asthma care was provided according to GINA (2018) and NAEPP (2007) guidelines. Participants and their parents also received asthma education, written asthma action plans and proper medications to control asthma symptoms and treat exacerbations.

Study findings revealed improvements in lung function (84.6% to 88.5%), asthma knowledge (70% to 77%) and quality of life (QOL)(125 to 132). Subscales on the QOL instrument indicated there were improvements in asthma symptoms (51.6 to 57.6) however there was no change in activity impairment (25.47 and 25.83) or emotional impairment (48.2 and 47.5).

**Conclusion:**

Targeted asthma specialty care delivered in a community setting is effective, provides greater access to care and increases the consistency of asthma follow up. While there was improvement in overall QOL, we found that participants continued to report activity and emotional impairment despite improvements in lung function. These findings are important because asthma guidelines do not recommend assessing children with asthma for emotional well-being therefore providers should inquire about specific impairment of the emotional well-being of the patient. Patients with emotional impairment should be referred to behavioral health to address this problem because left untreated it can lead to increased levels of anxiety and clinical depression. Furthermore, this research demonstrates an opportunity for health care providers across disciplines to collaborate for the development and testing of new and multi-level interventions that address the psycho-emotional and physical needs of patients with chronic health disorders.

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**Title:**

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**Keywords:**

Asthma, Childhood asthma and Community based intervention

**References:**

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**Abstract Summary:**

This presentation will describe a novel nurse-developed program designed to improve asthma outcomes in urban children. Program barriers and facilitators will be also be discussed.

**Content Outline:**

Improving Asthma Outcomes with a Community Based Asthma Specialty Clinic

**Introduction:**

Asthma is a chronic respiratory disease that is characterized by periods of exacerbation and remission. Once a debilitating disease that eluded diagnosis and severely limited daily functioning, asthma is easily diagnosed and evidence based treatment regimens that result in increased symptom free days, increased daily life functioning and improved quality of life now exist. However, despite clinical breakthroughs, improved medication, and successful treatment regimens, asthma remains an intractable disease and widening disparities in asthma outcomes persist.

**I. Asthma remains a significant burden**

In the United States (U.S.) there are approximately 19 million people diagnosed with asthma and about 8 million are children under the age of 18 (CDC, 2018). In 2015 (most recent statistics), asthma accounted for 11 million emergency department visits, 1.3

million unscheduled visits to primary care providers, and 479,300 hospitalizations (CDC, 2018). In addition to significant financial burdens (56 billion dollars annually), asthma contributes to significant mortality, about 9,000 deaths annually (CDC, 2018).

In the United States, minorities are more likely to suffer from uncontrolled asthma symptoms. Minority children are more likely to be adversely affected by this very controllable disease (CDC, 2018). African American and Puerto Rican children are two to three times more likely to die from an asthma attack than Caucasian children (CDC, 2108; Szentpentry, Forno, Canino, Celedon, 2017).

## **II. Asthma Access and Health Outcomes**

Poor access to asthma care negatively affects asthma outcomes. Other factors that negatively affect asthma outcomes include poor socioeconomic status and exposure to asthma triggers such as air pollution, roaches, rodents, tobacco smoke and dust (Gautier and Chapin, 2017).

Evidence based guidelines exist to assist healthcare providers with the proper diagnosis, classification, and treatment recommendations for asthma (GINA, 2018). The Global Initiative for Asthma Guidelines recommend that individuals with asthma receive step-wise treatment and regular visits with an asthma specialist for care and monitoring. Minority children have limited access to asthma specialty care thus receiving state of the art asthma care remains elusive to many minority children. As a result, these children have higher rates of ED use, hospitalizations, and poor lung function as measured by spirometry (Mitchell, Bilderback, Okelo, 2016).

## **III. Increasing Asthma Specialty Care Access**

Providing asthma specialty care in a community based setting could be an effective means of positively impacting asthma outcomes in minority children with asthma. This study was funded by the Robert Wood Johnson Foundation Nurse Faculty Scholars Program. We hypothesized that children who received asthma specialty care in community settings would experience significant improvement in lung function, symptom free days, asthma knowledge and quality of life. This quasi-experimental intervention study utilized a convenience sample of 30 children between the ages of 8 and 18 years with poorly controlled, moderate to severe persistent asthma. Data were collected from August 2015 through December 2017. Upon enrollment, baseline measurements (spirometry, quality of life, knowledge of disease, and medication use) were collected and reassessed every three months throughout the one-year study period.

Study protocol: Participants were recruited from a federally qualified health care center (FQHC). They were either self-referred or re referred by their primary provider to take part in this year-long intervention. Outcomes measured included pulmonary function, asthma symptoms, asthma quality of life, and asthma knowledge. Information regarding asthma related school absenteeism, emergency department use unscheduled primary care visits for asthma exacerbation were also collected. Data were collected at baseline and every three months following. Participants were seen by a pediatric nurse practitioner who specialized in asthma care. Asthma care was provided according to GINA (2018) and NAEPP (20017) guidelines. Participants and their parents also received asthma education, written asthma action plans and proper medications to control asthma symptoms and treat exacerbations.

Study findings revealed improvements in lung function, asthma knowledge, and symptom free days. Overall quality of life scores improved however there was no change in activity impairment or emotional impairment as measured by the asthma quality of life scale. These findings are consistent with finding from a previous study conducted by the authors.

**Conclusion:**

Targeted asthma specialty care delivered in a community setting is effective, provides greater access to care, and increases the consistency of asthma follow up. While there was improvement in overall QOL, we found that participants continued to report activity and emotional impairment despite improvements in lung function. Further investigation is warranted to determine why social emotional factors remain unchanged even when asthma symptoms and severity improve.

First Primary Presenting Author

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**Author Summary:** Dr. Felesia Bowen is an Associate Professor and Director, Undergraduate Programs at the Medical University of South Carolina. Dr. Bowen is a Pediatric Nurse Practitioner and has an established program of research in pediatric asthma symptoms and management.