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Enhancing Pediatric Asthma Care and Nursing Education Through an Academic Practice Partnership

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ABSTRACT

Background: Home environmental assessments and interventions delivered via academic practice partnerships (APP) between clinics and schools of nursing may be a low or no cost delivery model of pediatric asthma care and professional education. Patients receive enhanced clinical resources that can improve self-management and healthcare utilization. Additionally, students can practice chronic disease management skills in actual patient encounters.
Objective: To describe outcomes of the implementation of an APP between a school of nursing and a pediatric asthma specialty clinic (PASC) to deliver a home visit program (HVP). The HVP was designed to reduce emergency department visits and asthma related hospitalizations in PASC patients and provide clinical experiences for nursing students.
Methods: PASC referred patients to the HVP based on their level of asthma control. Students provided an individualized number of home visits to 17 participants over a nine month period. A 12-month pre- and post-HVP comparison of emergency department visits and asthma related hospitalizations was conducted. Additional information was gathered from stakeholders via an online survey, and interviews with APP partners and HVP families.
Outcomes: Children had fewer asthma related hospitalizations post HVP. Findings suggest a reduction in exposure to environmental triggers, improved patient and family management of asthma, and increased PASC knowledge of asthma triggers in the home and increased student knowledge and skills related to asthma management.
Conclusions: Multiple clinical and educational benefits may be realized through the development of APPs as an infrastructure supporting targeted interventions in home visits to pediatric asthma patients and their families.

Background

Asthma costs the United States (U.S.) society over $50 billion per year of direct medical expenses (Centers for Disease Control and Prevention, 2013). Work absences and sick or missed school days result in an additional $5.9 billion in indirect costs (Barnett & Nurmagambetov, 2011). About 15% to 54% of asthma hospitalizations may be preventable. Families who do not contact a provider prior to hospitalization are at greatest risk of a preventable hospital admission (Flores, Abreu, Tomany-Korman, & Meurer, 2005).

Allergen exposure plays a role in childhood asthma. Environmental control practices aimed at reducing these exposures are a critical component of asthma management (Matsui, Abramson, Sandel, Section on Allergy and Immunology, & Council on Environmental Health, 2016). Home visit programs (HVP) that use community health workers to deliver asthma education and environmental interventions have improved health outcomes and reduced cost in children with uncontrolled asthma (Campbell et al., 2015). Significant reductions in emergency department (ED) visits, hospitalizations, and costs associated with asthma have been reported in models that use a combination of nurse case management and community health workers to provide

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education and environmental interventions (Woods et al., 2012). The success of these programs highlights the gap in pediatric asthma care and underscores the importance of addressing the home environment to achieve improved patient outcomes.

Transportation is a major barrier to access and utilization of healthcare services in pediatric patients with severe, uncontrolled asthma (Kertz & Rivera-Spoljaric, 2016). When transportation is a barrier, a HVP may increase accessibility of needed resources and services and provide an important means of follow-up with high-risk patients. Individualized interventions in the home can increase the family's understanding of the child's disease process, the need for follow-up care, and medications, and the importance of avoiding triggers, which, in turn, may prevent ED visits and hospitalizations (Flores et al., 2005).

Home visit programs targeting asthma care have been found to not only reduce the number of missed school and work days, decrease allergens in the home, and reduce urgent care use, but also to lessen caregiver stress (Clark, Lachance, Milanovich, Stoll, & Awad, 2009). While evidence suggests HVPs improve patient outcomes and provide a significant return on investment (Woods et al., 2012), they are not routinely provided by outpatient clinics or hospitals. Provision of home visits depends on availability of reimbursement or other revenue streams and is largely dependent on insurer discretion rather than coverage and payment regulations (Malcarney, Seiler, & Horton, 2013).

Initiation of an asthma HVP within a medical center requires resources from the clinical enterprise and structural changes to the healthcare delivery system. However, recent shifts in nursing education paradigms align educational needs of students with the resource needs of the clinical enterprise. In a landmark report, the Institute of Medicine (IOM) addressed the changes needed in nursing education based on the increasing complexity of patient needs and care environments in the U.S. healthcare system. The report highlighted a significant gap in nursing education due to the emphasis on illness focused acute care rather than those needed for health promotion in the community setting (Institute of Medicine, 2011). This report created urgency around changing the education of future nurses, particularly with regard to management of complex chronic illness in the community setting.

Academic practice partnerships are emerging as a primary vehicle through which to provide home visits to deliver the extra clinical resources needed by patients with chronic disease (Smith, Lutenbacher, & McClure, 2015). Collaboration among academic and practice leaders in nurse practitioner (NP) education is a key to maximizing resource efficiency and promoting positive patient outcomes (Giddens et al., 2014). Rather than outsourcing home visits to a home health agency or developing an internal program, a clinical enterprise can source home visits through academic practice partnerships (APPs) to a school of nursing. This can create a win-win situation for all stakeholders.

Opportunities for hands-on clinical experience for students prepare them to lead nurse-driven care models, meet the changing health care delivery demands, and strategically deliver resources to patients in communities. For example, an APP based on a partnership between a hospital system and a nursing school reduced healthcare costs and improved quality outcomes in adult patients with heart failure transitioning home from the hospital. Students conducted assessments, provided education and early triage of problems, which resulted in a significant reduction in 30-day readmission rates (Pacific Lutheran University School of Nursing, 2012).

APPs maximize the resources of the clinical enterprise available to patients while providing unique, educational opportunities to students and individualized, cost-effective, quality care to at risk patients (Beal, 2012). Applying the framework of the APP to a pediatric asthma population via a partnership between a school of nursing and a pediatric asthma specialty clinic (PASC) provides an innovative strategy to bring needed resources to patients in the community. An APP care model using nursing students to provide services to pediatric asthma patients has not been previously described in the literature.

Local Problem

Tennessee (TN) ranks third among other states for highest rates of current childhood asthma. In 2011/2012, rates among TN children aged 0–17 exceeded national rates; 11.5% vs. 8.8%, respectively (Kakoti & Dewan, 2014). This was an increase of 21% over a five-year period. Almost 24% of these TN children were reported to have moderate or severe asthma.

In 2013 the rate of ED visits in [name removed for blind review] County, home of a large children's hospital in the area of this project, the rate of asthma ED visits each year is 79.3 per 10,000 compared to the state rate of 59.8 per 10,000 (Tennessee Department of Health, 2016). Among children ages 5–14, the rate was 94.9 per 10,000 (Tennessee Department of Health, 2016).

Statewide, almost $54 million dollars were spent for total hospital charges for a primary asthma diagnosis among TN children aged 1 to17 years in 2012. Although inpatient hospitalizations only represent approximately 10% of all asthma hospital visits among children, they account for almost 44% of all asthma charges ($23.5 million; Kakoti & Dewan, 2014).

The PASC affiliated with the children's hospital and a school of nursing (SON) advanced practice nurse (APN) associated with the clinic discussed options to try and improve patient self-management and decrease ED and inpatient hospitalizations due to asthma. Environmental assessments and interventions were identified as needed resources for the patients that matched the educational objectives and skill levels of the students. During these stakeholder discussions it was determined that neither the PASC clinic staff and providers nor the SON APN could identify any resources to provide home services to the PASC asthma patients for home environmental assessments and interventions. Local housing advocacy groups could potentially provide assistance in mold remediation efforts on behalf of renters; however, there was not a clear referral system in place for such programs through the PASC. Stakeholders also noted that funding for environmental interventions for asthma control was not available through Medicaid managed care organizations (MCOs) in Tennessee.

Specific Aims

To address the local need for home visits with high-risk PASC patients and reduce preventable ED and hospital admissions, and provide a real world clinical experience for community health nursing students, we created an APP. This provided the infrastructure for a HVP with the primary goal of extending clinic services to improve asthma control in pediatric patients with poorly controlled asthma and for a community health clinical practicum. Community health nursing students were available to conduct home visits. The focus of the experience met clinical goals related to chronic disease management. We expected to reduce inpatient and emergency department visits, increase patient and family knowledge of asthma management, and increase clinical skills in chronic disease management in nursing students.

Methods

Ethical Considerations

The project was reviewed by the university Institutional Review Board and determined to be a quality improvement, non-research project. No ethical issues emerged in the planning or execution of the project.

Context

The APP was formed between a school of nursing and a PASC, both housed within a large, academic medical center in the Southeastern United States. Members of the partnership included faculty and