

## Interpersonal Influences on the Asthma Self-Management Skills of the Rural Adolescent

Judith Quaranta, PhD, RN, CPN, AE-C<sup>1</sup>

Mallory Wool, RN, BS<sup>2</sup>

Kayla Logvis, RN, BS<sup>3</sup>

Kimberly Brown, RN, BS<sup>4</sup>

David Joshy<sup>5</sup>

<sup>1</sup> Assistant Professor, Decker School of Nursing, Binghamton University,

[jquarant@binghamton.edu](mailto:jquarant@binghamton.edu)

<sup>2</sup> Decker School of Nursing, Binghamton University, [mwool1@binghamton.edu](mailto:mwool1@binghamton.edu)

<sup>3</sup> Decker School of Nursing, Binghamton University, [kbrown10@binghamton.edu](mailto:kbrown10@binghamton.edu)

<sup>4</sup> Decker School of Nursing, Binghamton University, [kbrown8@binghamton.edu](mailto:kbrown8@binghamton.edu)

<sup>5</sup> College of Community and Public Affairs, Binghamton University, [djoshy1@binghamton.edu](mailto:djoshy1@binghamton.edu)

### Abstract

**Purpose:** The purpose of this study is to understand how self-management behaviors of the adolescent with asthma are influenced by the perceived expectations (normative beliefs/subjective norms) for self-management behaviors from healthcare providers, school nurses, teachers, family and friends.

**Sample:** Seven rural adolescents (five males and two females with an age range of 13-17 years)

**Method:** Focus groups were conducted with analysis for common themes influencing management behaviors.

**Results:** The majority of participants perceived provider and parental expectations for asthma management as only consisting of medication compliance. The students did not report any

perceived expectations from the school nurse except independent inhaler use. There was no expectation to report use to the school nurse. The participants felt that their teachers were not aware of their asthma diagnosis; therefore, no expectations were noted. Expectations from peers had no influence on self-management behaviors.

**Conclusion:** The results from this study demonstrate the influence of the expectations for asthma self-management by significant people in the adolescents' life. The adolescents in this study were unable to identify what behaviors they needed to perform in order to control their asthma. Except for taking their prescribed medications, no other behaviors were addressed by their health care provider, parents, friends or school nurse. The lack of expectation for other self-management behaviors that are essential for asthma control, such as knowledge of asthma symptoms, trigger avoidance and when to seek help during an asthma attack may be a leading contributor for uncontrolled asthma. Asthma action plans, if consistently used by health care providers, parents and schools, can reinforce the expectation for behaviors that will result in good asthma outcomes.

**Keywords:** Asthma, Adolescent, Self-management, Theory of Planned Behavior, Policy

### **Interpersonal Influences on the Asthma Self-Management Skills of the Rural Adolescent**

The purpose of this study was to explore how asthma management behaviors of the adolescent with asthma are influenced by the perceived expectations (normative beliefs/subjective norms) for asthma management behaviors from parents, healthcare providers, peers, teachers and school nurses. Normative beliefs are the perceived behavioral expectations of important referent groups or individuals. For this study, self-management behaviors were defined as (a) knowledge and avoidance of triggers; (b) knowledge and proper use of medications; (c) ability to identify asthma warning signs ; (d) the ability to take appropriate actions.

Adolescence is a time when asthma exacerbations may prove extremely detrimental, resulting in emergency room visits, hospitalizations, missed school as well as diminished health status. If the adolescent has been symptom free for an extended period, they may be unprepared to recognize or manage their asthma crisis. However, asthma management behavior is dependent upon more than just knowledge. Expectations of people in one's life influences behavior (Ajzen, 2006). This study proposes that asthma management activities will be more likely to occur if appropriate asthma management expectations are clearly defined.

The need for effective asthma management for the adolescent is evident. More than ten million children in the United States (US) under the age of 18 years have been diagnosed with asthma and almost seven million still have asthma (Bloom, Cohen, & Freeman, 2012). In 2011, the highest asthma prevalence rate (105.5 per 1000 population) was for ages 5-17 years. Asthma attacks occur more often in those younger than 18 years, with prevalence rates of 54.6 per 1000 compared to 39.4 per 1000 in those older than 18 years. The disproportionate impact on children with asthma is further evidenced by the fact that approximately 29% of all asthma hospital discharges in 2010 were for children less than 15 years of age, even though they comprise only 21% of the US population (American Lung Association [ALA], 2012). Almost 38% of children with asthma younger than 18 years old report their current health status as fair or poor (Bloom et al., 2012). Between 2007 and 2009, children ages 0-17 years had higher emergency room visit rates compared with adults ages 18 and over (10.7 compared with 7.0 per 1000 persons with asthma) (Moorman et al., 2012). In 2008, asthma accounted for an estimated 14.4 million lost school days in children with an asthma attack in the previous year (ALA, 2012).

Children with asthma and their families may have difficulty determining when asthma is not under control. If asthma symptoms are not disruptive to family life, there may be little impetus to

seek care, thus increasing the risk for poor outcomes. Price et al. (2002) surveyed parents and children with asthma ages 9-14 years old. Sixty-five percent of respondents described asthma as well controlled, despite reporting at least weekly symptoms of difficulty breathing, nocturnal waking, dry cough or difficulty speaking due to asthma. Similar findings were noted by Dozier, Aligne, and Schlabach (2006) who found that parents considered their children's asthma under control despite having missed school, experiencing asthma symptoms, needing unscheduled office visits, or using a rescue inhaler. Parents' perception of asthma control did not match the child's reported symptoms in 42% of the cases. Scores from the Childhood Asthma Control Test indicated that children perceived their asthma to be less well controlled than did their parents or adult caregivers (Carlton, Thompson, Wan, Conboy-Ellis, & Coates, 2010).

Circumstances of rural living compound the issues confronting the adolescent with asthma. Distance to healthcare may impede seeking care until the asthma exacerbation becomes critical, at that point requiring emergency care and hospitalization. Rural people typically define health in terms of ability to work (Long & Weinert, 1989). As long as the adolescent can complete the school day, asthma symptoms may be ignored, until an asthmatic crisis necessitates seeking treatment. Lack of anonymity (Long & Weinert, 1989) found in rural culture can be a barrier to carrying out asthma management behaviors in a public setting, such as school. This lack of anonymity, coupled with the adolescent fear of "being different", may deter the rural adolescent from sharing the asthma diagnosis with others and not performing the necessary asthma management behaviors. In addition, the most rural residents a 30% higher likelihood of being uninsured compared to urban residents, as well as being uninsured for longer periods of time. Physician shortages in rural areas, combined with hospital closures in the past 20 years, and lack

of public transportation, create barriers to health care for rural residents (Crosby, Wendel, Vanderpool, Casey & Mills, 2012).

### **Theoretical Framework**

The theoretical framework guiding this study is the Theory of Planned Behavior [TPB] (Ajzen, 2006). According to the theory, if a person is in favor of doing a behavior, the behavior is more likely to occur. The individual must believe that the behavior will have desirable outcomes (attitude). The level of social pressure, or expectation, the person feels to do the behavior (subjective norm) and whether the person feels in control of the behavior (perceived behavioral control) determines if the behavior will actually occur. Attitude toward the behavior, subjective norm, and perception of behavioral control lead to the formation of a behavioral intention. Generally, the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger the person's intention to perform the behavior in question. Aiming interventions at attitudes, subjective norms, or perceptions of behavioral control can change behavior. Changes in these constructs may produce changes in behavioral intentions and with adequate control result in new behaviors. The construct of subjective norm is the focus of this study.

### **Review of the Literature**

A review of the literature was conducted using CINAHL (Cumulative Index of Nursing and Allied Health Literature) focusing on subjective norms. Search terms included asthma, adolescent, asthma management, asthma self-management. Articles that incorporated the referent groups of (a) parents; (b) health care providers; (c) peers; (d) teachers; (e) school nurses were contained in the search. These referent groups were used to organize the search. No articles were found that specifically looked at the asthma management behaviors of the adolescent with asthma

in relationship to the Theory of Planned Behavior. Studies that investigated subjective norms with the adolescent regarding other behaviors were included in the review of literature, as well as studies that discussed the above mentioned referent groups in terms of asthma management.

## **Parents**

No studies were found specifically examining the influence of parental influences on the asthma management of the adolescent using the Theory of Planned Behavior as the framework. However, there were studies found that used the Theory of Planned Behavior to investigate parental influence on other behaviors of the adolescent. Kassem and Lee (2004) examined soda consumption among male adolescents (n=564). The researchers examined the influence of parents, doctors, teachers, friends, restaurant owners, and everyone who drinks regular soda. Results indicated that subjective norms were significant indicators of intention to drink regular soda. The referent groups with the most influence on soda-drinking behaviors were parents and doctors. Kuther and Higgins-D'Alessandro (2003) explored the impact of perceived parental norms on alcohol use on eleventh grade students (n=87). Parental norms were not found to be significant predictors of alcohol consumption for this age group. Alcohol consumption behaviors occurred independent of the individual's perception of parental norms toward drinking.

While not specifically addressing the Theory of Planned Behavior and the construct of subjective norm, the literature demonstrated that parents greatly influenced asthma management behaviors for the child with asthma. Parental knowledge as well as attitude toward the outcomes of asthma behaviors influenced the child's actions. If the parent was uncertain about how to manage their child's asthma, then the child had no referent point and was unaware of the expected norm behavior. Children with parents who were more knowledgeable about asthma felt more competent to manage their asthma (Barton et al., 2002; Miles, Sawyer, Franz, & Kennedy, 1995).

Parents who feared their child having an asthma attack controlled and limited the child's activities, making the child dependent on the parent for management, as the expectation was not geared toward self-management (Rich, Taylor, & Chalfen, 2000). Parents reported a lack of confidence in their ability to manage their child's asthma and identified the need for more clear, consistent and correct education about asthma management. These parents viewed emergency room visits as a "fact of life" for children with asthma and something that could not be avoided with asthma management. Parents were concerned about side effects of medications and were hesitant to use them, especially inhaled corticosteroids (Taylor-Fishwick, Major, Kelly, Butterfoss, Clarke & Cardenas, 2004). Maternal support was vital to the adolescent management of asthma symptoms. Adolescents depended on maternal support for advice and confirmation of asthma management decisions (Hughes, 2012); while the effect of paternal support was not considered in the Hughes study.

### **Health Care Providers**

While no studies were found specifically citing the Theory of Planned Behavior in relationship to the impact of health care provider's expectations on the asthma management behaviors of the adolescent with asthma, the literature review highlighted the impact of health care providers on the adolescent with asthma. Perceived expectations from health care providers influenced self-management skills and the likelihood of controlling asthma symptoms. Studies revealed that students were reluctant to tell health care providers about asthma symptoms if the student did not want more medication to be prescribed or their activities to be restricted. Students refrained from asking questions regarding their asthma, as they feared the provider would be irritated. A predominant theme was that students did not feel they had been given enough information by their provider to self-manage their asthma (van der Meer et al., 2007; Van Es,

LeCoq, Brouwer, Nagelkerke, & Colland, 1998). Hughes (2012) found that the adolescent with asthma did not take an active role with the health care provider if a parent were present during the appointment. The assumption was that the parent would obtain the information and assist the adolescent with this information when needed.

## **Peers**

Review of the literature did not reveal any studies utilizing the Theory of Planned Behavior with peer influence on the asthma self-management of the adolescent with asthma. However, a study by Kuther and Higgins-D'Alessandro (2003) on alcohol consumption of adolescents demonstrated perceived peer norms positively predicted alcohol consumption and attitudes about the consequences of drinking. Perceived favorable peer norms for alcohol consumption resulted in increased alcohol consumption as well as a more supportive attitude of drinking behaviors. This study validates the impact of peer subjective norms of the behaviors of the adolescent. If this relationship is a constant in the life of an adolescent, it is possible that the asthma self-management behaviors of the adolescent with asthma are influenced by the peers in the adolescent's environment.

Further studies provided insight into the influence of the peer group on adolescents with asthma. The literature has shown mixed results with respect to the influence of peers in the management of asthma by adolescents with asthma. Studies indicated that middle school students did not want to be different from their peers. They reported denying their asthmatic condition, ignoring symptoms and attempting to hide their asthma in order to remain with their friends. Other students reported not wanting to take their medications as this identified them as being different from their friends (Ayala et al., 2006; Rich et al., 2000; Velsor-Friedrich, Vlasses, Moberley, & Coover, 2004). If instructions for treatment and care did not fit into their lifestyle,

the students were reluctant to carry their inhaler (Kyngas, 1999; Velsor-Friedrich et al., 2004). Students reported that it was difficult to turn down a friend's offer to play basketball when the pollen count was high, even though the student with asthma knew an asthma exacerbation could result (Kyngas, 1999).

Conversely, Van Es et al. (1998) identified that a majority of their subjects were inclined to tell others they had asthma, and that these students were not afraid to take their medications in front of their friends. Students surveyed identified themselves as normal and viewed asthma as something they have to live with (Horner, 1999). Students who felt social support did not experience shame or feeling different when using inhalers (Knight, 2005).

### **Teachers**

No studies were found in the literature review explicitly using the Theory of Planned Behavior to examine the influence of school teachers on the asthma management behaviors of the adolescent with asthma. Several studies were found that underscored the impact that teachers have on the adolescent with asthma resulting in decreased asthma management behaviors. Students reported that teachers and coaches did not believe when they were having an asthma attack; students were accused of faking an asthma attack. This inhibited the student from reporting the attack and self-managing their asthma when an exacerbation occurred (Ayala et al., 2006; Horner, 1999; Kyngas, 1999; Velsor-Friedrich et al., 2004). The normative beliefs of referent group, the teachers, resulted in the subjective norm of denying asthma symptoms and not practicing self-management behaviors.

### **School Nurses**

The role of the school nurse for asthma management is defined by the National Association of School Nurses (NASN, 2011). Provision of health care and health education, medication

administration, and collaboration with parents and providers are specifically identified as competencies of the school nurse. The literature indicated that school nurses were knowledgeable about asthma. They fulfilled multiple roles and functioned as required by law, but had little time for health promotion and prevention practices. Few school nurses provided asthma education for their students with asthma. Most of the school nurses had not participated in any asthma education in the past six months (Calabrese et al., 1999). Students with asthma acquired the greatest knowledge with multiple educators: (a) families; (b) schools; and (c) health professionals (Paterson, Nayda, & Paterson, 2012).

### **Summary of Literature Review**

The lack of studies specifically investigating asthma management behaviors of the adolescent with asthma using the Theory of Planned Behavior provided evidence for the need for the current study.

### **Research Question**

The research question that guided this study was as follows: How do perceived behavioral expectations from parents, health care providers, peers, teachers and school nurses influence the asthma management behaviors of the adolescent with asthma?

### **Methods**

Focus groups were the method used for this study. Morgan (1997) characterizes focus groups as group interviews, with reliance on interaction within the group, based on topics provided by the researcher who typically takes on the role of moderator. This group interaction is the hallmark of focus groups, allowing for insights that would be less accessible without this interaction. Self-contained focus groups serve as a principal data source, requiring a careful matching of the research goals with the data that the focus group can generate (Morgan, 1997,

pp.2-3). Binghamton University's Human Subjects' Research Review Committee approved the study (Protocol no. 994-08).

Adolescents with asthma from two rural middle/high schools participated in one hour-long focus group centering on interpersonal influences of parents, teachers, health care providers and peers on their asthma self-management. School nurses identified potential subjects. A mailing to the parent/guardian of these students included a description of the study, a demographic sheet, and the informed consent/assent form with a stamped return envelope. Adolescents who participated in the study and then later validated the findings received a stipend. Seven adolescents (five males and two females with an age range of 13-17 years) agreed to participate. Two separate focus groups were conducted at the convenience of the participants. Focus groups took place between June and July 2009, with each session lasting approximately one hour. An interview outline guided each session. (See Table 1). All participants were in agreement with the focus groups being recorded. Two recorders were used in case of equipment failure of one of the recorders. Participants chose pseudo names to protect their identity. The recordings were transcribed by a transcriptionist. Analysis was done by reading through the transcripts and finding common repeating themes influencing their management behaviors. The researcher and two undergraduate nursing students analyzed the transcripts independently and then met to discuss the findings and come to consensus. After completion of the analysis, each subject met individually with the researcher to validate the findings. All subjects concurred with the themes identified and had no corrections or additions.

Table 1

*Focus Group Questions*

- 
1. Tell me about your asthma. What do you think it means when we say, “my asthma is under control”? Do you feel your asthma is under control? What signs or symptoms let you know your asthma is OK and what signs and symptoms let you know you are not OK?
  2. Tell me about your doctor or health care provider. What does your doctor think you should do to take care of your asthma? Do you feel you should do this? Do you agree with what they feel you should do for your asthma?
  3. Tell me about your parents or guardian. What do they feel you should do to take care of your asthma? Do you feel you should do this? Do you agree with what they feel you should do for your asthma?
  4. Tell me about your teachers. What do your teachers feel you should do to take care of your asthma? Do you feel you should do this? Do you agree with what they feel you should do for your asthma?
  5. Tell me about your friends. What do your friends feel you should do to take care of your asthma? Do you feel you should do this? Do you agree with what they feel you should do for your asthma?
  6. Tell me about your school nurse. What does your school nurse feel you should do to take care of your asthma? Do you feel you should do this? Do you agree with what they feel you should do for your asthma?
- 

**Setting**

This study took place in Chenango County, NY The U. S. Department of Agriculture’s (USDA) Rural-Urban Continuum Codes classifies Chenango County, NY as a nonmetro county with an urban population of 2,500-19,999, adjacent to a metro area (USDA, 2004). According to the 2010-2013 Community Health Assessment, Chenango County encompasses 894.36 square miles with 57.5 persons per square mile. Lack of major highways in the county impedes access to health care. NYS Route 12, where most of the health services are located, is a two-lane highway that bisects the county and is the only major north-south route. Only one hospital is located in Chenango County. Chenango County has 27 full time primary care physicians resulting in a physician to population ratio of 1:1885. This has led to the designation of Chenango County as a Health Professional Shortage Area (HPSA) by the U.S. Department of Health and Human Services for single county, low income, primary care (Chenango County Public Health, 2009).

These factors increase the risk for adverse outcomes for the rural adolescent with asthma as health care becomes inaccessible and unavailable.

## Results

Results from this study revealed the influence of expectations for asthma self-management from parents, health care providers, peers, teachers and school nurses. Eight consents and assents were returned. Of those eight, seven of the adolescents attended the focus group and validated the findings. All of the subjects were Caucasian, from rural areas in Upstate NY, and attended middle school or high school fulltime. (See Table 2).

Table 2

### *Study participant demographics*

Gender	Age	Grade in School
Female	16	10th
Female	14	8th
Male	16	10th
Male	16	10th
Male	15	10th
Male	13	7th
Male	17	11th

The most striking finding was the lack of awareness of asthma symptoms indicating uncontrolled asthma. These students did not have an understanding of what “asthma under control” meant. Most of the participants in the study utilized their rescue inhaler more than two times a week. Some participants needed to use it multiple times during the course of a gym period. None of these students were aware of having an asthma action plan, which would have assisted with their ability to self-manage. Management of their asthma was through medication use only. There was a disconnection between the student’s description of asthma symptoms, their ability to identify triggers and their ability to appropriately use prescribed medications. Although

able to correctly name and identify each inhaler, subjects described their use inappropriately, confusing rescue and controller medications. The students accepted their current asthma symptoms and had no expectations for better control.

### **Perceived Expectations from Parents**

All participants stated that their parents felt it was the adolescent's responsibility to manage their asthma. Management was typically defined as taking the medications prescribed by the health care provider. One subject stated that it was usually her parents and family who would remind her to take her medication. Four subjects stated it was up to them to manage their asthma. Statements from the subjects included: *"They said they'd stop riding me to take the Singulair, because it's not their job to do it, it's my job..."*

*"They told me to take care of it on my own." "..... Just deal with it.... I think by the time your kids are a certain age, they realize like they don't want to be in that kind of pain or deal with it, so they kind of realize to keep it under control" "They'll like say, "Go get your inhaler cause you're not—like you can't catch your breath or anything." "... they usually say to do what the doctor said so nothing can ever happen—like if I ever had like an asthma attack or anything. So they tell me to do it when I need to."*

### **Perceived Expectations from Health Care Providers**

Six of the seven participants perceived the expectations of their health care providers as taking the asthma medications as prescribed. Two of the participants stated that their doctor told them to try to take their inhaler as *"little as possible"*. Six of the seven participants stated that their health care provider had no other expectations. One participant was instructed in trigger avoidance, but only for two of the several triggers this participant mentioned. No others mentioned expectations for trigger avoidance or recognition of symptoms that would require

additional intervention. None of the participants had a written asthma action plan. Pertinent comments that validate these findings include: *“..he really thinks that I wouldn’t have any problems if I took like the allergy medicine he gives me.”* *“I just get a new inhaler whenever I need it or like with my allergies, I just got a new medicine for my allergies and stuff.”*

### **Perceived Expectations from Peers**

Perceived expectations of peers did not appear to be a significant factor in influencing the self-management behaviors of the participants. Six of the subjects did not feel uncomfortable using their inhalers in front of their peers. Statements from the subjects validating these conclusions include: *“...I’m not going to die because somebody else is like ‘Oh, that’s not cool’”.* *“I wouldn’t care—it’s going to help me breathe better, so--- I wouldn’t be embarrassed by using it.”* *“I could care less what they think about it because, you know, it’s a fact of life. People have asthma, I mean, that’s the way it is. I use it regardless of what they think.”*

### **Perceived Expectations from Teachers**

The participants did not report any asthma management expectations from their teachers. Most felt that the teachers would not know what to do in the event of an asthma attack. Some subjects were not sure if all of their classroom teachers were aware that they had asthma. Subjects identified gym teachers as being more aware of the student having asthma. When questioned if the participants felt the gym teachers would know what do to in case of an asthma attack, three students responded they did not think they would know what to do. Statements validating these findings include: *“None of my normal teachers [know I have asthma]—I don’t think so. Like we were playing a game – I was like “OK, I’ve got to sit out” And she’s like “Are you OK?” And I’m like “Yeah, I’m fine”. She’s like “You need to go to the nurse?” I’m like “No.” So I just sat there and waited for it to go away.”* *“I don’t think so [that they have any expectations for how I manage*

*my asthma]—as long as I'm not dead on the floor or something". Specific statements concerning physical education teachers included: "--they just don't really feel like they're responsible. They just say, "OK, well this is a nurse issue. Go to the nurse."*

### **Perceived Expectations from the School Nurse**

Five of the seven participants carried their own rescue inhalers. One participant was inconsistent in carrying the inhaler during the school day. All reported that the school nurse knew they had their inhalers. All stated that they used their inhalers during the school day but did not report this to the school nurse. The two subjects from the school with a school-based clinic stated they do tell the school nurse when they use their inhalers, but they did not do this consistently. Statements from the subjects include: *"I usually just take my inhaler when I need it. So I usually don't see her for my asthma or anything, cause like, I just bring in a note and give it to her so I can carry it on me."* *"...you carry it on you so that way you like don't have to make the trip down there to get it and let them know you need it"* *"... the gym teacher tried telling me to go around to the nurse, and I was like, 'Yeah, but what's she going to do about it?' You know, there's nothing you can really do till this goes away."*

### **Discussion**

The results from this study demonstrate the influence of the expectations for asthma self-management by significant people in the adolescents' life. The adolescents in this study were unable to identify what behaviors they needed to perform in order to control their asthma. Except for taking their prescribed medications, no other behaviors were addressed by their health care provider, parents, friends or school nurse. The lack of expectation for other self-management behaviors that are essential for asthma control, such as knowledge of asthma symptoms, trigger avoidance and when to seek help during an asthma attack may be a leading contributor for

uncontrolled asthma. Asthma action plans, if consistently used by health care providers, parents and schools, can reinforce the expectation for behaviors that will result in positive asthma outcomes.

For these adolescents, exercise was the most commonly identified as their asthma trigger. None of the students discussed modifying their participation in gym during the school day. Students used Albuterol during the gym period but did not premedicate. The students considered this good asthma management. Consistent with the literature, these students did not practice trigger avoidance (exercise) as they felt this was not a viable option (Ayala et al., 2006; Kyngas, 1999; Rich et al., 2000; van der Meer et al., 2007; van Es et al, 1998; Velsor-Friedrich et al, 2004).

The perceived expectation for management of their asthma from health care providers, parents, school nurses and teachers was to take asthma medication as prescribed. Only one of the seven students discussed trigger avoidance as an expectation, but only for two of the many triggers identified by this student. Except for one adolescent (who was the youngest subject interviewed), the perceived expectation was that they were responsible to take care of their own asthma, despite not having all the tools and knowledge to adequately keep their asthma under control. These findings are similar to those found by Rich et al. (2000). If management skills are not assessed or addressed, and no expectations for management behaviors are communicated to the adolescent, then the adolescent's current management behaviors become the expected norm, despite being ineffective in controlling their asthma.

Adolescents in this study did not report feeling different from their peers who did not have asthma. They stated their friends knew they had asthma and would remind them to take their medications. They denied feeling embarrassed while using their inhaler in front of their peers.

This was consistent with Knight (2005) who found that students with the perception of social support do not experience shame or feeling different when using inhalers.

Consistent with Horner (1999), these students identified themselves as normal and viewed asthma as “*something they have to live with*”. In contrast with other studies, these students did not deny their asthma (Ayala et al., 2006; Rich et al., 2000; Velsor-Friedrich et al., 2004). None of the adolescents reported having an asthma action plan; in addition, none of these adolescents knew what an asthma action plan was. Previous studies identified lack of asthma action plans as a barrier to effective asthma management (Borgmeyer, Jamerson, Gyr, Westhus & Glynn, 2005; Calabrese et al., 1999; van der Meer et al., 2007).

Asthma action plans are essential to ensure control of this condition. The written plan delineates the expected self-management behaviors for rural adolescents with asthma. These behaviors need to be shared with all the key adult players influential in the adolescents’ life. The 2007 National Heart, Blood and Lung Institute (NHBLI) guidelines for asthma management emphasize self-management education to control asthma (United States Department of Health and Human Services [USDHHS], 2007). Emphasis is on the collaborative partnership between provider and patient to develop an asthma action plan. The action plan should address the medical management of the condition as well as the ability of the patient to (a) identify and avoid asthma triggers; (b) use medication and devices appropriately; (c) identify symptoms that indicate uncontrolled asthma; and (d) perform the steps needed when these symptoms are present. Individualization of the plan for each patient is necessary to assure that carrying out the plan is able to fit within one’s lifestyle (USDHHS, 2007). This is especially true for the rural adolescent with asthma. Due to limited access to health care providers in a rural environment, the asthma action plan becomes essential for self-management. If the plan is unrealistic and cannot be

implemented during the school day or after- school activities, then adherence to the plan is unlikely. Asthma self-management must be as unobtrusive as possible so as not to interrupt the daily living activities of the adolescent.

The National Association of State Boards of Education (NASBE) has developed a research-based, best practice model policy for prevention and management of asthma that schools can adopt/adapt (NASBE, 2009). The school asthma plan recommends identifying and monitoring all students with an asthma diagnosis, obtaining individualized asthma action plans for all students with asthma, establishing emergency protocols for students without asthma action plans, and ensuring students are aware of the opportunity to self- carry rescue inhalers. Self-mamangement education and case management for he student with asthma is also recommended. This policy also advocates for asthma education of all school personnel as well as the need for a full time registered nurse in every school.

### **Implications**

Distance to healthcare mandates the role of the school nurse in assisting the rural adolescent in their asthma self-management. The rural adolescent needs to keep the school nurse informed about their asthma status and to report when they needed their rescue inhaler. The school nurse can assist the rural adolescent in discerning asthma symptoms that are not acceptable and refer the student to a health care provider when necessary. Without a written asthma action plan, this collaborative partnership between the school nurse, the health care provider and the rural adolescent with asthma is difficult to both obtain and sustain.

Asthma has been determined to be a disabling condition. A disabled person includes an individual who has a physical impairment that substantially limits one or more life activities, including breathing and learning (Jones & Wheeler, 2004). Title II of the Americans with

Disabilities Act of 1990 (Section 202), states that "...no qualified individuals with a disability shall, by reason of such disability, be excluded from participation or be denied the benefits of the services programs or activities of a public entity, or be subjected to discrimination by any such entity". Section 504 of the Rehabilitation Act of 1973 states that... "no qualified handicapped person shall, on the basis of handicap, be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any program or activity which receives Federal financial assistance" (United States Department of Education [USDOE], 2013). Under this provision, recipients of federal funds must address the needs of the disabled so that they can participate in services and programs to the extent necessary to prevent discrimination. By working together with the adolescent with asthma and assuring a written asthma action plan, the school nurse has the opportunity to influence the self-management of the adolescent with asthma. Creating the expectation for the self-management activities as indicated on the asthma action plan reduces the possibility of asthma becoming a disabling condition.

The recommended policies of the NASBE (2009) have the capability to address those issues identified by the students in this study. Teachers, with an increased awareness about asthma, would have higher expectations for self-management, enhancing the perceived expectation and subsequent management of their asthma. Requiring asthma action plans, as previously stated, highlights the behavioral expectations for asthma management from all involved players and has a greater impact on the adolescent managing his/her asthma.

### **Conclusion**

The focus groups for this study were conducted with students from rural school districts. Key findings from this study highlighted the influence of the perceived expectations for asthma management by significant persons in the lives of the adolescent, supporting the construct of

subjective norm in the Theory of Planned Behavior. Analysis of the recorded transcripts revealed that the majority of participants perceived provider and parental expectations for asthma management as only consisting of medication compliance. The students did not report any perceived expectations from the school nurse except independent inhaler use. There was no expectation to report use to the school nurse. The participants felt that their teachers were not aware of their asthma diagnosis; therefore, no expectations were noted. Expectations from peers had no influence on self-management behaviors. Actual performance of asthma self-management behaviors mirrored the behavioral expectations of the significant people.

These results demonstrate the usefulness of the Theory of Planned Behavior in improving asthma management behaviors for the adolescent with asthma. Expectations for self-management behaviors of the adolescent with asthma must be clear and consistent. Providers, parents, school nurses and teachers need to speak the same language and hold the adolescent accountable for performing those behaviors necessary to ensure good health outcomes. The asthma action plan allows this consistent message to be communicated to all those adults influential in the adolescents' life. These behaviors and asthma outcomes need to be evaluated and reinforced at each possible opportunity, whether during a school nurse visit or an appointment with a health care provider.

Further research needs to investigate ways to increase and enhance asthma management behaviors necessary to reduce the adverse outcomes associated with uncontrolled asthma. Investigating ways to increase and operationalize the expectations of those individuals significant to asthma management behaviors has the potential to lead to improved asthma management. The Theory of Planned Behavior provides a well-suited framework to guide future studies.

Furthermore, factors of rurality could be explored in the mix of variables that contribute to asthma management in the rural adolescent.

### References

- Ajzen, I. (2006). *Theory of planned behavior*. Retrieved from <http://www.people.umass.edu/aizen/pdf/tpb.intervention.pdf>
- American Lung Association. Epidemiology and Statistics Unit Research and Program Services Division. (2012). *Trends in asthma morbidity and mortality*. Retrieved from <http://www.lung.org/finding-cures/our-research/trend-reports/asthma-trend-report.pdf>
- Ayala, G.X., Miller, D., Zagami, E., Riddle, C., Willis, S., & King, D. (2006). Asthma in middle schools: What students have to say about their asthma. *Journal of School Health*, 76(6), 208-214. <http://dx.doi.org/10.1111/j.1746-1561.2006.00098.x>
- Barton, C., Abramson, M., Aroni, R., Stewart, K., Thein, F., & Sawyer, S. (2002). What determines knowledge of asthma among young people and their families? *Journal of Asthma*, 39(8), 701-709. <http://dx.doi.org/10.1081/JAS-120015793>
- Bloom, B., Cohen, R.A., & Freeman, G. (2012). Summary health statistics for U.S. children: National health interview survey, 2011. *Vital and Health Statistics, Series 10*, Data from the National Health Survey, (254). Retrieved from [http://www.cdc.gov/nchs/data/series/sr\\_10/sr10\\_254.pdf](http://www.cdc.gov/nchs/data/series/sr_10/sr10_254.pdf)
- Borgmeyer, A., Jamerson, P., Gyr, P., Westhus, N., & Glynn, E. (2005). The school nurse role in asthma management: Can the action plan help? *The Journal of School Nursing*, 21(1), 23-30. <http://dx.doi.org/10.1177/10598405050210010601>

- Calabrese, B.J., Nanda, J.P., Huss, K., Winkelstein, M., Quartey, R.I., & Rand, C.S. (1999). Asthma knowledge, roles, functions, and educational needs of school nurses. *Journal of School Health*, 69(6), 233-238. <http://dx.doi.org/10.1111/j.1746-1561.1999.tb06395.x>
- Carlton, G., Thompson, C., Wan, J.W., Conboy-Ellis, K., & Coates, L., (2010). Child and parental perceptions of asthma control using the childhood asthma control test. *Journal of Asthma and Allergy Educators* 1(1), 28-31. <http://dx.doi.org/10.1177/2150129709358430>
- Chenango County Public Health. (2009). *Chenango County community health assessment 2010-2013*. Retrieved from <http://www.co.chenango.ny.us//public-health/documents/ChenangoCountyCommunityHealthAssessment2010-13.pdf>
- Crosby, R.A., Wendel, M.L., Vanderpool, R.C., Casey, B.R., & Mills, L.A. (2012) Understanding rural America: A public health perspective. In Crosby R.A., Wendel, M.L., Vanderpool, R.C., & Casey, B.R. (Eds.), *Rural populations and health: Determinants, disparities, and solutions* (pp. 3 -22). San Francisco, CA: Jossey-Bass.
- Dozier, A., Aligne, C.A., & Schlabach, M.A. (2006). What is asthma control? Discrepancies between parents' perceptions and official definitions. *Journal of School Health*, 76(6), 215-218. <http://dx.doi.org/10.1111/j.1746-1561.2006.00099.x>
- Horner, S.D. (1999). Asthma self-care: Just another piece of school work. *Pediatric Nursing*, 25(6), 597, 600-604. [[MEDLINE](#)]
- Hughes, M. (2012). Asthma in adolescents. *World of Irish Nursing & Midwifery*, 20(5), 46-47.
- Jones, S.E., & Wheeler, L. (2004). Asthma inhalers in schools: Rights of students with Asthma to a free appropriate education. *American Journal of Public Health*, 94(7), 1102-1111. <http://dx.doi.org/10.2105/AJPH.94.7.1102>

- Kassem, N.O., & Lee, J.W. (2004). Understanding soft drink consumption among male adolescents using the Theory of Planned Behavior. *Journal of Behavioral Medicine*, 27 (3), 273-296. <http://dx.doi.org/10.1177/1090198109341783>
- Knight, D. (2005). Beliefs and self-care practices of adolescents with asthma. *Issues in Comprehensive Pediatric Nursing*, 28, 71-81. <http://dx.doi.org/10.1080/01460860590950845>
- Kuther, T.L. & Higgins-D'Alessandro, A. (2003). Attitudinal and normative predictors of alcohol use by older adolescents and young adults. *Journal of Drug Education*, 33 (1), 71-90. <http://dx.doi.org/10.2190/GOPR-XVHT-JL92-HE8T>
- Kyngas, H.A. (1999). Compliance of adolescents with asthma. *Nursing and Health Sciences*, 1, 195-202. <http://dx.doi.org/10.1046/j.1442-2018.1999.00025.x>
- Long, K.A., & Weinert, C. (1989). Rural nursing: Developing the theory base. *Scholarly Journal for Nursing Practice: An International Journal*, 3(2), 113-127. [[MEDLINE](#)]
- Miles, A., Sawyer, M., Franz, C.P., & Kennedy, D. (1995). A preliminary study of factors that influence children's sense of competence to manage their asthma. *Journal of Asthma*, 32(6), 437-444. <http://dx.doi.org/10.3109/02770909409077755>
- Moorman, J.E., Akinbami, L.J., Bailey, C.M., Aahran, H.S., King, M.E., Johnson, C.A., & Liu, X. (2012). National surveillance of Asthma: United States, 2001–2010. *Vital & Health Statistics, Series 3, Analytical and Epidemiological Studies / [U.S. Department of Health and Human Services, Public Health Service, National Center for Health Statistics]*, (35), 1. Retrieved from [http://www.cdc.gov/nchs/data/series/sr\\_03/sr03\\_035.pdf](http://www.cdc.gov/nchs/data/series/sr_03/sr03_035.pdf)
- Morgan, D.L. (1997). *Focus groups as qualitative research* (2<sup>nd</sup> ed.). Newbury Park, CA: Sage

National Association of School Nurses. (2011). *Role of the school nurse: Position statement.*

Retrieved from <http://www.nasn.org/PolicyAdvocacy/PositionPapersandReports/NASN/PositionStatementsFullView/tabid/462/ArticleId/87/Role-of-the-School-Nurse-Revised-2011>

National Association of State Boards of Education. (2013). *Joint statement on improving Asthma*

*management in schools.* Retrieved from <http://www.nasbe.org/wp-content/uploads/Joint-Statement-Improving-Asthma-Management-in-Schools-5.13.13.pdf>

National Heart Lung and Blood Institute. National Asthma Education and Prevention Program.

(2007). *Expert panel report 3: Guidelines for the diagnosis and management of asthma.*

United States Department of Health and Human Services, National Institutes of Health,

National Heart Lung and Blood Institute. Retrieved from

<http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf>

Paterson, G., Nayda, R., & Paterson, J. (2012). Chronic condition self-management: Working in

partnership toward appropriate models for age and culturally diverse clients. *Contemporary*

*Nurse: A Journal For The Australian Nursing Profession*, 40(2):169-178. [MEDLINE]

Price, D., Dermot, R., Pearce, L., Bawden, R., Freeman, D., Thomas, M., & Robson, L. (2002).

The burden of pediatric asthma is higher than health professionals think: results from the

asthma in real life (AIR) study. *Primary Care Respiratory Medicine Journal*, 11(2), 30-33.

Rich, M., Taylor, S.A., & Chlafen, R. (2000). Illness as a social construct: Understanding what

asthma means to the patient to better treat the disease. *Joint Commission on Accreditation of*

*Healthcare Organizations Journal*, 26(5), 245-253. [MEDLINE]

Taylor-Fishwick, J.C., Major, D.A., Kelly, C.S., Butterfoss, B.D., Clarke S.M., & Cardenas, R.A.

(2004). Assessing a community's pediatric asthma care needs: Insights gained from

physicians, school nurses, and parents. *Pediatric Asthma, Allergy & Immunology*, 17(1), 25-35. <http://dx.doi.org/10.1089/088318704322994912>

United States. Department of Agriculture. Economic Research Services (2004). *Rural-urban continuum codes*. Retrieved from <http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx>

United States. Department of Education. (2013). *Protecting students with disabilities*. Retrieved from <http://www2.ed.gov/about/offices/list/ocr/504faq.html>

van der Meer, V., van Stel, H.F., Detmar, S.B., Otten, W., Sterk, P.J., & Sont, J.K. (2007). Internet-based self-management offers an opportunity to achieve better asthma control in adolescents. *Chest*, 132, 112-119: <http://dx.doi.org/10.1378/chest.06-2787>

Van Es, S.M., leCoq, E.M., Brouwer, A.I., Mesters, I., Nagelkerke, A.F., & Colland, V.T. (1998). Adherence-related behavior in adolescents with asthma: Results from focus group interviews. *Journal of Asthma*, 35(8), 637-646. <http://dx.doi.org/10.3109/02770909809048966>

Velsor-Friedrich, B., Vlasses, F., Moberley, J., & Coover, L. (2004). Talking with teens about asthma management. *The Journal of School Nursing*, 20(3), 140-148. <http://dx.doi.org/10.1177/10598405040200030401>