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Factors Associated with Asthma Self-Management in African American Adolescents^{1,2}



Sharron J. Crowder PhD, RN^{a,*}, Kathleen M. Hanna PhD, RN^b,
Janet S. Carpenter PhD, RN, FAAN^c, Marion E. Broome PhD, RN, FAAN^d

^aCommunity and Health Systems Department, Indiana University School of Nursing, Indianapolis, IN

^bCarol M. Wilson Endowed Chair in Nursing, Nebraska Medical Center College of Nursing, Omaha, NE

^cDepartment of Science of Nursing Care, Indiana University School of Nursing, Indianapolis, IN

^dDuke University School of Nursing, Durham, NC

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Few studies have focused on asthma self-management in African American adolescents, a group with high rates of the disease. This study examined factors associated with asthma self-management in 133 African Americans aged 14–16 years including gender, asthma impairment, prior asthma education, cognitive and emotional illness representations. Twenty-five percent of the variance in asthma self-management was explained by having attended an asthma education program, perceiving more asthma consequences (illness consequences), and reporting greater understanding of asthma as an illness (illness coherence). Findings suggest that these variables may be important targets of interventions to improve asthma self-management in African American middle adolescents.

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ASTHMA SELF-MANAGEMENT AMONG African American adolescents is vitally important for preventing morbidity and mortality (Bruzzese et al., 2012; Naar-King et al., 2014). Asthma self-management refers to the problem solving behaviors that individuals use to manage asthma and includes self-care practices of symptom management, medication management, and environmental control (Fitzpatrick & Frey, 1993; Rand et al., 2012). Compared to Caucasians, African American adolescents demonstrate fewer self-management behaviors and have more uncontrolled asthma, significantly more difficulty with symptom and medication management, and more negative beliefs about their medication management (Bruzzese et al., 2012; Rhee, Belyea, Ciurzynski, & Brasch,

2009). Poor asthma self-management is associated with higher death rates, more emergency department visits, and more hospitalizations among African American youth compared to Caucasian youth (Akimbami, Moorman, Garbe, & Sondik, 2009; Gorina, 2012).

Middle adolescence, defined as ages 14–16 years (Radzik, Sherer, & Neinstein, 2008), may be a particularly challenging time for asthma self-management. Middle adolescence is a time when the fundamental attributes needed to manage asthma emerge (Sadof & Kaslovsky, 2011). Middle adolescents start to spend more time away from home and assume more of their asthma self-management (Jonason, Egmar, Haller, & Kull, 2014; Mammen & Rhee, 2012). They also want to be “normal” and like their peers but have complex asthma treatment regimens (Rhee, McQuillen, & Belyea, 2012). Self-management can be fostered or compromised by middle adolescents’ emerging abstract thinking abilities and more universal cognitive factors such as beliefs about the disease (Mammen & Rhee, 2012; Naimi et al., 2009).

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* Corresponding author: Sharron J. Crowder, PhD, RN.

E-mail address: sjcrowde@iu.edu.

Only a limited number of asthma studies have focused on factors associated with self-management among African American middle adolescents (Bruzzeze et al., 2011). Other self-management studies have been conducted with African American adolescents ranging from 13 to 19 years (Bruzzeze et al., 2012; Clark et al., 2010; Joseph et al., 2013; Naar-King et al., 2014; Velsor-Friedrich et al., 2012) without evaluating the specific group of middle adolescents. Because asthma self-management can improve outcomes and reduce health care system burden, it is important to identify factors associated with asthma self-management among African American middle adolescents (Chipps et al., 2012; Nurmagambetov et al., 2011; Rhee, Pesis-Katz, & Xing, 2012). Therefore, the purpose of this study was to examine factors associated with asthma self-management in African American middle adolescents (14–16 years of age).

Review of the Literature

In this review of literature, several factors potentially associated with asthma self-management were identified and are discussed. These include gender, levels of asthma impairment, prior asthma education, and more positive cognitive and emotional illness representations. Each of these factors is discussed below followed by a summary paragraph containing the study hypothesis.

Gender

Gender may be associated with asthma self-management. Some studies have shown that, compared to adolescent males, adolescent females have greater asthma prevalence, more emergency room visits, and hospitalizations (Clark et al., 2010; MacKay & Duran, 2008). One study showed that adolescent females had poorer medication self-management, including less overall usage of their asthma medication(s) (Bruzzeze et al., 2012). In contrast, conflicting data show that compared to females, adolescent males have higher asthma mortality rates and are more likely to delay treatment than females (Murray, Stang, & Tierney, 1997; Pawar & Smith, 2006). In addition, one study suggests that males appear to have poorer overall self-management (Joseph, Havstad, Johnson, Vinuya, & Ownby, 2006).

Level of Asthma Impairment

Another factor potentially associated with self-management is asthma impairment, defined as “the frequency and intensity of symptoms and functional limitations the patient is experiencing currently or has recently experienced” (NHLBI, 2007, p. 2). Relationships have been established between lower levels of asthma impairment and better self-management behaviors (Murphy et al., 2012; Nguyen, Zahran, Iqbal, Peng, & Bouley, 2011). Adolescents’ positive self-management behaviors, particularly symptom and medication management as well as environmental control, positively influence their level of asthma impairment (Britto et al., 2014; Chipps et al., 2012; NHLBI, 2007).

Prior Asthma Education

Comprehensive asthma education programs for adolescents have been shown to improve knowledge, symptom management, medication adherence, environmental control, and inhaler techniques as well as decrease asthma impairment (Britto et al., 2014; Mosnaim et al., 2011). Unfortunately, there are limited numbers of comprehensive asthma education programs for adolescents and not all adolescents participate in those existing programs (Srof, Taboas, & Velsor-Friedrich, 2012; Zahran, Person, Bailey, & Moorman, 2012). These programs can be offered in diverse settings including schools (National Association of School Nurses, 2014; Srof et al., 2012).

Cognitive and Emotional Illness Representations

Previous studies suggest that adolescents’ beliefs about their asthma are related to asthma self-management (Clark et al., 2010; Rhee et al., 2009); however, no studies have examined the association of illness representations (i.e. beliefs) to adolescents’ asthma self-management. Illness representations are mental representations of knowledge and experience or beliefs about an illness (Cameron & Leventhal, 2003). Leventhal, Leventhal, and Schaefer (1992) classified illness representations as cognitive (identity [*perceived*] symptoms, cause, timeline, consequences of illness, and control) or emotional (Cameron & Leventhal, 2003). Moss-Morris et al. (2002) revised the Illness Representations Questionnaire, to include the additional following representations: acute versus chronic timeline, cyclical timeline, personal and treatment control, and illness coherence, that is, one’s understanding of the illness. More positive cognitive illness representations are associated with better self-management in adults (Hagger & Orbell, 2003; Halm, Mora, & Leventhal, 2006; Horne & Weinman, 2002) including better perception and presumably better management of symptoms (Ohm & Aaronson, 2006), as well as better medication adherence or self-management (Horne & Weinman, 2002). However, the limited number of studies in adolescents did not evaluate cognitive illness representations of asthma (Bucks et al., 2009; Gaston, Cottrell, & Fullen, 2011; Zugelj et al., 2010). Emotional illness representations (depression, anxiety, anger) have been associated with the self-management behaviors of chronically ill adolescents with hypertension (Zugelj et al., 2010), but they have not been studied in adolescents with asthma as illness representations.

Summary

In summary, based on the review of literature, the hypothesis for this study was that being female, having lower levels of asthma impairment, prior asthma education, and more positive cognitive and emotional illness representations would be associated with greater asthma self-management among African-American middle adolescents aged 14–16 years. We controlled the influence of race and age on asthma self-management by limiting the sample to African Americans aged 14–16 years.

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