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Urban-Rural Differences in School Nurses' Asthma Training Needs and Access to Asthma Resources

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ABSTRACT

Purpose: Few studies have examined school nurses preferences' for asthma training. Our purpose was to: 1) assess school nurses' perceived asthma training needs, 2) describe nurses' access to asthma educational resources, and 3) identify urban-rural differences in training needs and access to resources in southern states.
Design and Methods: A convenience sample of school nurses (n = 162) from seven counties (two urban and five rural) in North Carolina and South Carolina completed an online, anonymous survey. Chi-square tests were used to examine urban-rural differences.
Results: Although most nurses (64%) had received asthma training within the last five years, urban nurses were more likely to have had asthma training than rural nurses ($\chi^2 = 10.84$, $p = 0.001$). A majority of nurses (87%) indicated they would like to receive additional asthma training. Approximately half (45%) of nurses reported access to age-appropriate asthma education materials, but only 16% reported that their schools implemented asthma education programs. Urban nurses were more likely than rural nurses to have access to asthma education programs ($\chi^2 = 4.10$, $p = 0.04$) and age-appropriate asthma education materials ($\chi^2 = 8.86$, $p = 0.003$).
Conclusions: Few schools are implementing asthma education programs. Rural nurses may be disadvantaged in terms of receiving asthma training and having access to asthma education programs and materials.
Practice Implications: Schools are an ideal setting for delivering age-appropriate asthma education. By providing school nurses with access to age-appropriate asthma education resources and additional asthma training, we can help them overcome several of the barriers that impede their ability to deliver asthma care to their students.

In 2013, the prevalence of current asthma in children under the age of 18 was 8.3%, making asthma one of the most common childhood chronic conditions in the United States (Akinbami, Simon, & Rossen, 2016). Among youth with current asthma, 33% of children (6–11 years old) and 9% of adolescents (12–19 years old) had poorly controlled asthma, as evidenced by suboptimal spirometry values (Kit, Simon, Tilert, Okelo, & Akinbami, 2016). Poorly controlled asthma can lead to costly emergency department visits and unscheduled office visits, with combined direct and indirect expenses for school-aged children estimated at over five billion dollars per year (Groenewald, Wright, & Palermo, 2015). Asthma is also responsible for approximately 10 million school absences annually (Akinbami, Moorman, & Liu, 2011) and increases the number of physically and mentally unhealthy days that youth experience, which negatively impacts their quality of life (Cui, Zack, & Zahran, 2015; Horner, Brown, & Walker, 2012).

Through national goals set forth as part of Healthy People 2020, the US Office of Disease Prevention and Health Promotion (2016) outlined several objectives to reduce the negative impact of asthma on youth. These asthma-specific objectives include: reducing missed school days due to asthma, reducing hospitalizations and emergency department visits among children, and increasing the number of people who receive formal asthma education, which includes increasing the proportion of

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people with current asthma who receive written action plans and instruction on how to use their inhalers. Because school-based programs circumvent many of the logistical issues (e.g., limited transportation and parent availability) that often prevent youth from receiving asthma education, school nurses are well-positioned to contribute toward the successful attainment of these objectives (Butz, Kub, Bellin, & Frick, 2013; Christiansen & Zuraw, 2002; Halterman et al., 2012; Horner & Brown, 2014). Indeed, a large body of literature has shown that school-based asthma education improves children's knowledge of asthma, self-efficacy, self-management behaviors, and clinical outcomes (Bartholomew et al., 2006; Butz et al., 2005; Coffman, Cabana, & Yelin, 2009; Joseph et al., 2007; Levy, Heffner, Stewart, & Beeman, 2006; Tinkelman & Schwartz, 2004).

Although school nurses are the most likely school employee to deliver asthma education to students, there is limited quantitative research focused on school nurses' access to asthma education programs and their asthma training preferences, especially for school nurses who work in southern states. Previous studies examining school nurses' asthma-related needs have documented significant barriers, such as lack of funding, inadequate supplies, and time constraints as deterrents to nurses' ability to provide asthma education to their students (Hanley Nadeau & Toronto, 2016; Hillemeier, Gusic & Bai, 2006a, b; Winkelstein et al., 2006). Indeed, one study of urban and rural school nurses in Pennsylvania found that 85% of nurses reported at least one obstacle to providing asthma management education (Hillemeier et al., 2006b). Because asthma training can increase nurses' confidence to provide effective asthma care to their students, it is important to identify nurses' asthma training needs (Putman-Casdorph & Pinto, 2011; Winkelstein et al., 2006).

The presence of environmental asthma triggers, access to healthcare, and asthma outcomes varies across urban and rural areas. Specifically, urban children with asthma are twice as likely to see a specialist and 2.7 times as likely to receive asthma care in an emergency department than rural children (Yawn et al., 2001). Rural children also may face different environmental challenges than urban children, such as increased indoor exposures to secondary smoke and a higher prevalence of allergic rhinitis and chronic bronchitis (Mujuru et al., 2011; Pesek et al., 2010; Valet et al., 2011). Additionally, school nurse staffing in rural elementary schools has been found to be less comprehensive than in urban areas (Hillemeier et al., 2006b). Although these urban-rural differences may affect the asthma training needs of school nurses, no studies have specifically examined differences in training needs for urban and rural school nurses in the South.

In order to build upon the few previous studies that have examined urban-rural differences in school nurses' asthma training needs, our purpose was to: 1) assess school nurses' perceived asthma training needs; 2) describe nurses' access to asthma educational resources; and 3) identify urban-rural differences in training needs and access to resources. Specifically, this descriptive study adds to previous work by examining urban-rural differences in student asthma education resources and school nurse training needs in two southern states and provides greater detail about the types of educational resources available to nurses and their students in urban and rural counties.

Methods

Participants

School nurses from seven counties (2 urban, 5 rural) in North Carolina and South Carolina were invited to participate in an online 16-item survey. A total of 197 school nurses were invited to participate; 162 completed the survey (participation rate = 82.2%). Because the survey was anonymous and limited to assessing training needs, the Institutional Review Boards at the University of North Carolina at Chapel Hill and University of South Carolina reviewed the survey protocol and determined that it did not constitute human subjects research.

In North Carolina, school nurses who served urban schools and were part of the School Nurse Association of North Carolina (Western region) listserv (n = 63) were emailed the survey link by their school nurse supervisor. School nurses (n = 20) who participated in the Health-e-Schools program (http:/crhi.org/MY-Health-e-Schools) were also mailed the survey link. Health-e-Schools is designed to increase access to health care for underserved children and facilitated by school nurses in four rural Western North Carolina counties. In the two South Carolina counties (one urban, one rural), the lead school nurses emailed the online survey link to all 114 school nurses employed by the school districts. The degree of rurality of the schools was determined based on the 2013 United States Department of Agriculture's Rural-Urban Continuum (RUCA) Codes (Parker, 2011).

Procedure

In order to access the online survey, school nurses clicked on a link that was emailed to them. The survey began with questions about nurses' previous asthma training experiences then asked about their perceived training needs and access to resources. The survey took approximately 5–10 min to complete; there was no incentive to participate.

Instruments

The survey was designed with input from a measurement expert and multiple school nurses in order to address the asthma training topics of importance to them. The survey was also limited to 16 items in order to limit respondent burden.

Previous Asthma Training Experience

Nurses were asked if they had specific training in asthma care (yes/no). If nurses responded that they had received asthma training, they then indicated when they received that training (within the last year, 1–2 years ago, 3–5 years ago, over five years ago), the length of training (<1 h, 1–3 h, >3 h), training mode (in-person/conference, online, other), and whether the training had a specific focus on children (yes/no).

Training Preferences

Nurses indicated which topics they would like additional training in, including: 1) identifying early warning signs of an attack; 2) school protocol for dealing with an acute asthma exacerbation (asthma attack); 3) medication administration; 4) coordinating care with primary care providers or specialists; 5) identifying and eliminating asthma triggers at school; 6) creating and modifying asthma action plans; 7) strategies for identifying symptoms; and 8) other (all "other" choices in the survey included a fillable text box). They also answered a yes/no question regarding whether they would like additional training in how to effectively communicate the needs of students with asthma to others. If they answered yes, they were then asked with whom, with options including: 1) families; 2) students without asthma; 3) teachers; 4) other school faculty/staff (e.g., coaches, bus drivers, custodians, nutrition staff); 5) healthcare providers; and 6) other outside agencies. Finally, nurses indicated whether they would prefer to receive additional training in-person, online, or via another format, as well as how much time they would be willing to dedicate to such training.

Access to Asthma Education Resources

The survey also assessed school nurses' access to asthma education resources. Three yes/no questions assessed: 1) whether there were student asthma education programs at the nurse's school; 2) if there were age-appropriate asthma education materials available to students; and 3) whether the nurse was willing to show educational videos to students. If nurses indicated asthma education programs were available,