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THE ROLE AND IMPACT OF SCHOOL NURSES AND INTENTIONS TO DELEGATE DIABETES-RELATED TASKS AMIDST BUDGET CUTS AND LEGISLATIVE CHANGES

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THE ROLE AND IMPACT OF SCHOOL NURSES AND INTENTIONS TO DELEGATE DIABETES-RELATED TASKS AMIDST BUDGET CUTS AND LEGISLATIVE CHANGES

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Education in the
College of Education, Kinesiology and Health Promotion Department
at the University of Kentucky

By

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ABSTRACT OF DISSERTATION

THE ROLE AND IMPACT OF SCHOOL NURSES AND INTENTIONS TO DELEGATE DIABETES-RELATED TASKS AMIDST BUDGET CUTS AND LEGISLATIVE CHANGES

As the percentage of school children with chronic conditions such as diabetes continues to rise, funding for school nurses to keep those students healthy and safe is decreasing. This dissertation includes three studies: (1) a systematic review of the literature on the role and impact of American elementary school nurses, (2) a focus group study that further examined the role of Kentucky school nurses and described their reaction to a new regulation that necessitates delegation of diabetes-related nursing tasks to unlicensed assistive personnel (UAP), and (3) a quantitative study that examined Kentucky school nurses' past behaviors and future intentions regarding the delegation of diabetes-related tasks.

A systematic review of the literature revealed that activities of school nurses can be conceptualized into four major areas: (a) health promotion and disease prevention; (b) triage and treatment of acute issues (e.g., injuries and infectious diseases); (c) management of chronic conditions; and (d) psychosocial support. School nursing activities are associated with increased attendance, higher quality schools, and cost savings.

Focus groups in three regions of Kentucky found that Kentucky school nurses fulfill the same major roles as their counterparts across the nation, and face similar challenges such as lack of time, limited resources, language barriers, and communication issues with families. School nurse participants described their biggest impact on students as identifying and addressing students' physical and psychosocial barriers to learning. While recent legislation was passed in Kentucky necessitating the delegation of insulin administration to UAP, school nurses had not experienced many changes at the time of the focus groups. However, some nurses said that their districts were not planning to delegate insulin administration and intended to keep a nurse in every school. Others appreciated the prospect of having more trained staff in schools to recognize signs of distress in chronically ill students.

A statewide survey of 111 Kentucky school nurses indicated that nurses' past delegation behaviors and future intentions related to delegation are rooted in the level of skilled

decision-making that must occur and the risk to the student if the wrong decision is made. Unfortunately, school nurses' intentions to delegate higher-stakes tasks (e.g. carbohydrate counting, insulin dose verification, and insulin administration) were significantly stronger than their support for (attitude related to) delegation of those tasks, which is disconcerting both for the safety of students as well as for the liability retained by delegating nurses. This disparity between support and intentions indicated that school nurses anticipate that they will have to delegate certain tasks to UAP despite their discomfort with delegating them, most likely due to high workload and lack of resources.

Additional studies should be undertaken to determine the impact of legislative changes on the delivery of school health services in Kentucky and other states, particularly once school districts and nurses have had adequate time to adjust to new laws. Such studies should investigate to whom nurses are delegating health services, what tasks are being delegated, and the extent and process of training that UAP receive. Future surveys should utilize perceived behavioral control items that assess situational control (e.g. policy, workload) over delegation rather than, or in addition to, efficacy of individual skills required for delegation of nursing tasks. Researchers must further explore the discrepancies between attitude and intentions; that is, why are nurses planning to delegate tasks to UAP if they do not support the delegation of those tasks?

Kentucky school nurses are champions of health promotion for children, not only in their provision of health services and health education, but also in the area of school health policy. School nurses should train UAP so that more school staff can recognize signs of distress in students with diabetes, but at the same time should continue to advocate and seek funding for a nurse in every school with the help of the Every Student Succeeds Act.

KEYWORDS: School nursing; school health; diabetes; delegation; health promotion; health policy; theory of planned behavior

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By

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I dedicate this manuscript to my family – Jeff, Conner, and Caleb. Although this work has often taken my time and attention away from you, you were also the reasons that I could never give up. My success is your success.

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CHAPTER ONE

Introduction

An astonishing 13 – 18% of American children and adolescents have some sort of chronic condition (Cohen et al., 2011; Perrin, Bloom & Gortmaker, 2007; Van Cleave, Gortmaker & Perrin, 2010), and an estimated 4 – 6% of all school-age children receive medication in school on a typical day (Ficca & Welk, 2006; McCarthy, Kelly & Reed, 2000). In order for chronically ill children to receive a comparable education to their healthy peers, a considerable amount and variety of health services must be provided at school. Such services are commonly provided by a school nurse. The critical role played by school nurses in both health and educational outcomes for students has been demonstrated in the literature. Students in schools with nurses have higher overall school attendance (Allen, 2003) than students in schools without nurses, and school attendance is associated with academic achievement (Roby, 2003). Nurses not only take the burden off teachers and other school personnel by attending to students' acute illnesses and injuries; they also ease the burden of parents and guardians by managing chronic conditions in children such as diabetes and asthma (Perrin, Bloom, & Gortmaker, 2007). The presence of nurses in schools allows teachers to concentrate on teaching rather than caring for ill students, children to learn more as a result of increased attendance in the classroom, and parents to be present and productive at higher levels in the workforce (Wang et al., 2014). Unfortunately, variable parameters related to the provision of health services in schools coupled with an economic decline have led school systems to question the extent to which school nurses are needed (Lineberry & Ickes, 2015). Many states

have passed laws and regulations that allow health services to be delivered to students by school personnel rather than a registered nurse through a process called delegation.

Delegation

Delegation of health-related tasks by a registered nurse to an unlicensed staff person is not unique to the school system, but is used by nurses in many practice settings including hospitals. The American Nurses Association (ANA) defines nursing delegation as the transfer of responsibility of performing a nursing activity to another person while retaining accountability for the outcome (ANA & National Council of State Boards of Nursing (NCSBN), 2006). An important principle of delegation is that while a nurse may delegate components of care, he or she may not delegate the nursing process itself. That is, the "functions of assessment, planning, evaluation, and nursing judgment cannot be delegated" (ANA & NCSBN, 2006, p. 2). Furthermore, the decision of whether or not to delegate any particular task is based on the nurse's judgment considering the Five Rights of Delegation (ANA & NCSBN, 2006):

1. The right task
2. Under the right circumstances
3. To the right person
4. With the right directions and communication
5. Under the right supervision and evaluation

Delegation by School Nurses

The National Association of School Nurses (NASN) posits that the delegation of nursing tasks in schools can be valuable when based on the above definition of delegation and in compliance with state nursing laws, regulations, and guidance (2014).

> When a review of the Five Rights of Delegation indicates that delegation is appropriate, the school nurse must develop an individualized healthcare plan (IHP), based on the medical orders, outlining the level of care and healthcare needs of the student and indicating which nursing tasks can and cannot be delegated. Further, the continuous process of evaluation should be based on outcomes of care, ensuring that the delegated task is completed properly and produces the desired outcome. Delegation is not appropriate for all students, all nursing tasks, or in all school nurse practice settings. (NASN, 2014, p. 3)

Complicating matters related to the Five Rights of Delegation is that state regulations related to delegation vary considerably, and sometimes policies within states contradict one another. Wilt and Foley (2011) stated:

> When educational law empowers a school administrator to delegate or assign tasks, policies may be created that are in direct conflict with State Nurse Practice Acts [NPAs], placing the school nurse in the position…where [he or she] may not be able to directly supervise an individual who has been delegated to perform nursing procedures and forced to choose between following standards of nursing practice or an administrator's directive. This puts the school nurse and his or her nursing license in a precarious position. (p. 186)

Delegation by School Nurses in Kentucky

In Kentucky, under Kentucky Revised Statute (KRS) 156.501, each school district is responsible for developing policies and procedures specific to student health services (Kentucky Department of Education, 2012). Further, KRS 156.502 stipulates that health services be provided in a school setting by a physician, advanced practice registered

nurse, registered nurse, licensed practical nurse or a school employee who is delegated responsibility to perform the health service by a physician or nurse (Kentucky Department of Education, 2012). In other words, Kentucky state law allows school health services – such as administration of certain over-the-counter and prescription medications, blood glucose monitoring, and carbohydrate counting – to be provided by unlicensed assistive personnel (UAP) who have been deemed competent to perform the service and trained by a delegating physician or nurse to deliver the service. This statute intends to increase the reach of physicians and nurses by extending their services (via UAP) in a cost-effective manner. For instance, rather than employing a physician or nurse in every school to administer medications, a school district could opt to contract with a few physicians or nurses to train existing staff, such as educators or administrative personnel, in each school to administer medications to its students. This practice has been in place in Kentucky for many years. However, amended legislation (KRS 158.838; Kentucky Legislative Research Commission, 2014) was proposed in 2013 that required at least one employee on duty at all times at each school to administer insulin injections to students with diabetes. This legislation, in turn, necessitated an extension of the services that could be delegated to UAP to include administration of insulin injections. Informal conversations with school nurses at that time reflected concerns about both the potential harm to students receiving services from UAP and the risk of liability for the nurses who would delegate these services (E. Stone, personal communication, December 6, 2013). Unpublished survey results collected in October 2013 by Eva Stone, an advanced practice registered nurse and school health coordinator for Boyle County Schools in Kentucky, in anticipation of the proposed law, showed that 80.4% of 224 Kentucky school nurse

respondents did not support unlicensed school staff being trained to administer insulin in schools (personal communication, December 17, 2013). Respondents also lamented that their non-nursing colleagues (potential UAP) in schools were unsupportive of the proposed amendment, using the words “uncomfortable”, “apprehension”, and “fear” in describing unlicensed UAP’s feelings regarding potential management of students with diabetes.

Purpose and Significance of Research

If broadly implemented, Kentucky’s adoption of legislation expanding the services that could be delegated to UAP in schools to include the administration of insulin had the potential to bring significant changes to school health in Kentucky. An investigation into the effects of such legislation is certainly warranted. By determining the present nature and extent of delegation to UAP in Kentucky schools, as well as the factors associated with nurses’ intention to delegate in the future, leaders in school health can develop policies and training programs that promote the safe, effective, and consistent delivery of health services in Kentucky schools.

This dissertation is comprised of three separate studies in chapters two through four, narrowing in focus from general (school nursing in America) to specific (delegation of diabetes care by school nurses in Kentucky), utilizing various research methods (systematic review of the literature, focus groups, and surveys) and evolving in time (from proposed legislation to nearly one year beyond its adoption).

Chapter Two Overview

To provide a broad foundation upon which to study this problem, a better understanding of school nursing was needed. Chapter two summarizes the results of a

systematic review of past research demonstrating the role and impact of nurses in American elementary schools (Lineberry & Ickes, 2015). Based on the literature identified through the systematic review, activities of school nurses can be conceptualized into four major areas: (a) health promotion and disease prevention; (b) triage and treatment of acute issues (e.g., injuries and infectious diseases); (c) management of chronic conditions; and (d) psychosocial support. School nursing activities are associated with increased attendance, higher quality schools, and cost savings. In addition, teachers, school administrators, and parents all view the school nurse as an invaluable member of the educational team. This study was published in the *Journal of School Nursing* in 2015.

Chapter Three Overview

The systematic review of the national literature, along with the amendment of KRS 158.838 (requiring at least one employee on duty at all times to administer insulin injections to students with diabetes) in March 2014, provided the impetus to further explore the delivery of school health services in Kentucky and how it might be changing due to the amended law. Focus groups offered an opportunity for such exploration, providing insight into the unique challenges faced by school nurses in Kentucky, and allowed for the informed design of a quantitative survey instrument to collect data from school nurses across the state. Chapter three describes the results of three focus groups with school nurses in various regions of Kentucky. The purposes of the focus groups were to:

- define the role of school nurses in Kentucky,
- describe the impact of school nurses on students,

- explore challenges faced by school nurses in Kentucky,
- describe if and how school nursing had changed at that point due to budget cuts and legislation, and
- gather information to focus and inform the development of a survey for all Kentucky school nurses.

Chapter Four Overview

The focus groups revealed much uncertainty about the consequences of the KRS 158.838 amendment. However, since the amendment did not take effect until July 2014, school nurses had not yet experienced many changes in their duties related to the law at the time of the focus groups in September 2014. While the focus groups included rich discussions of the challenges faced by nurses in schools and their many varied duties, the role of school nurses in caring for students with diabetes and the nurses' attitudes about whether and how to delegate that care following enactment of this new legislation warranted further study. The researcher found no other published studies that examined school nurses' attitudes and intentions to delegate the delivery of diabetes health services. However, unpublished research indicated that Kentucky school nurses' delegation practices and support for delegation vary widely. There are many serious issues surrounding delegation of diabetes-related tasks including problems that could arise from nurses' unwillingness to delegate certain diabetes-related tasks, or problems that could arise when delegation does occur. Because there is very little guidance in the research literature regarding this topic, the current study was undertaken. The final component of this dissertation research utilized information gleaned from the focus groups as well as Ajzen's (1991) Theory of Planned Behavior as a framework to describe the delegation of

diabetes care in Kentucky schools. Specifically, a statewide survey of school nurses' attitudes, perceptions, intentions, and behaviors related to the delegation of diabetes care to UAP was undertaken one year following the enactment of the 2014 amendment of KRS 158.838. The purpose of the survey was three-fold:

- to describe the attitudes, perceived behavioral control, and subjective norms of Kentucky school nurses regarding the delegation of diabetes health services to UAP;
- to determine the nature and extent to which health services related to diabetes were being delegated to UAP in Kentucky schools; and
- to determine the demographic profile, attitudes, perceived behavioral control, and subjective norms associated with school nurses' intentions to delegate health services related to diabetes to UAP in Kentucky schools.

The hypotheses associated with the survey research were:

- School nurses' demographic characteristics (e.g. length of time as a school nurse, type of degree, number of schools and students served) will be associated with their attitudes, perceived behavioral control, and subjective norm related to the delegation of diabetes-related tasks to UAP;
- School nurses' attitudes, perceived behavioral control, and subjective norm will be associated with their intentions to delegate diabetes-related tasks to UAP;
- More Kentucky school nurses will report that they delegate blood glucose monitoring, insulin dose verification, and glucagon administration than carbohydrate counting and insulin administration; and

- A linear composite of school nurses' attitudes, perceived behavioral control, and subjective norms related to the delegation of diabetes-related tasks to UAP will be associated with their intentions to delegate those tasks.

Chapter four briefly reviews the literature and describes survey findings and implications.

Chapter Five Overview

Chapter five provides a summary of the findings from the three papers in this dissertation. Conclusions from each study are compiled and reiterated. Finally, implications that this dissertation has for future research, policy, and practice are considered.

CHAPTER TWO[1]

The Role and Impact of Nurses in American Elementary Schools: A Systematic Review of the Research

Introduction

Keeping children safe, healthy, and in school should be a top priority. Since all American children aged five years and older must attend school, the school system provides an excellent opportunity to promote health in children. In fact, the Centers for Disease Control and Prevention (CDC, 2013) recommend coordinated school health (CSH) as a strategy for improving health and learning in American schools.

Coordinated School Health

The CDC (2013) claims that school health programs and policies in the U.S. have resulted from a wide variety of mandates and regulations at multiple levels, culminating in a collection of policies and programs that have been pieced together with differing standards and target populations, overseen by professionals in multiple disciplines. Coordinating these many pieces into a systematic approach can enable schools to eliminate gaps and reduce redundancies, build partnerships and enhance communication among professionals within the school and throughout the community, and focus efforts on helping students engage in protective health behaviors while avoiding risky behaviors (CDC, 2013).

The CDC (2013) describes eight components of CSH: health education; physical education; health services; nutrition services; counseling, psychological, and social

[1] Lineberry, M. J. & Ickes, M. J. (2015). The role and impact of nurses in American elementary schools: a systematic review of the research. *Journal of School Nursing*,*31*(1), 22-33. doi: 10.1177/1059840514540940.

services; a healthy and safe school environment; health promotion for staff; and family and community involvement. Each of these eight components of CSH contributes to an overarching goal of healthy school children. As such, each component must be upheld as an integral and necessary function, strengthened by ongoing study and quality improvement.

Unfortunately, budget cuts in education are forcing boards of health and administrators to reduce costs in schools (Leachman & Mai, 2013). Since health services are provided by qualified professionals such as physicians, dentists, health educators, and school nurses, they incur personnel costs above and beyond the cost of teachers and administrators. Cutting health service professionals from the budget may seem like an easy way to reduce costs with minimal consequences, but the services lost would be devastating to the children attending our nation's schools.

The Health of School Children

Reading, writing, and 'rithmatic may be the foundations of elementary school, but many other support services must be offered in schools to promote a safe and accessible learning environment for all children. Medically fragile children in school require ventilators, tube feedings, medication, and other complex nursing care (Allen, Cristofalo, & Kim, 2011). Approximately 215,000 people younger than 20 years of age have either type 1 or type 2 diabetes (CDC, 2011), and 8% of all children have a food allergy (Gupta et al., 2011). Approximately 9% of all children have asthma (Akinbami et al., 2012) and more than 326,000 school children through age 15 years have epilepsy (Epilepsy Foundation, 2010). More than one third of children and adolescents are overweight or obese (Ogden, Carroll, Kit & Flegal, 2012). Overall, between 13 – 18% of children and

adolescents have some sort of chronic condition (Cohen et al., 2011; Perrin, Bloom & Gortmaker, 2007; Van Cleave, Gortmaker & Perrin, 2010), and an estimated 4 – 6% of all school-age children receive medication in school on a typical day (Ficca & Welk, 2006; McCarthy, Kelly & Reed, 2000). In order for medically fragile and chronically ill children to receive a comparable education to their healthy peers, a considerable amount and variety of health services must be provided at school. Such services are commonly provided by school nurses.

Health Services and School Nursing

While no federal law or mandate specifies the role, scope of practice, or academic preparation of school nurses, policy statements and recommendations by expert groups offer guidelines that school districts should aspire to achieve. The National Association of School Nurses (NASN) defined school nursing as:

> a specialized practice of professional nursing that advances the well-being, academic success and lifelong achievement and health of students. To that end, school nurses facilitate normal development and positive student response to interventions; promote health and safety including a healthy environment; intervene with actual and potential health problems; provide case management services; and actively collaborate with others to build student and family capacity for adaptation, self-management, self-advocacy, and learning. (NASN, 2010)

The American Academy of Pediatrics (AAP) Council on School Health (2008) stated that, while school nurse activities and the range of school health services varies by school district, the following services are the minimum that should be offered: assessment of health complaints, medication administration, and care for students with special health

care needs; a system for managing emergencies and urgent situations; mandated health screening programs, verification of immunizations, and infectious disease reporting; and identification and management of students' chronic health care needs that affect educational achievement. Furthermore, the NASN determined, and the AAP supported the determination, that the minimum qualifications for the professional school nurse should include licensure as a registered nurse and a bachelor's degree from an accredited college or university, with additional certification licensure for the school nurse established by appropriate state boards of nursing (Council on School Health, 2008).

Loose parameters surrounding health services and school nursing coupled with an economic decline have led school systems to question the extent to which nurses are needed in schools. Evidence of the impact of school nurses can and should be evaluated before these critical facilitators of coordinated school health are cut from the budget. The purpose of this article is to summarize the results of past research demonstrating the effects of school nurses in American elementary schools on outcomes such as student attendance, academic achievement, immunization compliance, health screenings, obesity prevention, health knowledge, school personnel and parent satisfaction, and teacher and administrator time savings. This synthesis will, in turn, guide recommendations for school districts as they move forward with personnel decisions related to the delivery of health services in elementary schools.

Review Process and Selection Criteria

Four computerized databases were searched by one researcher: CINAHL, Educational Resource Information Center Database (ERIC), EBSCO MEDLINE, and Academic Search Elite. Search terms included a combination of the following: school

nurse, school nursing, primary school, elementary school, and child: 6-12 years. Approximately 250 articles were initially identified. Inclusion criteria for this synthesis included American elementary school-related articles written in English and published from 1937 (earliest publication date indexed in selected databases) to June 2013 in a peer-reviewed journal. Non-American schools were excluded due to the differences in both education and health care internationally, and studies examining only middle and high schools were excluded due to the variety of social and developmental issues presented by and unique to adolescent students. Only articles reporting original quantitative, qualitative, or observational data were included. Additionally, only articles describing the activities (e.g., interventions, surveillance) or perspectives of school nurses, or stakeholders' (e.g., students, parents, teachers, administrators) perspectives of the role of school nursing, were included. On the basis of these criteria, 30 articles qualified for this review. Figure 2.1 provides additional details of the flow of information through the systematic review.

Findings

Twenty-two of the studies were descriptive (Table 2.1) and eight were quasi-experimental (Table 2.2). Thirteen of the studies utilized surveys or questionnaires in data collection; thirteen extracted data from student health and school attendance records; four gathered data through interviews or focus groups; four used nursing logs or task analysis of nursing activities; and two studies directly measured student knowledge through quizzes. Study subjects and units of analysis ranged from individual students (sample size range 125 – 16,595) to school nurses (sample size range 21 – 2,629), parents (N = 369), teachers/administrators (sample size range 102 – 699), schools (sample size range 2 –

175), and school districts/counties (N = 57). Based on the literature identified through the systematic review, activities of school nurses can be conceptualized into four major areas: (a) health promotion and disease prevention; (b) triage and treatment of acute issues (e.g., injuries and infectious diseases); (c) management of chronic conditions; and (d) psychosocial support. Data related to student attendance, time and cost savings, and satisfaction with the school nurse were also synthesized.

Discussion

Health Promotion and Disease Prevention

The included studies highlighted many key activities of elementary school nurses that can be described as health promotion and disease prevention, including education of students and school personnel, screening of vision and body mass index (BMI), and tracking and administration of immunizations. For instance, school nurses in Chicago delivered three in-service sessions to assist teachers in identifying students' health problems, reading students' health records and using them effectively, and making referrals to the school nurse (Rose, Chen, & Souter, 1987). Teachers commented that the program facilitated better care for children, and their referrals of students to the school nurse increased dramatically following the program.

Two studies (Kimel, 1996; Morton & Schultz, 2004) described personal hygiene interventions by nurses, specifically related to germs on hands. Kimel (1996) found that absenteeism was significantly higher in control students than in students receiving a hand washing program (p = .001). Similarly, Morton and Schultz (2004) reported that significantly fewer students became ill after receiving a nurse-delivered "Germ Unit" and using alcohol gel in addition to typical hand washing (p = .0053). Thus school nurses can

play a large role in equipping students with the knowledge and skills to prevent the spread of infection, allowing them to attend and participate in the classroom to the best of their ability, and avoiding parents' and guardians' absence from the workforce to care for sick children.

O'Donnell and Alles (1983) described a study in which a school nurse secured grant funding to implement a nutrition curriculum in an elementary school. The nurse identified an existing curriculum and trained teachers on its delivery, and also obtained nutrition resources beyond the curriculum for use in the school. At each grade level (kindergarten through sixth grade), there was a positive gain in mean nutrition achievement test scores from pretest to posttest. For example, there was a 7.8 point increase from pretest (M = 13.3, SD = 3.9) to posttest (M = 21.1, SD = 5.1) on the 30 item nutrition achievement test administered to third-graders. If this knowledge later translates into healthy food choices, and perhaps sharing of the information with family members at home, it could potentially have a large impact on the overweight and obesity crisis facing our nation. Similarly, DeSocio, Stember, and Schrinsky (2006) reported a study in which the school nurse delivered six, 45-minute modules on mental health to children ages 10-12 years. Scores of students' mental health knowledge improved significantly from pre-test to post-test. In addition, teachers and other school personnel used the school nurse as a health education resource and students' visits to the school nurse increased following the program ($p < .001$). As adolescent suicides and acts of violence in school become more common, it is important that students learn to identify signs of emotional distress in themselves and their peers so that they can seek help before tragedy occurs. In combination, these studies demonstrate the capacity and value of utilizing school nurses

in the delivery of health education, a broad subject that supports individual and population health throughout the lifespan.

School nurses have long been recognized for their health screening activities. In fact, Weismuller and colleagues (2007) found that 65.8% of referrals to the school nurse were for screening. Kemper, Helfrich, Talbot, and Patel (2012) reported that vision screening by school nurses in their study resulted in identification of at least three cases of refractive error for every 100 students screened. In addition, they noted that about two-thirds of the students with abnormal screenings had documented follow-up with an optometrist or ophthalmologist within six months after screening.

Several studies described BMI screening and obesity prevention practices. Morrison-Sandberg, Yubik, and Johnson (2011) reported that all school nurses in their study practiced primary prevention (methods to thwart disease onset; e.g., height and weight screening for all students, nutrition/ exercise education through newsletters and in the classroom) and 90% practiced secondary prevention (methods to detect and treat disease early; e.g., guidance to parents regarding dietary changes, support for children being teased about their weight) related to obesity. In another study, nearly 72% of nurses reported school-based screening or assessment related to overweight students; however, elementary school nurses were less likely to provide weight management services than were high school nurses ($p < .001$); Stang, Story, & Kalina, 1997). Nauta, Byrne, and Wesley (2009) reported that, although nearly all school nurses believed that childhood obesity was becoming more prevalent, only one-third used BMI screening and were confident recommending weight-control programs for children with obesity.

Hendershot and colleagues (2008) found that school nurses with mandated BMI screening policies had higher BMI efficacy expectations and reported knowing how to correctly measure BMI as compared to nurses in schools without BMI screening mandates ($p < .001$). Over half of the school nurses in the study reported that tracking BMI would help convince administrators to implement healthy weight programs in schools. Stalter, Chaudry and Polivka (2011) reported that all school nurses in their study perceived BMI as an accurate measure of school health and beneficial in evaluating team efforts aimed at school health. Similar to Hendershot and colleagues' (2008) findings, nurses in this study reported that lack of a BMI screening policy was a barrier to BMI screening in schools (Stalter et al., 2011). Additional barriers reported included lack of privacy, time, training, educational materials, and administrative support as well as high workloads (Morrison-Sandberg, Kubik, & Johnson, 2011; Stalter, Chaudry, & Polivka, 2011; Stang, Story, & Kalina, 1997). Also noted were facilitating factors to BMI screening, including physical education teachers who often supported school nurses in collecting and recording BMI data, and adequate space and equipment (Stalter, Chaudry, & Polivka, 2011).

School nurses also promote compliance with required vaccinations for students. Luthy and colleagues (2011) described an intervention in which school nurses delivered curriculum to sixth-grade classes weekly for four weeks on the Tdap and other immunizations, as well as additional ways to decrease communicable diseases. The nurses encouraged classroom teachers to supplement the weekly curriculum with a 15-20 minute lesson on immunizations each week. Tdap immunization compliance increased from 4% to 57% for this group of students. The authors (Luthy et al., 2011) noted,

however, that this compliance rate was similar to the compliance rate (54%) of students entering seventh grade the year of the study, so "numerous children would have likely received their Tdap immunization in preparation for seventh grade entry anyway" (p. 255). In 2004, Salmon's research team found that school nurses were more likely than other school personnel to hold beliefs supporting the utility and safety of vaccines, and that students attending school with a school nurse were significantly less likely to have immunization exemptions than children attending schools without nurses (odds ratio = .39; 95% CIs [.28, .56]). In another study, students attending schools whose nurses offered on-site administration of the FluMist vaccine had significantly fewer days absent than students in schools that did not offer the vaccine ($p < .001$; Wiggs-Stayner et al., 2006). While not statistically significant, Baisch's (2011) study found that immunization compliance was much greater after school nurses were hired. Thus, through delivery of educational units in the classroom and less tolerance for non-medically necessary exemptions, nurses are increasing vaccination rates and reducing the transmission of communicable diseases in schools.

Triage and Treatment of Acute Issues

Weismuller and colleagues (2007) reported that 21.7% of referrals to the school nurse were for physical illnesses. Stephenson (1983) found that 56% of visits to a school nurse resulted in the child being returned to the classroom rather than being sent home. The percentage of students that check out of school for illnesses is significantly lower in schools that have a full-time nurse compared with schools that do not have a full-time nurse ($p = .04$; Allen, 2003). In Allen's (2003) study, schools without full-time nurses relied on the school secretary, teacher, or a parent volunteer to decide when a student

should be sent home from school rather than having a trained nurse assess the child and make a recommendation. If the student's parents or caregivers are at work when they are notified that the student is being sent home, they must leave work to pick up the child, sometimes losing income or receiving disciplinary action for their absence. While truly sick children should not be at school since they cannot learn when they do not feel well and may infect other students, students that are not infectious and could feel better with minimal care should be allowed to stay at school so that they do not miss classroom time and their caregivers do not face consequences of missing work. Some schools have implemented practices that promote such "minimal care" for students that do not feel well but are not infectious, such as allowing the school nurse to administer over-the-counter (OTC) medications. One study (Foster & Keele, 2006) reported a trend for fewer students to be sent home after implementation of a district-wide policy allowing school nurses to administer OTC medications such as acetaminophen, ibuprofen, and cough drops to students presenting to the school nurse with mild symptoms. Parents seemed supportive of the policy, with 95% giving permission for the nurse to administer at least one OTC medication to their children. That the policy would prevent them from leaving work to bring their children OTC medications or pick them up from school likely contributed to their support. Thus, having trained school nurses available to assess students' symptoms and provide minimal treatment increases students' time in the classroom and parents' time at work.

Management of Chronic Conditions

Management of chronic disease emerged as another major role of the school nurse. Baisch and colleagues (2011) examined student health records and reported that

their contents were much more complete following the implementation of school nurses ($p < .05$), noting that complete and accurate records are necessary for the safe management of students' health conditions. Bucher, Dryer, Hendrix, and Wong (1998) found that school nurses in their study each cared for an average of 34 students with asthma, with most of their students taking one medication for asthma at school. The majority reported that asthma medications were administered either by the school nurse or by the student under the nurse's supervision. While inhalers were the most common pharmacological asthma treatment administered, school nurses reported frequently using nonpharmacological treatments such as a calming environment, emotional support, positioning, and pursed lip breathing to diminish asthma attacks in students. Fortunately, this treatment by school nurses seems to pay off; students with asthma in schools with full-time nurses missed significantly fewer days than students in schools with part-time nurses ($p \leq .05$); Telljohann et al., 2004). Despite their efficacy, school nurses identified four major barriers in caring for students with asthma: lack of student and parent knowledge; lack of communication between parents, school personnel, and physicians; lack of resources since many families cannot afford a second set of asthma medications and supplies to keep at school; and lack of respect for the school nurse's expertise and role (Major et al., 2006). While, as mentioned earlier, other chronic conditions such as life-threatening allergies and diabetes are becoming more common in students, the current study did not result in articles specific to the management of these conditions by school nurses.

Psychosocial Support

School nurses also help students manage and cope with psychosocial problems such as bullying and familial issues. Nurses reported seeing between 0 and 40 cases of bullying per month, but also said that they were only moderately confident that they could recognize bullies or their victims (Hendershot et al., 2006). Vernberg, Nelson, Fonagy, and Twemlow (2011) found that both victimization and aggression were significant, unique predictors of visits to the nurse for somatic complaints, illness, and injury after controlling for grade and gender ($p \leq .05$). This indicates that nurses have the advantage of being in a position to help students who present with issues related to being the victim or perpetrator of bullying. School nurses reported that four effective strategies in reducing student bullying are improved supervision of students, prevention activities, assisting students showing warning signs, and responding after bullying occurs (Hendershot et al., 2006). With so many negative consequences of bullying including emotional distress that can lead to suicide or acts of violence (Klomek, Marrocco, Kleinman, Schonfeld, & Gould, 2007), it is critical that school personnel are vigilant and prepared to respond to bullying. School nurses are already taking on this role but need more training to increase their confidence.

Interestingly, Snyder, Minnick, and Anderson (1980) found that students whose parents are divorced or separated visit the school nurse more frequently than children living with both biological parents ($p < .001$), and they present more frequently to the nurse with injuries/trauma ($p < .01$). Nurses can use these visits to provide emotional support and coping skills to students, and refer them to additional services if necessary.

The time spent by school nurses on these activities seems to be different based on the grade of the students served. Gilman's (1979) team found that the school nurse spends significantly more time in direct contact with students as the school level increases ($p = .0001$). While high school nurses spend much of their time obtaining health history directly from students and providing individual counseling and consultation, elementary school nurses spend more of their time talking with students' parents and teachers and administering prescribed medications. Stephenson (1983) found no significant differences in number of visits to the elementary school nurse's office by gender, familial income, identification of a primary care physician, or academic level within each grade. However, results indicated significantly more frequent visits to the school nurse by students in higher grades ($p < .01$) and students with recurrent health problems ($p = .04$). Clearly school nurses are serving the needs of students at all levels through both direct interaction and collaboration with students' families and community resources.

Satisfaction and Savings

Parents and school personnel alike have positive attitudes toward the elementary school nurse. Baisch, Lundeen, and Murphy (2011) reported that school personnel believed that the school nurse helped to keep children in school when they may have been sent home without a school nurse. They all believed that they spent considerably less time on student health issues after a nurse was hired, freeing their time to attend to their primary roles. Specifically, the school nurse freed about 57 minutes per day for principals, 46 minutes per day for clerical staff, and 20 minutes per day for teachers. This time savings adds up to considerable cost savings. Baisch and colleagues (2011) reported

that the "total annual savings in staff time per school based on changes in time spent dealing with health concerns when a school nurse is present may be estimated at over $133,000" (p. 77). According to Hill and Hollis's (2012) study, this figure might be a gross underestimation. Whereas Baisch, Lundeen, and Murphy (2011) accounted for each teacher losing 20 minutes of instructional time per day while caring for students' health issues, the teachers in a study by Hill and Hollis (2012) estimated that time lost each day was approximately an hour. These teachers believed that they spent more time teaching and that students with chronic illnesses were safer when school nurses were present (Hill & Hollis, 2012). Moreover, they expressed frustration that they were responsible and potentially liable for students' health issues when school nurses were not present.

Parents have their own ideas of the value of elementary school nurses. Kirchofer's team (2007) found parents' perceptions of the five most important roles of the school nurse to be providing first aid and emergency care; educating teachers related to students with special needs; communicating with parents, the school, and health providers; preventing and controlling diseases; and providing medical treatments to students with special needs or chronic conditions. The fact that 100% of parent respondents in this study said that they were willing to pay an increase in annual tax dollars to have a full-time nurse in elementary schools highlights the value they place on the activities of the nurse.

If increased finances were designated for the support of school nursing within increased funding streams for education and schools, these parents just might see increases in their children's attendance and achievement in math and reading. Gottfried (2012) found that, after controlling for school budget and characteristics of individual

students, classrooms, teachers, principals, and neighborhoods, schools with nurses have higher measures of quality related to reading achievement, math achievement, and attendance than do schools without nurses ($p < .05$). Since Guttu and colleagues (2004) reported that lower nurse-to-student ratios were significantly related to services provided to children with diabetes and asthma; counseling sessions for psychological problems; serious injuries reported, documented, and referred to school nurse for follow-up care on returning to school; and follow-up care with a specialist as a result of school vision screening, schools should consider number of students enrolled in deciding how many nurses they should support to reap these important benefits.

Limitations

Several limitations to this study exist. One researcher conducted the literature search and extracted all data, relying solely on previously published articles of original data indexed in selected databases. Publication bias is certainly a limitation in a review focused solely on peer reviewed literature, yet with the scarcity of research in this area, this review is warranted. In addition, only American studies of elementary school nurses were included. This decision tied directly into the differences in education structure of American schools compared to international institutions and provides a framework for future studies to consider. The selection of certain keywords – and exclusion of others – in the research methods also likely limited the results. However, common terms used in school nursing literature were incorporated to be as inclusive as possible. Strong studies with important implications may not be discussed in this article because they did not meet the inclusion criteria described above. Including studies from as early as 1937 strengthens

this review as it encompasses the historical influence of school nurses as well as present day impact.

Implications for Future Research, Practice, and Policy

The 30 studies reviewed indicate the impact of nurses in American elementary schools. School nurses provide education to teachers on student health records, enabling them to more directly access critical information related to their students and engage in conversations with students, parents, nurses, and other school personnel to provide a safer environment for students. School nurses also provide education to teachers on other aspects of health such as nutrition, encouraging teachers to deliver nutrition curriculum to their classes in a train-the-trainer model. Having the school nurse train teachers on-site seems a much more convenient method for teachers than bringing in substitute teachers for classrooms so that teachers can attend professional development seminars off-campus. This strategy also allows the teachers to receive the same training with their colleagues in a familiar setting, promoting participation and interaction in hands-on and role-playing activities. Future research should focus on the efficacy of using the school nurse to deliver health-related professional development activities for teachers and other school personnel.

School nurses also deliver health education related to hand washing and mental health directly to students. Sessions on germs, the importance of hand washing, and the use of hand sanitizer in the absence of hand washing stations resulted in fewer absences and illnesses (Kimel, 1996; Morton & Schultz, 2004). More time in the classroom results in more instructional time for students, less absenteeism for their working parents, and higher reimbursements for schools. Mental health education delivered directly to students

by nurses resulted in increased mental health knowledge among students. While studies (DeSocio, Stember, and Schrinsky, 2006) show increases in students' knowledge following implementation of such a program, future studies should investigate the translation of this knowledge gain into practice (e.g., fewer signs of suicidal ideation; increased reports to teachers, counselors, social workers, and nurses of students displaying troublesome behaviors). Nevertheless, the fact that teachers, counselors, and administrators request more classes offered by the school nurse is a testament to their role and the need for their expertise in elementary schools. School teachers and administrators should regularly collaborate with school nurses for the delivery of health-related curriculum in classrooms and school-wide.

This review highlighted the importance of school nurses in health screenings for students. Not only are nurses successful in identifying students with abnormal screens and referring them to a specialist, they also successfully work with community partners to ensure that children receive the recommended services. Several studies mentioned that while screenings are not uncommon, it takes the effort of a school nurse to facilitate follow-up. Workloads of teachers and school administrators are too heavy to take on this important role.

Similarly, BMI screenings were investigated in several studies. Unfortunately, many nurses reported low self-efficacy in counseling students and parents on weight management for children with above average BMIs. While screening is necessary, it is not sufficient to tackle the growing childhood obesity epidemic facing our nation. School nurses should receive education and resources to work with students and families affected by overweight and obesity. Future studies should describe and measure the effects of

professional development for school nurses related to weight management programs, as well as the implementation of such programs. Since this review shows that nurses working in schools with mandated policies regarding BMI screening are more confident in measuring BMI and are more likely to screen for BMI, schools and districts without BMI screening mandates should work toward their implementation.

School nurses also have a positive impact on immunization compliance rates. Their work in teaching children about immunizations and their importance, their belief in the value of immunizations to eradicate diseases at the population level, and their practice to only give immunization exemptions when medically necessary ensure that federal recommendations are met in schools. Therefore, even if funding prevents a school nurse in every school, districts should adopt policies in which only nurses are allowed to review students' medical records for immunization compliance and grant immunization exemptions.

While several studies investigated the role of school nurses in managing asthma in elementary students, discussion of the management of other chronic diseases by school nurses was absent in the literature reviewed. Since diabetes is becoming more common in American children, school nurses must be trained and available to measure their glucose levels, recommend meals and snacks that meet their carbohydrate needs, and administer insulin as necessary. Future studies should focus on practices of nurses in the management of diabetes among elementary school children.

Many studies documented fewer absences related to the presence or intervention of a school nurse. However, none of the studies in this review discussed targeting absenteeism as an intervention. In other words, none of the articles in this review

described school nurses tracking absenteeism and following up with students and their families to increase school attendance. While the literature does not document this practice, school nurses likely take an active role with habitually absent students. Future studies should investigate these practices and document their efficacy.

Surprisingly, this review did not reveal studies investigating students' access to other healthcare services beyond the school system and school nurse. Future studies should investigate whether the school nurse acts as a supplement to students' primary care provider or whether the school nurse is the only health care provider that some students see. Such evidence would further define the impact of the school nurse.

A theme throughout the literature is that lack of time, lack of communication, and heavy workloads are barriers for elementary school nurses. Despite positive attitudes about school nurses from teachers, school administrators and personnel, and parents, elementary school nurses still manage extremely large caseloads with limited funds and resources. School nurses often feel that their role and expertise is undervalued. Few have the CDC-recommended nurse-to-student ratio of 1:750 although smaller ratios are related to better student outcomes (Guttu, Engelke, & Swanson, 1979). Perhaps nurses could provide more data to show their efficacy if their ratios were more aligned with the 1:750 recommendation, allowing them more time to engage in research. Since that goal likely will not come to fruition in the immediate future as the country's economy struggles to recover, universities must collaborate with school systems to provide guidance and expertise from trained researchers.

Perhaps the greatest gap in the school nursing literature and need for future research is a lack of rigorous methodology to evaluate the efficacy of school nurses. As

described above and illustrated in Tables 2.1 and 2.2, 22 of the studies reviewed were descriptive in nature and eight were quasi-experimental. Due to lack of experimental design, external variables cannot be controlled and it is difficult to conclude that findings are a result of the presence, knowledge, or activities of a school nurse. However, given the nature of student assignments to classrooms within specific school districts, it is nearly impossible to conduct an experimental study in schools. Still, researchers could have considered important confounders such as socioeconomic status of the student populations since socioeconomic status is related to academic (Sirin, 2005; White, 1982) and health (Adler et al., 1994; Pickett & Pearl, 2001) outcomes, but only four studies identified in this review did so (Gottfried, 2012; Stephenson, 1983; Telljohann, Dake, & Price, 2004; Vernberg, Nelson, Fonagy, & Twemlow, 2011). As Sirin (2005) notes:

> Although the ongoing trend in the study of school performance suggests that the social and economic context is key in understanding school success, it is still a common practice to mention SES in the introduction and discussion sections of journal articles without actually incorporating it in the measurement model. Researchers should no longer limit themselves by discussing only the context but rather should actually measure and evaluate the social and economic context in relation to their special area of interest. (p. 447)

Future studies should be designed with as much rigor as possible given the environment in which school nurses practice, taking into consideration such confounding effects as socioeconomic status.

Finally, researchers, policy-makers, and administrators must come together to discuss the evidence of the impact of school nurses and school health services in

improving academic and health outcomes in children. Budget analysts and administrators must review and consider all evidence of the impact of each of the eight components of coordinated school health separately and in combination to truly coordinate health initiatives and make the best use of funds spent on education and health. The purpose behind the CDC's model of coordinated school health is to eliminate gaps in services, build partnerships, and promote healthy behaviors in students, and school nurses clearly facilitate these goals. Decreasing the presence of nurses in schools would impede the coordinated school health model and the critical health services provided in schools every day.

Conclusion

Based on the literature identified through the systematic review, activities of school nurses can be conceptualized into four major areas: (a) health promotion and disease prevention; (b) triage and treatment of acute issues (e.g., injuries and infectious diseases); (c) management of chronic conditions; and (d) psychosocial support. School nursing activities are associated with increased attendance, higher quality schools, and cost savings. Stakeholders, including teachers, school administrators, and parents, all view the school nurse as an invaluable member of the educational team. Despite these findings, additional and more methodologically rigorous evidence is needed to safeguard the employment of school nurses and decrease nurse-to-student ratios. Trained researchers and universities should collaborate with school systems to facilitate research design, implementation, and dissemination.[1]

[1] Lineberry, M. J. & Ickes, M. J. (2015). The role and impact of nurses in American elementary schools: a systematic review of the research. *Journal of School Nursing*,*31*(1), 22-33. doi: 10.1177/1059840514540940.

Figure 2.1 Flow Diagram of Search Results

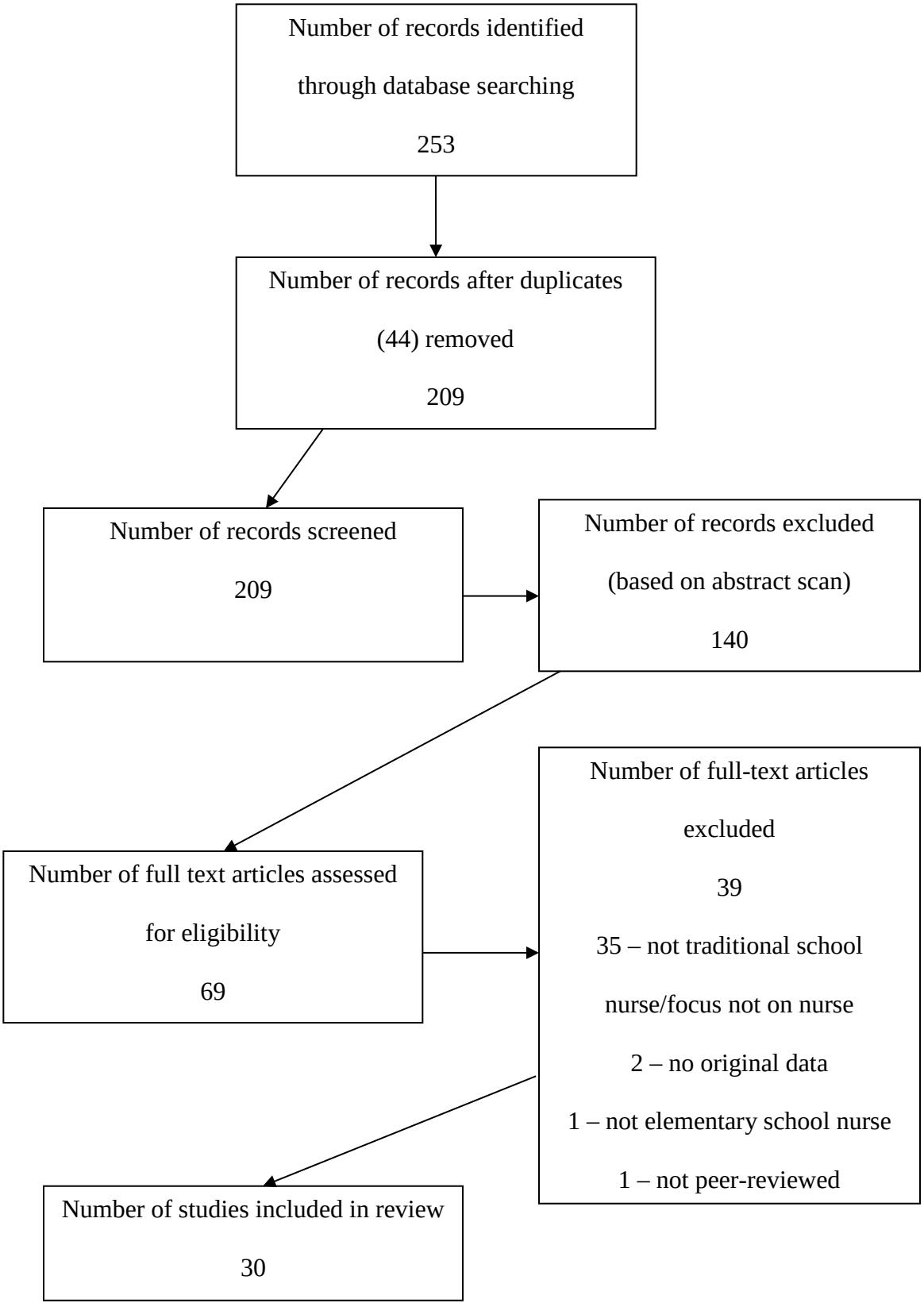

Table 2.1 *Descriptive Studies related to Impact of School Nursing*

Article	Sample/Design	Outcome
Allen, 2003	*N*=22 schools DC: archival records, structured interviews with school principals, daily checkout forms, and parent surveys	Early releases from school
Baisch, Lundeen, & Murphy, 2011	*N*=634 school administrators, clerical staff, and teaching staff; 16,595 students DC: surveys, student health records Note: Authors state that "quasi-experimental matched control design" was used, but there was no intervention.	Satisfaction; time savings; completeness of student health records; immunization compliance rates
Bucher, Dryer, Hendrix, & Wong, 1998	*N*=125 students DC: survey	Management of asthma
Gilman, Williamson, Nader, Dale, & McKevitt, 1979	*N*=3,057 nurse activities DC: task analysis instrument	School nurse activities
Gottfried, 2012	*N*=175 schools DC: secondary analysis of school district dataset	Attendance; standardized test scores in reading and math
Guttu, Engelke, & Swanson, 2004	*N*=57 school districts/counties DC: survey	Nurse-to-student ratios; management of diabetes and asthma; counseling for psychosocial problems; injuries; school vision screening
Hendershot, Dake, Price, & Lartey, 2006	*N*=404 elementary school nurses DC: survey	Bullying perceptions and practice
Hendershot, Telljohann, Price, Dake, & Mosca, 2008	*N*=2,629 elementary school nurse DC: survey	Body Mass Index
Hill & Hollis, 2012	*N*=560 elementary school teachers DC: survey	Satisfaction; time savings; early releases
Kemper, Helfrich, Talbot, & Patel, 2012	*N*=2,726 students DC: vision screening records	School vision screening

Table 2.1 continued

Kirchofer, Telljohann, Price, Dake, & Ritchie, 2007	*N*=369 parents DC: questionnaire	Awareness; interaction; perceived importance of school nurse role
Major et al., 2006	*N*=32 elementary school nurses DC: focus group	Barriers to management of asthma
Morrison-Sandberg, Kubik, & Johnson, 2011	*N*=21 elementary school nurses DC: semistructured interviews	Obesity prevention
Nauta, Byrne, & Wesley, 2009	*N*=103 school nurses DC: survey	Obesity knowledge and practice
Salmon et al., 2004	*N*=696 school personnel DC: survey	Immunization exemptions; vaccination knowledge and attitudes
Snyder, Minnick, & Anderson, 1980	*N*=610 elementary school students DC: school nurse's log and student enrollment cards	Visits to school nurse
Stalter, Chaudry, & Polivka, 2011	*N*=25 elementary school nurses DC: focus groups	Barriers to BMI screening
Stang, Story, & Kalina, 1997	*N*=296 school nurses and 533 school administrators DC: questionnaire	Overweight perceptions and practice
Stephenson, 1983	*N*=551 elementary school students DC: nurse's log, school's data computer sheets, and student health records	Visits to school nurse
Telljohann, Dake, & Price, 2004	*N*=569 elementary school students with asthma DC: student records	Attendance; full-time vs. part-time school nurse
Vernberg, Nelson, Fonagy, & Twemlow, 2011	*N*=590 elementary school students DC: school nursing logs and student surveys	Visits to school nurse; victimization; aggression
Weismuller, Grasska, Alexander, White, & Kramer, 2007	*N*=240 elementary school students DC: student health and attendance records	Absenteeism; visits to school nurse; school nurse interventions

Note. DC = data collection method

Table 2.2 *Quasi-experimental Studies*

Article	Sample/Design	Intervention	Outcome
DeSocio, Stember, & Schrinsky, 2006	*N*=370 students DC: 16-item pre- and posttest	Six 45-minute modules on mental health delivered to students by school nurse	Mental health knowledge
Foster & Keele, 2006	*N*=23 schools DC: School Health Report data	Over-the-counter medication administration policy	Sent home rates
Kimel, 1996	*N*=199 students DC: School absentee logs	Handwashing program delivered by school nurse to kindergarten and first grade classes	Absenteeism
Luthy, Thorpe, Dymock, & Connely, 2011	*N*=895 (pre), 958 (post) students DC: student immunization records	4-week immunization educational/awareness sessions for classes by school nurse and teacher; incentives.	Immunization compliance rates
Morton & Schultz, 2004	*N*=253students DC: School absentee log	45-minute "Germ Unit" plus alcohol gel as adjunct to handwashing	Absenteeism due to infectious illness
O'Donnell & Alles, 1983	*N*=1,279 students DC: nutrition achievement test	Nutrition curriculum and resources chosen by nurse for teachers' primary instructional reference, plus required participation in nutrition education workshop	Nutrition knowledge
Rose, Chen, & Souter, 1987	*N*=102 teachers DC: questionnaire	Three in-service sessions by school nurses for teachers related to: student signs, symptoms, and behaviors indicative of health problems; meaning of information contained in student health folder; and how to make a referral to the school nurse.	Teacher satisfaction
Wiggs-Stayner et al., 2006	*N* = 1292 students in 4 schools DC: student attendance records	FluMist vaccine administered on-site at two schools	Absenteeism

Note. DC = data collection method

CHAPTER THREE

School Nursing in Kentucky: A Qualitative Approach

Introduction

Many studies have demonstrated the vast and significant work of school nurses. In their 2015 review of the literature, Lineberry and Ickes noted that the roles of school nurses in America could be conceptualized into four main areas: (a) health promotion and disease prevention; (b) triage and treatment of acute issues (e.g., injuries and infectious diseases); (c) management of chronic conditions; and (d) psychosocial support.

School nurses promote health and prevent disease in many ways. They teach students about germs and the importance of personal hygiene to prevent the spread of infection (Kimel, 1996; Morton & Schultz, 2004). Nurses promote a number of healthy habits such as nutrition (O'Donnell & Alles, 1983) and mental well-being (DeSocio, Stember, & Schrinsky, 2006) through health education in the classroom. School nurses conduct screenings to prevent or detect problems with vision (Kemper, Helfrich, Talbot, & Patel, 2012; Weismuller, Grasska, Alexander, White, & Kramer, 2007) and obesity (Morrison-Sandberg, Kubik, & Johnson, 2011; Stang, Story, & Kalina, 1997). School nurses also monitor and promote compliance with required student immunizations (Baisch, Lundeen, & Murphy, 2011; Luthy, Thorpe, Dymock, & Connely, 2011; Salmon et al., 2004), which reduces the transmission of communicable diseases in schools.

When students present to the office complaining of illness or injury, nurses are trained to assess those children and triage or treat them accordingly. Assessment and recommendation by a school nurse, as opposed to a teacher or school administrator, are more likely to result in the student being returned to the classroom rather being sent home

(Allen, 2003). Lineberry and Ickes (2015) noted that the availability of school nurses increases students' time in the classroom and parents' time at work. Beyond the triage and treatment of acute complaints, school nurses are instrumental in managing chronic conditions in students. Between 13-18% of children and adolescents have a chronic health condition (Cohen et al., 2011; Perrin, Bloom, & Gortmaker, 2007; VanCleave, Gortmaker, & Perrin, 2010) with 4-6% of school-age children receiving medication in school on a typical day (Ficca & Welk, 2006; McCarthy, Kelly, & Reed, 2000). School nurses document students' conditions and treatments in their health records much more completely than do non-nursing school staff, providing for safer management of students' health conditions at school (Baisch et al., 2011). School nurses also provide psychosocial support and community referrals to students, investigating underlying emotional and poverty-related issues when objective measures do not coincide with students' physical complaints or when students are frequent visitors to the school nurse (Pavletic, 2011). Perpetrators and victims of bullying are often frequent visitors to the school nurse for somatic complaints, illness, and injury (Hendershot, Dake, Price, & Lartey, 2006; Vernberg, Nelson, Fonagy, & Twemlow, 2011), and each visit presents an opportunity for identification and psychosocial intervention.

The literature also describes the many challenges faced by school nurses in fulfilling these critical roles, including issues with: students' and parents' understanding of health conditions; communication among parents, school personnel, and physicians; lack of resources (privacy, time, educational materials, and administrative support), policy, and training; and high workloads (Hendershot, Telljohann, Price, Dake, & Mosca, 2008; Major et al., 2006; Morrison-Sandberg et al., 2011; Stalter, Chaudry, & Polivka,

2011; Stang et al., 1997). Despite these challenges, nursing activities are related to higher quality schools, increased attendance, and cost savings in U.S. elementary schools (Lineberry & Ickes, 2015).

Unfortunately, budget cuts in education are forcing boards of health and school administrators to reduce costs in schools (Leachman & Mai, 2013). Many states have passed laws and regulations that allow health services to be delivered to students by school personnel rather than a registered nurse through a process called delegation. Passage of such laws likely influences the duties of school nurses working in those states.

In March 2014, legislators in Kentucky amended Kentucky Revised Statute (KRS) 158.838 to require at least one employee on duty at all times at each school to administer insulin injections to students with diabetes (Kentucky Legislative Research Commission, 2014). This legislation, in turn, necessitated an extension of the services that could be delegated to unlicensed assistive personnel (UAP) to include the administration of insulin. Recent passage of new laws in Kentucky and other states regarding delegation has brought more attention to the many duties performed by nurses and the changing roles of nurses. The recent passage of this amendment provides a unique opportunity to study various aspects of the role of school nurses. Therefore, the purpose of this qualitative study was to explore school nursing in one particular segment of the U.S. – the state of Kentucky. More specifically, the aims of this study were to:

- define the role of school nurses in Kentucky,
- describe the impact of school nurses on students,
- explore challenges (including delegation) faced by school nurses in Kentucky,

- describe if and how school nursing had changed due to budget cuts and legislation, and
- gather information to focus and inform the development of a quantitative survey to be administered to Kentucky school nurses.

Methods

The study was approved by the University of Kentucky Institutional Review Board (IRB) in July 2014. In early September 2014, three focus groups with school nurses were conducted in three regions (western, central, and southern) of Kentucky. The principal investigator (PI) chose the three regions, and then selected one specific school district within each of those regions that was known by the investigator to have an active school health coordinator who might be willing to assist the PI. The PI selected the three district school health coordinators who covered Hopkins county (western Kentucky), Boyle/Lincoln counties (central Kentucky), and Lake Cumberland (southern Kentucky). The PI emailed the district school health coordinator (email addresses listed on the Kentucky Department for Education website at http://openhouse.education.ky.gov/Directory) for each of the selected districts, requesting that the coordinator invite all school nurses serving all grade levels from his/her district to participate. The email that was sent to the district school health coordinators included specific verbiage to paste into their email invitation to the school nurses and is contained in Appendix 3.1. The invitational email asked that school nurses who were interested in participating to contact the PI via phone or email to state that they planned to attend the focus group. Contacting the PI with intent to participate simply allowed the PI to

appropriately arrange the meeting space and provide light refreshments for participants. No data were collected prior to the focus groups.

The focus groups were held in private meeting rooms located in the districts of the participating school nurses. Two of the focus groups were held at public health departments and one was held in an elementary school. The PI conducted the research. Completion of coursework in research methods, as well as prior experience as a research coordinator for studies utilizing focus group methodology, prepared the PI for this role. Fruit, granola bars, and water were provided to participants upon their arrival. After describing the research and obtaining informed consent (Appendix 3.2) from participants, the PI used the following prompts, guided by the aims of the study, for the audio-recorded discussion:

- Tell me about your role as a school nurse.
- How have your duties changed due to budget cuts and legislation?
- What challenges do you face in your role as a school nurse?
- How do you impact students in your role as a school nurse?

After discussion of the four prompts, the PI distributed a survey (Appendix 3.3) to each participant. The survey included 40 multiple-choice questions that were guided by unpublished survey data from October 2013 shared with the PI by an advocate for school nursing in Kentucky. The PI modified the original questionnaire by changing several answer choices to better capture ideas expressed through responses to open-ended survey items. The PI also added some questions guided by a systematic review of the literature (Lineberry & Ickes, 2015) describing the impact and role of American elementary school nurses. Upon distributing the survey to focus group participants, the PI instructed

participants to not complete the survey but rather to give the investigator feedback on the clarity of the items and answer choices as each were read aloud by the PI.

Each focus group lasted approximately one hour. All focus group audio recordings were transcribed by the PI.

Results

No demographic data were collected, but all participants were women and over 22 years of age (per study protocol). The number of participants for each focus group was ten (40%, Central region), seven (28%, Western region), and eight (32%, Southern region), respectively, for a total of 25 school nurses. Data from the four prompts were analyzed separately from feedback on the questionnaire. Preliminary analysis on the focus group data for the four prompts, but not feedback related to the survey items, utilized Dedoose (www.dedoose.com), an online data management/analysis program. Data files for N = 3 focus groups were uploaded as media files into Dedoose before they were analyzed. In order to describe themes, the PI and an Assistant Professor in health education who is experienced in qualitative data analysis separately reviewed the transcripts in their entirety to familiarize themselves with the data. Then, they met to compare their observations and agreed that four themes, coinciding with the four focus group prompts, emerged from the data and that these four themes should be utilized for data coding. Next, the two researchers independently coded the data based on those four themes.

Theme 1: Role as a School Nurse

When participants were asked about their role as a school nurse, they described a multitude of duties that they regularly must manage. Not surprisingly, participants said

that students come to the nurse with an acute illness or injuries such as headaches, sore throats, fevers, stomachaches, vomiting and injuries acquired on the playground and she must use her training to assess the situation and appropriately triage the student.

> "*We are constantly seeing [students] for a medical condition and making an assessment of whether they can stay at school or not stay at school, if we can do something at school to make it better for them, medication or whatever it is, if it's an earache and you look in their ear and it's infected then you're calling the parent."*

They also check students for head lice and administer lice treatments when home treatment has been ineffective. In addition to the acutely ill and injured students that present to the school nurse, participants also care for chronically ill children. One nurse commented:

> *"I think [a] misconception is that we just do band-aids and boo-boos and really there's more and more ill kids coming to school…and I don't think people are even aware that we even do those things."*

Nurse participants described caring for chronically ill students with diagnoses including ADHD, asthma, life-threatening allergies, cancer, diabetes, epilepsy and seizure disorders, hemophilia, heart conditions, and head trauma, among others. Nurses said that they are tasked to care for students' tracheostomies, gastronomy tubes, and catheters as well as monitor blood glucose levels, count carbohydrates, and administer medications ranging from Albuterol (for asthma exacerbation) to Diastat (for seizures), Epinephrine (for exposure to life-threatening allergies), glucagon (for hypoglycemia), and insulin (for hyperglycemia).

School nurses described a number of preventive care and health promotion activities for students and staff alike. They reported checking students' heights and weights, screening their vision and hearing at the start of the school year, performing physical exams and dental screenings, and administering immunizations and fluoride treatments. Respondents noted that offering these services at the school prevents students from missing class to go to a clinic in the community. Some nurses noted that they regularly screen middle and high school students for drug use, with particular attention to students who drive or participate in extracurricular activities, and refer students with positive drug screens for counseling and treatment services. Nurses provide age-appropriate health education in the classroom including hand-washing/hygiene and human growth and development, as well as mandatory, weekly tobacco education classes for students caught chewing or smoking cigarettes. They host health fairs for both students and staff, and implement workplace wellness initiatives such as Humana Vitality screenings and weight loss programs. Nurses said that they often administer allergy shots and other medications to teachers and staff.

School nurses explained that an integral piece of their job is coordination of care with other care providers and service agencies. They described working with physicians, pharmacists, and dentists to understand students' conditions and their care plans so that services can be safely and appropriately provided at school, as well as to arrange services that cannot be delivered at school.

> *"There's a lot of collaboration with doctors as well, even pharmacies. It seems like if you can't get what you need from the parent then we do a lot of contact directly with the doctors' offices, pharmacies, and things like that so that we can*

get the proper maybe consents that we need or health plans to be developed to ensure that our students are safe and that all staff that need to be aware, are."

Indeed, nurses said that a big part of their role is educating, training, and delegating the delivery of school health services to other staff in order to keep students safe. They described the reality that they cannot be in more than one place at one time, so they train people to deliver some services and respond to emergency situations in their absence. This training and delegation allows students with chronic conditions to participate in activities such as field trips without a nurse present.

"There always has to be someone, and you can't pull the nurse with 1200 students to go with one single class. So that's why you have to delegate and train others. For me, my priority at the beginning of the school year is those health plans. And to me that's one of the biggest things that I do is to go through everybody's emergency medical information and find out what they have, and …develop a health plan and then get those appropriate people trained."

Many nurses described instances when they provided emotional support to students and connected them with services to improve their home lives. They said that students consider them a "safe zone" and share information with them that they may not communicate with others. Some students just come in for hugs, seeing the nurse as a "mommy-figure" at school. Nurse participants said that students oftentimes present with a physical complaint such as a headache or stomachache but then talk about other issues, such as divorce of parents or thoughts of self-harm. The nurse then recruits the help of psychologists, social services, and counselors as appropriate to the situation. Many school nurses also coordinate "at-risk meetings" at least once each month. Prior to the meetings,

they generate reports of students' attendance, grades, and behaviors to identify students who are at risk for academic issues. During the meeting, the nurses lead discussions of these at-risk students with the principal, counselor, various teachers and specialists, and even cafeteria personnel to identify contributing factors and issues. After the meeting, school nurses follow up with the student and his/her family, sometimes even visiting their home, before recommending intervention methods and services.

Theme 2: Changes due to Budget Cuts and Legislation

In response to how their duties changed due to budget cuts, participants cited several negative effects. Many complained that their salaries are less than nurses in other sectors such as hospitals and clinics. One nurse said that she gets paid less now as a registered nurse in the school system than she did with less education (licensed practical nurse) in a clinical setting. Some nurses said that they do not receive benefits such as health insurance, while others said that they do receive benefits but do not get paid in the summer months when school is not in session. Nurse participants also lamented that they have not received pay raises in several years, which affects retention and recruitment of new nurses. They explained that, whereas nurses in the past would accept a job in the school setting despite a lower starting salary since regular pay raises of approximately 5% annually were the norm, nurses now recognize that pay raises should not be expected and are less likely to seek out a job in the schools. School nurses also said that budget cuts have prevented vacant nursing positions from being filled, and reduced the number of days and hours that they are contracted to work. They noted that these lost days, particularly at the beginning of the school year, reduce the time they have to read

students' health records, plan for accommodations, and train and delegate health service delivery to staff.

School nurses also reported higher workloads than in the past due to fewer school nurses and less administrative support. They discussed having to now cover multiple schools, and "running" between schools during the day to give insulin injections. School nurses explained that the burden of documentation, billing, and recordkeeping now falls predominantly or solely to them since clerical support for school nurses has been greatly reduced or eliminated completely in some areas.

When participants were asked how their jobs have changed due to legislation which expanded the duties that could be delegated to UAP to include insulin injections, their responses were best characterized by this response:

> *"We have yet to see because it's just started. We have yet to see how the staff is going to react to this and nobody may want to take responsibility for it."*

Several nurses voiced concern that delegation to unlicensed staff may not be a viable solution. They anticipated that staff may refuse to take on the role due to worry about liability and legal issues that may result. Participants also noted that even trained staff who had been delegated the delivery of specific services in the past had felt uncomfortable delivering those services when the time for care arose.

> *"We had a diabetic go on a field trip last year and the aide was trained and even though she was trained, she was scared to check his sugar…She ended up calling the parent and that parent ended up keeping the child at home and he didn't get to go on that trip."*

Nurses who were employed in a district that had a nurse in every school said they had no plans to delegate injections to UAP at this time even though the law allows it. Nurses in other districts supported the regulation because increased delegation necessitates more training of unlicensed school employees – so more informed stakeholders are on alert for signs of medical emergencies. One nurse said,

> *"So far as with the delegation, the person who you're delegating to is required [by the new law] to have the training of what to look for whereas before they were not. It was just us. So it's actually made it a little better because you have someone that's there that knows what to look for and things that they can do to help in that situation whereas before they might have not known."*

Another nurse speculated that the law could ease the burden of nurses traveling between schools at meal times to care for students with diabetes:

> *"I can only imagine for someone who was having to run into three buildings to give insulin and run back out, giving the shot is the easy part of it. It's when [blood sugar] peaks and when there's two [students]…so I can imagine it's made it easier for them because they're better able to address the true issues related because they're just running in and…if you have to be between four schools within an hour to give insulin, and most of them are pen, you're running in and you're really running out. You're not doing anything but giving them a shot. You're not there to make sure that they do eat. You're not there to make sure they're not having a problem 30 minutes or 60 minutes after when it peaks."*

Theme 3: Challenges to School Nursing

School nurses discussed many challenges that they perceive as interfering with their ability to fulfill their roles. Many nurses mentioned that they do not have enough time during the school day to complete all of their duties. One nurse said,

"Children are lined up at my door from the minute I walk into the building until 30 seconds before the bell rings at the end of the day."

Another stated that demands for her time don't cease at the end of the school day, recalling an instance that she was contacted after school to assess a student who began having health issues on the bus. Nurses also cited financial constraints as a barrier to their jobs:

"Financially, that's probably the largest because it prevents you from doing everything. We don't have state buy-in. We need that support in order to maintain and keep providing the care that we can do."

A common theme in participants' discussion about the challenges of being a school nurse was the required documentation accompanying all of their tasks.

"Everything that we're doing we're not only doing but then you have to spend 40 minutes documenting it too, you know, in four or five different places and getting all the information out to where it needs to be…"

Nurses described paperwork associated with billing Medicare and Medicaid, and running daily, weekly, and monthly reports to submit for regulatory and auditing purposes.

In addition to challenges with requirements of the job itself, participants described barriers presented by students' families. They discussed problems with families' lack of education or understanding of their child's chronic condition and treatment regimen.

Participants told stories of parents who neglect to return their phone calls or complete paperwork necessary to inform nurses of students' health history and allow them to deliver services at school. They also discussed that some students lack a caring adult at home.

> *"We had a student that I went and assessed over at the alternative school and he had struggled to breathe all night long and they had already given him a nebulizer treatment at school per our protocol – trained staff had done that – and he cleared up a little but his O_2 stat was still 89, he was wheezing, couldn't get the aunt who was the guardian to return a phone call, couldn't get the guardian's significant other to pick up the phone so we had the principal go out to the school in the meantime because he needed to go to the doctor. [The guardian] didn't have time, she said someone else would have to deal with it. So we had to call 911…[Not all children] have someone in that home advocating for them so I feel like that's one thing as far as the barriers…"*

Compounding this issue are language barriers. Nurses described that some of their students and families do not speak English, and some children must translate forms and conversations between their caregivers and nurses. Participating school nurses lamented that many well-meaning families lack health insurance, transportation, and even running water, so although they know their children are sick or need medications, immunizations, or dental attention, they are unable to physically get to or pay for those services or supplies. Finally, nurses conveyed that another barrier is having medications and supplies available at school. They described students with asthma not having an inhaler or nebulizer at school because they only have one and left it at home. Nurses attributed this

barrier to the cost associated with purchasing two sets of medications and supplies so that they can access them at home and school without worrying about taking them back and forth each day.

Theme 4: Impact on Students

When participants were asked how they impact students in their school nursing role, many responses involved advocating for the students, linking them to resources, offering them a nurturing hug, and monitoring for social and home issues that may underlie the physical issues for which students present. Many of these were discussed in the sections above. Nurses stated they are positive, friendly, and caring to all of the students.

> *"I had a kid say to me, 'You know you're the only person that's ever talked to me like I had any sense.' And it's terrible; it shouldn't be that way. But sometimes we are the one person."*

Nurses said that they provide students a safe place to talk or just take a breather if they are feeling anxious. They also noted that they are much more accessible to students than other school staff:

> *"For most of us, we don't have a receptionist or a secretary or anybody and our door is open until we need to shut it for confidentiality – it's an open door. So they're revolving in and out even if they do need that hug. We're easy to get to whereas it's more difficult to get to a principal or a counselor, you have to sign up or there's a secretary. It really is, for the most part, you get to walk in and if we can't see you right then, we'll get to you just as soon as we can."*

The impact of school nurses was demonstrated in their stories of collaborating with others to provide resources for students in distress. One such story is reproduced below.

> *"We had a little boy the other day…from Honduras and he came in with a toothache. We do have a lady that speaks Spanish in our school so she'll come down and translate for me. But his tooth was three-quarters gone. And he ended up staying home the next day. Since he's not here legally, he had no access to health care so I called one of the dentists who agreed to take him pro bono, pulled it…Our principal let her go translate for the dentist because nobody in the household speaks English, and then of course the Family Resource Center was in on it too so it was the collaboration of us all trying to link them with someone."*

One nurse summed it up best by saying:

> *"So what we really do overall is try and reduce barriers so kids can come to school and learn."*

Feedback on Survey

School nurses provided valuable feedback related to the survey. They suggested inclusion of "daycare" as an answer choice for nurses' primary practice site. Nurse participants also offered that additional occupations/roles should be included in answer choices inquiring about who provides assistance in the delivery of health services at school. For instance, they said that bus drivers, cafeteria workers, coaches, and even a custodian have served as UAP. Perhaps most significantly, participants suggested that the PI separate questions related to delegation – and support for delegation – of student

health services to unlicensed assistive personal into distinct tasks. For instance, one survey item asked:

> *"Have you delegated unlicensed assistive personnel at your school(s) to assist students with carbohydrate counting, insulin dose verification, blood glucose monitoring, and/or glucagon administration?"*

Two answer choices were given for that question – "Yes" and "No". Respondents said that item is really asking four separate questions rather than one, and should be broken out into one question for each of the tasks (e.g. carbohydrate counting) mentioned. They also suggested that a fifth diabetes-related task be queried: insulin administration. School nurses explained that, although KRS 158.838 discusses the delegation of both glucagon and insulin injection to UAP, it added just one task – insulin administration – to the carbohydrate counting, blood glucose monitoring, glucagon administration, and insulin dose verification that nurses have been legally permitted to delegate in schools for years. Interestingly, nurse participants' comments related to what diabetes-related tasks they delegated to UAP differed between the focus groups. Nurses in some counties said that they only delegate glucagon administration but not the other four tasks (carbohydrate counting, blood glucose monitoring, insulin dose verification, and insulin administration) while nurses in other counties said that they delegate carbohydrate counting, blood glucose monitoring, insulin dose verification, and glucagon administration but not insulin administration.

Discussion

Focus groups with school nurses in Kentucky provided a rich description of their multi-faceted duties. Supportive of previous research (Baisch et al., 2011), nurses in the

current study reported that they spend a considerable amount of time at the beginning of the academic year compiling students' health records and corresponding with other care providers to ensure that students' individual health plans are accurate, complete, and feasibly implemented at school. In addition, when students' health issues (including immunizations) are not being addressed due to lack of insurance, no means of transportation to a clinic, or language barriers between providers and students/families, school nurses fill the gaps by offering vaccinations (Wiggs-Stayner et al., 2006) and screenings (Kemper et al., 2012) at school, connecting students with practitioners who will deliver services at a reduced or no cost, and providing school personnel to translate during appointments. Without the time, skill, and resourcefulness of school nurses, these students' health needs may go unmet and result in absences or suboptimal performance in school.

In addition to their efforts in preventing disease and illness, and consistent with Weismuller and colleagues (2007) who reported that 21.7% of referrals to the school nurse are for physical illness, nurses in the current study described that much of their time is spent assessing students' acute symptoms and injuries. Oftentimes nurses assess students with mild symptoms and decide to administer an over-the-counter medication, allowing them to return to the classroom rather than being sent home. School staff is not trained to perform nursing assessments and tend to send students home when they might more appropriately be returned to the classroom (Allen, 2003; Foster & Keele, 2006; Stephenson, 1983). Thus, having trained nurses in schools to assess students' symptoms, fill gaps in resources, and provide over-the-counter treatment also increases students' time in the classroom.

Kentucky school nurses echoed the literature in describing the myriad chronic health issues that afflict today's students (Cohen et al., 2011; Perrinet al., 2007; VanCleave et al., 2010). Consistent with earlier research (Ficca & Welk, 2006; McCarthy et al., 2000), they administer a number of medications and maintain a variety of medical devices every day. Certainly one participant's comment about the misconception that school nurses just deal with boo boos and band aids is justified by the stark reality of these serious medical conditions and accommodative equipment. Without the presence of nurses who are trained to safely manage and monitor these conditions – and carefully document the care provided – and who have dedicated time to do so, teachers and other school personnel would be responsible for students' health issues in addition to, or possibly at the expense of, their primary instructional and administrative duties (Baisch et al., 2011; Hill & Hollis, 2012).

Kentucky school nurses have faced many negative consequences due to budget cuts such as fewer paid working days, vacant nursing positions being eliminated rather than filled, non-competitive salary and benefits packages, and infrequent pay raises. Fewer nursing positions and fewer paid days for school nurses increase the workload while decreasing the amount of time to complete the work – a potential precipitant for nurses' frustration and diminished care for students. At the time that the focus groups were conducted, nurses had not yet encountered any discernable effects of KRS 158.838. Several school nurses said that, although they can now legally delegate injections of insulin to UAP, they have no immediate plans to do so in their schools unless school nursing positions or hours are decreased enough to warrant delegation necessary. Some school nurses are concerned that delegation of injections to UAP is not a viable solution

to caring for chronically ill students. Non-nursing staff may refuse to fill this role out of fear of liability (Hill & Hollis, 2012), or may be trained as UAP but then refuse to provide care when the time arises to give the injection as nurses have encountered in the past with other delegated tasks. On the other hand, school nurses do appreciate that the new regulation increases the training that UAP must receive, equating more training with increased awareness of health conditions and the potential for better recognition of signs of distress that chronically ill students may exhibit. The actual consequences of KRS 158.838 will unfold in the coming years as individual districts choose whether or not to exercise the delegation of additional diabetes-related tasks.

Kentucky school nurses in this study articulated many of the same challenges that are reported in the literature (Major et al., 2006; Morrison-Sandberg et al., 2011; Smith & Firmin, 2009; Stalter et al., 2011; Stang et al., 1997), such as lack of time, limited resources, language barriers, and communication issues with families. Nurses conveyed that their biggest impact on students is their ability to identify and address these barriers so that children's physical and psychosocial needs are met. Similar to findings in earlier research, the nurses in this study described that frequent visitors to the nurse often have unmet needs or struggles at home (Snyder, Minnick, & Anderson, 1980) or with peers (Vernberg et al., 2011), so they take the time to have meaningful conversations with these students to identify and address the underlying roots of their problems (Smith & Firmin, 2009). School nurses advocate for their students by not only referring them to social services for ongoing help but also by meeting their immediate needs of hygiene, clothing, and food so that they can more confidently and attentively participate in learning activities (Dunkle & Nash, 1991).

Finally, school nurse participants offered a number of suggestions to elicit more comprehensive and clear responses to a statewide survey for school nurses. Perhaps the most critical information gleaned from review of the survey was that nurses' practices related to, support, and justification for the delegation of diabetes health services varied greatly between focus groups and no nurse endorsed unqualified support for or against delegation of all tasks. Therefore, this research demonstrated that separate survey items should be developed for each diabetes-related task to more clearly elicit and validly describe nurses' attitudes and practices.

Limitations

Several limitations exist with focus group methodology (Smithson, 2000) and should be recognized when interpreting the results of this study. First, the researcher utilized a convenience sample rather than randomly selecting school districts to invite to participate. Once the districts were chosen and the district school health coordinators were contacted, snowball sampling likely was utilized as individual school nurses encouraged their fellow school nurses to participate in a focus group with them. Since school nurses in the selected districts opted in or out of the study, it is possible that the nurses who chose to participate have stronger ideas about their roles, challenges, impact, and changes and do not necessarily reflect the opinions of non-participating nurses in their districts. Also, since only three regions were selected to participate in the study, the data may not represent the full spectrum of experiences and attitudes of school nurses across the state. Some nurses may have wanted to participate but were unavailable at the time of the scheduled focus groups. Therefore, the results of this study may not be generalizable to the entire state of Kentucky.

Furthermore, the PI could have inadvertently introduced bias into the study by giving nonverbal cues of agreement or surprise during focus group conversations, or could have prompted further discussion of some participant comments rather than others thereby influencing the collected data. Participating school nurses may have had experiences or attitudes that were different than those voiced during the focus groups but felt uncomfortable offering those alternative views in front of their peers. In other words, some participants may have felt socially pressured to either agree with their peers during the focus groups or remain silent, thereby leaving their ideas unrepresented in the data.

Implications for Future Research, Practice, and Policy

This study has many implications for future research, practice, and policy. Since participating school nurses had not yet encountered many changes due to KRS 158.838 several months after its passage, researchers should continue to study the practices of school nurses in Kentucky to follow its effects over time. In addition, future studies should utilize survey methodology with all school nurses in Kentucky or a randomly selected group across the state. A statewide survey would allow for the inclusion of experiences and attitudes of nurses from all areas of the state, uninfluenced by facilitator bias and social pressures, and would be more representative of Kentucky school nursing. Since the current study precipitated so much discussion about the delegation of diabetes-related school health services and revealed vastly different practices and attitudes of school nurses in the three regions, this area of school nursing is particularly suitable for future research. These focus group data should be used to inform the development of a focused and concise tool to further study the delegation of diabetes-related school health services in Kentucky. Also, even though this study was conducted in only one state,

delegation of health services in schools is a controversial issue nationwide. Given the many possible medical and legal consequences associated with the delegation of diabetes-related tasks in schools, this issue should be studied in other states, as well.

Since nurses constantly collaborate with other school staff and practitioners in the community to meet the needs of students and their families, boards of health – both local and state – should prioritize facilitation of these collaborations. School nurses must spend their already thinly stretched time identifying translators and pro bono service providers. If school boards regularly convened community members, Family Resource and Youth Services Center staff, and school nurses to share current resources, all of these collaborating partners could redirect the time saved toward other tasks while still meeting the needs of students.

Since school nurses are so pressed for time and are challenged by not only delivering health services but also documenting and reporting on those services, the regulatory bodies requiring that documentation should convene to discuss opportunities to combine and condense the paperwork. While recordkeeping is critical for student safety, continuity of care, and billing purposes, it may be that a coordinated system of documentation would result in the same result with a lower burden of time. Administrators may also consider collecting data on the utilization of other clerical positions in the school to discern if another staff member may be able to assist the school nurse with paperwork. This strategy would benefit the school nurse but not affect the budget.

Local and district school policy makers should be mindful of the full spectrum of duties fulfilled by school nurses. Policy makers and administrators determining budgets

should bring school nurses to the table to develop safe and feasible regulations and standards. The nurses in this study certainly made a case for the importance of the duties that are performed prior to the start of the school year and school administrators need to reexamine cost-cutting directed at those days. Since student health is associated with academic achievement related to grades, test scores, school attendance, and student behavior (Michael, Merlo, Basch, Wentzel, & Wechsler, 2015), school nurses directly benefit the education of students.

Conclusion

Focus group data revealed that school nurses in Kentucky manage a number of complex tasks every day despite facing challenges of limited time and resources, communication barriers with students and families, and multiple documentation requirements for each service provided. School nurses attribute their availability to students, their ability to recognize students' underlying psychosocial problems and health concerns, and their persistence in connecting students with appropriate resources to address those issues as their greatest impacts on students. While, at the time of this study, Kentucky school nurses had not yet encountered many changes in their jobs due to new legislation that expanded the diabetes-related tasks that they could delegate to unlicensed school personnel, their statements reflected that some nurses had concerns about possible negative effects on students' health while other nurses expressed support for delegation.

CHAPTER FOUR

Intentions of Kentucky School Nurses to Delegate Diabetes-Related Tasks to Unlicensed Assistive Personnel

Introduction

During the month of October 1902, Lina Rogers embarked on an experiment in New York City that led to the birth of school nursing in America (Schumacher, 2002). A recent review of the literature (Lineberry & Ickes, 2015) summarizing the varied roles of nurses in America today indicated that present-day school nurses function quite similarly to Lina Rogers in 1902. Lineberry and Ickes (2015) summarized the activities of school nurses into four major areas: (a) health promotion and disease prevention; (b) triage and treatment of acute issues (e.g., injuries and infectious diseases); (c) management of chronic conditions; and (d) psychosocial support. Ms. Rogers promoted health and the prevention of disease through her dental, vision, and hearing screenings. She triaged and treated infectious diseases by sending home children with communicable diseases and working with their families to get them well for a speedy return to school. And Ms. Rogers offered psychosocial support for students and their families so that their basic needs could be met. The one role that is so important in American schools today that Ms. Rogers may not have filled is management of chronic conditions. Diabetes is one such condition.

Diabetes in Children

The National Diabetes Statistics Report, 2014 (Centers for Disease Control and Prevention, 2014) stated that approximately 208,000 – or 0.25% - of people younger than 20 years of age had diagnosed diabetes (type 1 or type 2). A study by Dabelea and

colleagues (2014) reported that the prevalence of both type 1 and type 2 diabetes among children and adolescents in the U.S. increased significantly between 2001 and 2009. Specifically, during that 8-year period, the prevalence of type 1 diabetes increased by 21.1% and the prevalence of type 2 diabetes increased by 30.5% (adjusted rates, Dabelea et al., 2014). Imperatore and colleagues (2012) projected that the burden of type 1 diabetes in children and adolescents will nearly triple by 2050, while the number of youth with type 2 diabetes will have a four-fold increase. Since most children under the age of 20 years attend school, school systems must implement processes and procedures to safely manage diabetes among students.

Delegation of Health Services in Schools

Given the increasing number of students requiring medications and other health services during the school day along with decreasing budgets for the employment of school nurses, many states have passed laws and regulations that allow health services to be delivered to students by teachers and other school staff rather than by a registered nurse. This process is called delegation, and the teachers and staff delivering the health services are called unlicensed assistive personnel (UAP). The intent of delegation is to increase the reach of physicians and nurses by extending their services (via UAP) in a cost-effective manner. For instance, rather than employing a physician or nurse in every school to administer medications, a school district could opt to contract with a few nurses to train existing staff, such as educators or administrative personnel, in each school to administer medications to its students. Throughout the U.S., health services are delegated to staff serving a variety of different primary roles in the school including clerical staff/secretaries, teachers, classroom paraprofessionals, principals, cafeteria staff, social

workers, psychologists, and coaches (Hanson, Randolfi, & Olson-Johnson, 2002; Resha, 2010; Tetuan & Akagi, 2004). An appropriate UAP is not determined by the staff's job title or primary role in the school, but on that person's availability to the student, understanding of the child's condition, competency to perform the delegated task, and ability to recognize signs and symptoms indicating a medical emergency. Students also frequently self-administer medications, with the type of medication and students' grades influencing nurses' level of comfort with and extent of supervision of self-administration (Ficca & Welk, 2006; Kelly, McCarthy, & Mordhorst, 2003; McCarthy, Kelly, & Reed, 2000). Students are considered UAP when they administer their own medications in schools.

Nursing delegation. Delegation of health-related tasks by a registered nurse to UAP is not unique to the school system, but is used by nurses in many practice settings including hospitals. The American Nurses Association (ANA) defines nursing delegation as the transfer of responsibility of performing a nursing activity to another person while retaining accountability for the outcome (ANA & National Council of State Boards of Nursing (NCSBN), 2006). The National Association of School Nurses (NASN, 2014) posits that the delegation of nursing tasks in schools can be valuable when based on the above definition of delegation and in compliance with state nursing laws, regulations, and guidance.

An important principle of delegation is that while a nurse may delegate components of care, he or she may not delegate the nursing process itself. That is, the "functions of assessment, planning, evaluation, and nursing judgment cannot be delegated" (ANA & NCSBN, 2006, p. 2). Furthermore, the decision of whether or not to

delegate any particular task is based on the nurse's judgment considering the Five Rights of Delegation:

1. The right task
2. Under the right circumstances
3. To the right person
4. With the right directions and communication
5. Under the right supervision and evaluation

Complicating matters related to the Five Rights of Delegation is that state regulations related to delegation vary considerably, and sometimes policies within states contradict one another. Wilt and Foley (2011) stated:

> When educational law empowers a school administrator to delegate or assign tasks, policies may be created that are in direct conflict with State Nurse Practice Acts [NPAs], placing the school nurse in the position…where [he or she] may not be able to directly supervise an individual who has been delegated to perform nursing procedures and forced to choose between following standards of nursing practice or an administrator's directive. This puts the school nurse and his or her nursing license in a precarious position. (p. 186)

Delegation of diabetes health services. Nurse Kathy Quan (2009) explained that tasks that can be safely delegated have a predictable outcome, a minimal potential for risk, and a standard procedure; they are not complex, do not require critical thinking, and typically recur according to a schedule. Delegation of diabetes health services is controversial because, while some of the tasks related to the treatment of diabetes are routine (e.g. blood-glucose monitoring), there is some assessment and decision-making

involved with other tasks (e.g. /carbohydrate counting, administration of insulin). The National Diabetes Education Program (NDEP, 2010) describes the management of diabetes as a balancing act between diet (which typically makes glucose levels increase) and exercise, insulin, and diabetes medications (which cause glucose levels to decrease). Corrective actions depend on the student's glucose level and follow the medical orders designed by the student's medical practitioner. For example, mild hypoglycemia can be managed with glucose tablets or gel, fruit juice, regular soda, or honey. Severe hypoglycemia, on the other hand, constitutes a medical emergency and necessitates treatment with a glucagon (hormone that raises blood glucose levels) injection.

Given the controversy surrounding the delegation of diabetes health services, it is not surprising that state laws regarding the delegation of diabetes health services vary widely. Some states such as Arkansas do not allow delegation of glucagon because any child with severe hypoglycemia is unstable, thereby not meeting the Five Rights of Delegation (Jones, n.d.). States like Colorado, on the other hand, consider training and delegating glucagon and insulin administration to UAP necessary in order to appropriately meet the needs of students with diabetes (Colorado State Board of Nursing, 2015). Kentucky legislators just recently adopted Colorado's stance in 2014 by amending KRS 158.838 (Kentucky Legislative Research Commission, 2014) to require at least one employee on duty at all times at each school to administer insulin injections to students with diabetes. This legislation, in turn, necessitated an extension of the services that could be delegated to UAP to include administration of insulin injections.

A 2015 unpublished study using focus groups in Kentucky showed that few nurses had experienced changes in their jobs as a result of KRS 158.838. Several said

that, although the law had changed to allow school nurses to delegate the delivery of more diabetes-related health services to UAP, they had no plans to change their practices. In other words, they planned to have a nurse on duty at all times at each school to administer insulin injections to students with diabetes so that they didn't have to delegate that task to UAP. Some nurse participants had positive opinions of the new regulation because it mandated more training for UAP, which the nurses felt could serve to increase student safety. Despite some positive regard toward KRS 158.838, participants believed that having a school nurse in every school to provide care for students while on school property (as opposed to field trips, for which delegation is necessary) was the safest and most ideal strategy for the delivery of school health services. Focus group data revealed that a rich, timely, and undocumented issue in Kentucky school nursing was the delegation of diabetes-related health services to UAP in schools. Focus group participants reported vastly different practices and support for the delegation of five specific tasks: carbohydrate counting, blood glucose monitoring, insulin administration, insulin dose verification, and glucagon administration.

The focus of the current study was an investigation into Kentucky school nurses' practices and attitudes related to the delegation of these five specific tasks and, given the recent amendment of KRS 158.838, their intentions to delegate them in the future. The Theory of Planned Behavior (TPB) was selected as the theoretical framework for this research given its previous use to study the intentions of school nurses (Chabot, Godin, & Gagnon, 2010; Stretch et al., 2009). The following discussion briefly describes the TPB.

Theory of Planned Behavior

According to the TPB (Ajzen, 1991), three independent constructs determine intention: attitude toward the behavior, subjective norm, and perceived behavioral control. Attitude toward the behavior refers to the extent of a person's positive or negative appraisal of the behavior. Subjective norm refers to "the perceived social pressure to perform or not perform the behavior" (p. 188). The third construct, perceived behavioral control, is a person's perceived ease or difficulty of performing the behavior of interest. The fourth construct, intention, is an indication of how hard people are willing to try to perform the behavior. According to Ajzen, the stronger the intention to engage in a behavior, the more likely should be its performance. The culmination of attitude toward the behavior, subjective norm, and perceived behavioral control predicts behavioral intention, while behavioral intention along with perceived behavioral control predicts engaging in the behavior.

Significance of the Study

Since diabetes is a common and growing chronic condition among children and adolescents, it is imperative that school systems implement policies and procedures to safely manage diabetes in students. Given the recent amendment to KRS 158.838 in Kentucky that requires at least one employee on duty at all times at each school to administer insulin injections to students with diabetes, there is the potential for school systems to rely more heavily on UAP (upon delegation by nurses) than on nurses to deliver health services to students with diabetes. The researcher found no other published studies that examined school nurses' attitudes and intentions to delegate the delivery of diabetes health services. However, unpublished research indicated that Kentucky school nurses' delegation practices and support for delegation vary widely. There are many

serious issues surrounding delegation of diabetes-related tasks including problems that could arise from nurses' unwillingness to delegate certain diabetes-related tasks, or problems that could arise when delegation does occur. Because there is very little guidance in the research literature regarding this topic, the current study was undertaken.

Purpose

The purposes of this study were to:

- describe the attitudes, perceived behavioral control, and subjective norms of Kentucky school nurses regarding the delegation of diabetes health services to UAP;
- determine the nature and extent to which health services related to diabetes were being delegated to UAP in Kentucky schools; and
- determine the demographic profile, attitudes, perceived behavioral control, and subjective norms associated with school nurses' intentions to delegate health services related to diabetes to UAP in Kentucky schools.

The hypotheses associated with the survey research were:

- School nurses' demographic characteristics (e.g. length of time as school nurse, type of degree, number of schools and students served) will be associated with their attitudes, perceived behavioral control, and subjective norm related to the delegation of diabetes-related tasks to UAP;
- School nurses' attitudes, perceived behavioral control, and subjective norm will be associated with their intentions to delegate diabetes-related tasks to UAP;

- More Kentucky school nurses delegate blood glucose monitoring, insulin dose verification, and glucagon administration than carbohydrate counting and insulin administration; and
- A linear composite of school nurses' attitudes, perceived behavioral control, and subjective norms related to the delegation of diabetes-related tasks to UAP will be associated with their intentions to delegate those tasks.

Methods

The University of Kentucky Institutional Review Board approved this study in the fall of 2015. Published and unpublished research and focus group research with school nurses were utilized to develop a web-based survey for data collection.

Survey Development

Unpublished research. An informal survey distributed to Kentucky school nurses in October 2013 (personal communication, December 17, 2013) revealed that 80.4% of 224 Kentucky school nurses did not support unlicensed school staff being trained to administer insulin in schools. These unpublished data revealed some of the issues particularly concerning to school nurses in Kentucky, as well as the range of nurses' responses. This information guided the categorization of answer choices for the survey in the current study.

Focus group data. Using evidence compiled from a systematic review of the literature (Lineberry & Ickes, 2015) along with unpublished survey data from 2013, a quantitative survey was drafted and presented to focus group participants for their feedback. The draft survey that was used in the focus groups addressed a number of

school nursing issues ranging from employer to vaccination exemptions, management of student health data, and nurse involvement in Coordinated School Health programs.

Published research. The TPB was chosen as the model to frame this research due to its prior use in studies on the intentions of school nurses. The current study incorporated a fourth construct – demographics – into Ajzen's model, as illustrated in Figure 4.1. Given the connection between the TPB construct of perceived behavioral control and the Five Rights of Delegation, survey items that addressed perceived control related to nurses' decisions to delegate were developed and added to the survey. Survey data by the Rutgers Center for State Health Policy (Farnham et al., 2011) evaluating delegation to certified home health aides directly informed the development of survey items addressing perceived behavioral control. The Rutgers study asked survey participants to rate their agreement with or perceived preparation related to items mapped to the Five Rights of Delegation. Survey items related to subjective norm and intention were informed by the work of Chabot, Godin, and Gagnon (2010) who studied determinants of elementary school nurses' intentions to adopt a new health promotion role.

Survey Instrument

The final Kentucky School Nurses Survey (see Appendix 4.1) consisted of 57 multiple-choice, Likert, and open-ended items (see Table 4.1). The TPB construct of attitude is operationalized in this study as level of support for delegation. Note that the survey included questions related to asthma, life-threatening allergies, and diabetes. The inclusion of asthma and life-threatening allergies in the survey was meant to encourage nurses to consider their perspectives on delegation more broadly than if the survey was

diabetes-specific, and also to allow for collection of a more robust set of data which could be analyzed and reported in the future. The focus of the current study was limited to the delegation of school health services for students with diabetes. Before administering the survey, it was reviewed by four university faculty members with specialties in health promotion, public health, and biostatistics to ensure face validity. Reliability of the perceived behavioral control and subjective norm index scores were calculated using Cronbach alpha procedures, and both scales were found to have acceptable internal consistency (perceived behavioral control, $\alpha = 0.72$; subjective norm, $\alpha = 0.81$).

Data Collection

The web-based survey was administered and data collected through Qualtrics (www.qualtrics.com). A link to the Kentucky School Nurses Survey was distributed via the Kentucky School Nurses listserv (KYNURSE), embedded in an email describing the purpose of the study and containing all IRB-required information pertaining to anonymity, privacy, voluntary participation, and the investigator's contact information (see Appendix 4.2). KYNURSE is one of many listservs provided and administered by the University of Kentucky College of Education as a way to support communications related to the Kentucky Education Reform Act (KERA) among students, teachers, administrators, and Kentucky Department of Education staff. As of November 3, 2014, there were 566 subscribers on KYNURSE. Anyone finding such communications useful is allowed to subscribe and post to the list; therefore, not all 566 subscribers are school nurses. The PI subscribes to the listserv and was permitted by listserv rules to distribute the survey by way of KYNURSE. Reminder emails were distributed via KYNURSE one week beyond the initial email and one day prior to the survey closing. At the end of the

survey, participants were invited to click a link that opened a separate Qualtrics survey (not tied to their responses) and enter their email address for a chance to win one of five $50 VISA gift cards. The Kentucky School Nurses Survey and gift card eligibility survey were open for three weeks.

Of the 566 subscribers, 111 (19.6%) responded. However, since not all subscribers met eligibility criteria (e.g., Kentucky school nurses), the true response rate was likely higher. In other words, since anyone (e.g. school administrators, researchers such as the PI) may subscribe to the listserv, and since school nurses leave their jobs due to budget cuts, retirement, and relocation without unsubscribing to the listserv, the number of listserv subscribers eligible to participate in the study was definitely fewer than 566. No demographic data are collected from subscribers to this particular listserv, so the true response rate could not be calculated. If 80%, or 453, of the listserv subscribers at the time of survey administration were Kentucky school nurses, then the response would be 24.5%. Therefore, speculating that 80 – 100% of subscribers were eligible to participate in the study, the response rate was most likely between 19.6% and 24.5%.

Data Analysis

Data were exported to SPSS (Version 23.0) for analysis. Categorical data were described with frequencies and percentages. Responses to items measuring attitudes, perceived behavioral control, subjective norm, and intentions to delegate were each recoded into three categories prior to analysis: 0 = strongly oppose /oppose, strongly disagree/disagree, definitely will not/probably will not; 1 = neither support nor oppose, neither agree nor disagree, unsure; 2 = strongly support /support, strongly agree/agree,

definitely will/probably will. Attitude and intention variables were not scaled, but rather the recoded score for each item was used as its own variable for analysis. Perceived behavioral control and subjective norm scale scores were calculated by adding the recoded values for each of the items mapped to those constructs. Therefore, the perceived behavioral control total score – which included six Likert-type items, the responses to which were recoded into 0, 1, or 2 – had a possible range of 0 to 12. Likewise, the subjective norm total score – which included five Likert-type items, the responses to which were recoded into 0, 1, or 2 – had a possible range of 0 to 10. McNemar's chi-square tests were used to determine if nurses' attitudes and intentions were different for the delegation of each diabetes-related task. Similarly, McNemar's chi-square tests were used to determine if nurses' attitudes were different across tasks, and if nurses' intentions were different across tasks. Pearson's product moment correlations were employed to determine individual relationships among attitudes, perceived behavioral control, and subjective norm. The individual and unique contribution of attitude, perceived behavioral control, and subjective norm on intention to delegate each diabetes-related task were assessed using multiple linear regression approach (General Linear Model; Cohen & Cohen, 1983).

Results

Demographic data describing the 111 survey respondents were illustrated in Table 4.2. Note that all demographic item response choices were exclusive except for the item related to primary practice site, for which respondents were instructed to choose all that applied. The majority of nurses in the sample had at least three years' experience as a school nurse, were licensed as a registered nurse, cared for between one and ten students

with diabetes, worked in an elementary school, worked in two or more schools, and had experienced a reduction in school nursing (either number of paid hours decreased or number of school nurses decreased) in the past year. An inverse relationship was identified between years of experience as a school nurse and attitude regarding the delegation of insulin administration ($p = .017$), indicating that the more experience school nurses had, the less favorable their attitudes were toward delegation of this task. A direct relationship was found between level of education and intentions to delegate carbohydrate counting ($p = .029$) and insulin dose verification ($p = .020$). This indicates that those with higher levels of education had greater intentions to delegate these two tasks. In addition, a direct relationship was found between working in more than one school and intention to delegate carbohydrate counting ($p = .020$). No other associations with demographic characteristics were found to be statistically significant.

Table 4.3 illustrates bivariate relationships between attitudes, perceived behavioral control, and subjective norm. Perceived behavioral control was related to subjective norm ($r = 0.44$, $p < .01$) as well as attitudes regarding the delegation of insulin dose verification ($p < 0.01$) and blood glucose monitoring ($p < 0.01$). In addition to its relationship with perceived behavioral control, subjective norm was also related to attitudes regarding the delegation of insulin dose verification ($p < 0.05$), blood glucose monitoring ($p < 0.01$), and glucagon administration ($p < 0.05$).

Table 4.4 displays respondents' attitudes regarding the delegation of each of the five diabetes-related tasks to UAP, as well as their intentions to delegate those tasks in the future. Results indicated that the percentages of school nurses who intended to delegate carbohydrate counting, insulin dose verification, and insulin administration were

significantly higher than the percentages of school nurses who supported the delegation of those tasks. Comparisons of respondents' attitudes regarding delegation of tasks revealed significantly less support ($p<.01$) for insulin administration than for carbohydrate counting, insulin dose verification, blood glucose monitoring, and glucagon administration. Support for blood glucose monitoring and support for glucagon administration were significantly higher ($p < .01$) than support for carbohydrate counting and insulin dose verification. The difference between support for blood glucose monitoring and support for glucagon administration was also statistically significant ($p < .05$), with respondents having more support for glucagon administration. Comparisons of respondents' intentions to delegate diabetes-related tasks indicated that nurses have stronger ($p < .01$) intentions to delegate glucagon administration and blood glucose monitoring than carbohydrate counting, insulin dose verification, and insulin administration.

When asked which diabetes-related tasks they had delegated in the past, 40.5% responded that they had delegated insulin dose verification, 73% blood glucose monitoring, 79.3% glucagon administration, 42.3% carbohydrate counting, and 29.7% insulin administration. McNemar chi-square tests revealed that more Kentucky school nurses have delegated carbohydrate counting and insulin dose verification than insulin administration ($p < .01$); and more have delegated blood glucose monitoring and glucagon administration than carbohydrate counting, insulin dose verification, and insulin administration ($p < .01$).

Table 4.5 illustrates associations between attitudes regarding the delegation of specific diabetes-related tasks, perceived behavioral control, and subjective norm with

intentions to delegate those tasks. As shown below, attitudes are unique and significant predictors for intentions to delegate each of the five diabetes-related tasks. In addition, subjective norm is a unique and significant predictor of intention to delegate insulin administration ($p < .05$). Regression models that simultaneously entered attitude regarding delegation of the task, perceived behavioral control, and subjective norm were statistically significant for intention to delegate each of the five diabetes-related tasks. Specifically, attitude, perceived behavioral control, and subjective norm collectively accounted for 14.5% of the variance for intention to delegate carbohydrate counting; 12.3% of the variance for intention to delegate insulin dose verification; 10.1% of the variance for intention to delegate insulin administration; 9.4% of the variance for intention to delegate blood glucose monitoring; and 25.9% of the variance for intention to delegate glucagon administration.

Discussion

The first hypothesis, that school nurses' demographic characteristics (e.g. length of time as school nurse, type of degree, number of schools and students served) will be associated with their attitudes, perceived behavioral control, and subjective norm related to the delegation of diabetes-related tasks to UAP, was supported by one finding. The results indicated that the more years of experience that school nurses had, the less supportive (attitude) they were of delegating insulin administration to UAP. Perhaps their years on the job have shown them diabetic emergencies that newer school nurses have never encountered, leading them to have deeper concerns over the possible risks of what "could" happen, situations for which a UAP has not been trained. Other results related to demographic characteristics that were not hypothesized were related to nurses' intentions

to delegate diabetes-related tasks in the future. Specifically, school nurses with more education (e.g. having a Bachelors or Master's Degree) had higher intentions to delegate carbohydrate counting and insulin dose verification to UAP, and the more schools that nurses covered, the greater their intentions to delegate carbohydrate counting to UAP. It seems intuitive that, since nurses cannot physically be in more than one school at any one time, they would have greater intentions to delegate services to UAP if they were responsible for more than one school. However, it is interesting that the association between number of schools covered and intentions to delegate to UAP were not also significant for the tasks (e.g. insulin administration and glucagon administration) for which each school must have at least one employee on duty at all times to deliver care. Further investigation is needed to explain this finding.

The second hypothesis, that school nurses' attitudes, perceived behavioral control, and subjective norm will be associated with their intentions to delegate diabetes-related tasks to UAP, was only supported for attitudes. That is, school nurses' attitudes regarding the delegation of each of the five diabetes-related tasks were associated with their intentions to delegate those specific tasks to UAP. However, nurses' perceived behavioral control was not associated with their intentions to delegate any of the diabetes-related tasks. Subjective norm was associated with school nurses' intention to delegate insulin administration, which indicates that nurses who perceived that their peers or stakeholders (e.g. principals, teachers, parents, nursing association) wish for them to delegate insulin administration to UAP have greater intentions to delegate that task in the future.

The third hypothesis was supported by the results for blood glucose monitoring and glucagon administration but not for insulin dose verification. Delegation of diabetes-

related tasks seems to fall into three tiers, with most nurses having delegated blood glucose monitoring (73%) and glucagon administration (79.3%); a moderate amount having delegated carbohydrate counting (42.3%) and insulin dose verification (40.5%); and few (29.7%) having delegated insulin administration. These three tiers seem to align with the amount of skilled judgment and assessment involved with those tasks, as well as with the severity of their associated risks. For instance, blood glucose monitoring and glucagon administration have been delegated by the majority of respondents. Out of the five tasks studied, these involve the least amount of judgment. If a UAP is tasked to monitor a student's blood glucose level, his or her delegated instructions are likely to assist the student in pricking the skin with a lancet, placing a drop of blood on a test strip, and inserting the test strip into a blood glucose meter that shows the student's blood glucose level on a digital display (NDEP, 2010). The UAP then notes the blood glucose level in the chart. This is a critical task in managing diabetes, but is purely technical and does not require judgment on the part of the UAP. Similarly, if a UAP is tasked to administer glucagon injections in case of severe hypoglycemia, his or her instructions are to inject a pre-dosed amount of glucagon from a kit. There is no measurement of dosage required and, although glucagon may cause nausea or vomiting when a student regains consciousness, it cannot harm a student (ADEP, 2010). On the other hand, if the UAP is delegated the task of carbohydrate counting, he or she must insure that the nutritional content and portions of food that the child consumes are precise to obtain accurate calculations. Since the amount of insulin to be administered is based on carbohydrate counts, inaccurate calculations could easily result in too much or too little insulin being administered, which could in turn result in hypo- or hyperglycemia for the student.

Similar risks exist for insulin dose verification and for insulin administration. Therefore, it makes intuitive sense why more school nurses have delegated blood glucose monitoring and glucagon administration than carbohydrate counting, insulin dose verification, and insulin administration. Furthermore, this notion is supported by these survey responses:

> *"Carbohydrate counting can be taught but many times schools run out of what is on the menu so it takes a lot of time to really figure out the number of carbs the student is going to consume and what can be substituted. Also, some students do not eat all the carbs they choose and then someone needs to figure out what needs to be done regarding the dose of Insulin (which is ordered to be given BEFORE the student eats). Physical activity must also be figured, that [affects] the amount of insulin given/taken."*

> *"I have no problem delegating an emergency medication with a plan to follow to UAP. My hesitancy begins when there [are] nursing judgment calls that have to be made before the medication is given and whether that medication may cause irreparable damage if not given appropriately (e.g. insulin)."*

Hypothesis four was supported by the results for all five diabetes-related tasks. That is, a linear composite of school nurses' attitudes, perceived behavioral control, and subjective norms related to the delegation of diabetes-related tasks to UAP was associated with their intentions to delegate carbohydrate counting, insulin dose verification, insulin administration, blood glucose monitoring, and glucagon administration. As evidenced by the significance of the relationships detailed in Table

4.5, attitude was the strongest predictor for intention to delegate each task in the future. It seems natural that a medical professional's attitude – the extent of her positive or negative appraisal – about a patient care activity would be a strong predictor of her intention to engage in that behavior. Subjective norm, however, was a significant predictor for intention to delegate insulin administration but none of the other four diabetes-related tasks. Although none of the items contributing to the subjective norm scale specifically mentioned policy, it could be that the recent amendment to KRS 158.838 affected participants' assessments of others' expectations and support for the delegation of insulin administration. Certainly the passage of legislation that all but mandates the delegation of this task in schools that enroll students with diabetes but do not employ a full-time nurse gives the perception of support. Perceived behavioral control was not a significant predictor for intention to delegate any of the tasks, but this could have been a factor of the wording of the survey items. Since five of the six items assessing perceived behavioral control asked about nurses' confidence in their ability to perform the Five Rights of Delegation, it is possible that the perceived behavioral control items assessed nurses' self-efficacy related to the skills necessary to delegate tasks to UAP rather than their perceived control over the situation. That is, perhaps the nurses in this study believe that they have the requisite skills to delegate health services to UAP, but there are other issues out of their control (e.g. funding to have a nurse in every school at all times) that affect their true perceived behavioral control over delegation that were not assessed in the survey instrument. While the survey instrument did not measure contributing factors outside of nurses' control, several participants' open-ended comments support this notion. For instance, one nurse wrote:

"I am very confident in my skills to teach and supervise UAP but I feel that it is unsafe. We should not be expecting non-medical personnel to make nursing decisions. If we don't have a full time nurse in every school I will definitely be training UAP to perform all of … these tasks because that is my only option."

It should be noted that, although multiple linear regression models predicting intentions to delegate all five diabetes-related tasks were significant, the amount of variance explained by attitudes, subjective norm, and perceived behavioral control was fairly low (ranging from 9% to about 26%). Additional factors not explored in this study such as workload must also play a role in school nurses' intentions to delegate diabetes-related tasks to UAP, and those factors as well as other theoretical models merit further investigation.

One surprising finding that was not hypothesized was that nurses' intentions to delegate carbohydrate counting, insulin dose verification and insulin administration to UAP in the future were significantly higher than nurses' support for (attitude related to) delegation of those tasks. In other words, many school nurses who did not support or strongly support the delegation of those tasks reported that they do intend to delegate them. School nurses may intend to delegate insulin administration in the future simply because their workloads are so demanding and dispersed that they have no other option. Budget cuts to education have led to a reduction in resources for school districts and individual schools, causing a reduction in the employment of school nurses. The nurses who are still employed must cover additional schools and care for more students in fewer hours and with little to no administrative support. Since KRS 158.838 mandates that there must always be a school employee on-site during the school day to administer insulin

injections to students with diabetes, nurses that are assigned to more than one school must delegate that task to UAP for the times that they are off-site. However, it is troubling that school nurses feel pressured to delegate tasks to UAP despite their nonsupport because of a lack of resources, while they (as opposed to the UAP, school, or district) maintain liability for the outcome (201 KAR 20:400; Kentucky Legislative Research Commission, 1999).

Limitations

A few limitations to this research must be mentioned. The method of distribution – a listserv to which school nurses can self-subscribe – did not sample all school nurses in the state. Still others may have received the survey email but not had the opportunity to complete the survey during the window of time when it was available. Some school nurses may feel uncomfortable using technology and so their experiences may not have been captured by the online survey. All of these limitations reduce the generalizability of the results of this study to the population of Kentucky school nurses as a whole. In addition, although the reliability of the subjective norm and perceived behavioral control scales were acceptable, these indices may not have fully represented the TPB constructs.

Implications for Future Research, Practice, and Policy

This study has many implications for future research, practice, and policy. As districts in Kentucky choose how to best comply with KRS 158.838, additional studies should be undertaken to determine resulting changes in the delivery of school health services in Kentucky. Likewise, other states facing similar legislative changes should research school health services in their own states. When such studies are planned,

researchers should consider the limitations described above. Because Kentucky school nurses are employed by a number of agencies including Departments of Education, Health Departments, and even community hospitals, there was no all-inclusive list of school nurses to utilize in participant recruitment. Other states may employ school nurses in a more centralized manner, thereby offering researchers a comprehensive mechanism of participant recruitment. If a centralized repository of all school nurses in a state provided physical mailing addresses, then researchers might also consider mailing paper copies of the survey to potential participants. Paper surveys may increase the likelihood of participation from nurses less comfortable with online surveys. Regarding perceived behavioral control items, future surveys should utilize items that assess situational control (e.g. policy, workload) over delegation rather than, or in addition to, efficacy of individual skills required for delegation of nursing tasks. Future studies should also further investigate the discrepancies between attitude and intentions; that is, why are nurses planning to delegate tasks to UAP if they do not support the delegation of those tasks?

Regarding practice, all school nurses should take advantage of the increased education required of UAP through KRS 158.838. More comprehensive training for school staff will increase awareness of signs of distress in students with chronic illness such as diabetes even when a school nurse is present. Nurses who are assigned to schools on part-time bases should take advantage of the training resources provided through local, state, and national organizations to equip UAP as best they can to confidently, effectively, and safely deliver health services if and when necessary. Step-by-step procedures skills checklists should be utilized to clearly delineate the task being

delegated, serve as a reference and reinforcement of proper technique for the UAP, and reduce as much as possible the need for decision-making when the nurse is not on-site (Shannon & Kubelka, 2013). Also, nurses must remind administrators that, just because nurses *are allowed to* delegate tasks to UAP does not mean that they must. State and national nursing associations should support school nurses in the education of school administrators and health departments regarding the value of school nurses. Administrators and legislators must be reminded of the increased demands on school staff in the absence of a nurse, as well as the relationship between nurses and student attendance and academic outcomes (Lineberry & Ickes, 2015). The presence of school nurses not only saves the school money by decreasing demands on school staff, but also brings more resources into the school due to the nature of attendance- and outcomes-based funding for education. Nurses, teachers, administrators, parents, and even students should continue to advocate for a nurse in every school. Kentucky school nurses are certainly doing their part. As Kentucky's new Commissioner of Education holds town hall meetings across the state in spring 2016 to gather input on the design of a new education accountability system, a group of nurses has organized to ensure that at least one person attends each meeting to advocate that school health services be delivered by nurses. A group of parents organizing to advocate alongside those nurses could certainly strengthen the cause.

As discussed in the section above, the reason that school nurses intend to delegate some diabetes-related tasks despite their lack of support for UAP administering those services is likely insufficient resources. Comments from the survey provide anecdotal evidence that school nurses are passionate about their jobs and the students they serve.

They should never feel forced to compromise student safety or put their licensure in jeopardy due to policies that are unsupported by funding. Any successful health promotion initiative must involve collaboration and alignment of policies and educational, regulatory, organizational, social, economic, and political components (McKenzie, Neiger, & Thackeray, 2009). Each component is necessary but none is sufficient without alignment of the others.

Fortunately, a new policy at the national level offers hope of such alignment for the benefit of school nursing. The Every Student Succeeds Act (ESSA; U.S. Department of Education, 2015) includes school health and physical education in its definition of well-rounded education, and Title IV of ESSA provides significant funding for school health programs. In order to be eligible for ESSA funds, which be available July 1, 2016, districts must have strong state and local support as well as specific plans of how the funds will be used. A separate bill, the Nurses for Under-Resourced Schools Everywhere Act (NURSE Act; U.S. Congress, 2016), was introduced in the Senate on February 24, 2016 that, if passed, would allow public schools and state agencies to apply for federal grant funds to cover 75% of a full-time school nurses' salary in low-income and under-resourced schools. Three months later in May 2016, the American Academy of Pediatrics (AAP) published a policy statement recommending at least one full-time nurse in every school (AAP, 2016). These acts of Congress and expert recommendations demonstrate the recognition by some leaders that school health is important and nurses are necessary to deliver health services in schools. Therefore, school nurses should not only work within their schools and districts to develop budgets for specific health plans, but also organize advocacy groups and spearhead efforts to lobby for ESSA Title IV funds. With

so many issues competing for their attention, legislators may not prioritize funding for school nurses. However, hundreds or thousands of constituents presenting their case in an organized and detailed manner cannot go unnoticed and may elicit real benefits for school health.

Conclusion

The Theory of Planned Behavior was useful in providing information about nurses' intentions to delegate diabetes-related tasks to UAP despite the fact that some pieces of the theory explained little variance. In this study, nurses' past delegation of diabetes-related tasks seemed to fall into three tiers corresponding to the amount of skilled judgment and assessment involved with those tasks, as well as with the severity of their associated risks. Similarly, comparisons of respondents' intentions to delegate diabetes-related tasks in the future indicated that nurses have stronger intentions to delegate tasks that do not require skilled judgment or assessment by the UAP to which they are assigned. Nurses' past delegation behaviors and future intentions related to delegation are rooted in the level of skilled decision-making that must happen and the risk to the student if the wrong decision is made. Unfortunately, school nurses' intentions to delegate these higher-stakes tasks (carbohydrate counting, insulin dose verification, and insulin administration) were significantly higher than their support for (attitude related to) delegation of those tasks, which is disconcerting both for the safety of students as well as for the liability retained by delegating nurses. This disparity between support and intentions indicates that school nurses anticipate that they will have to delegate certain tasks to UAP despite their discomfort with delegating them, most likely due to high workload and lack of resources. School nurses should train UAP so that more school

staff can recognize signs of distress in students with diabetes, but at the same time should advocate and seek funding for a nurse in every school with the help of the Every Student Succeeds Act.

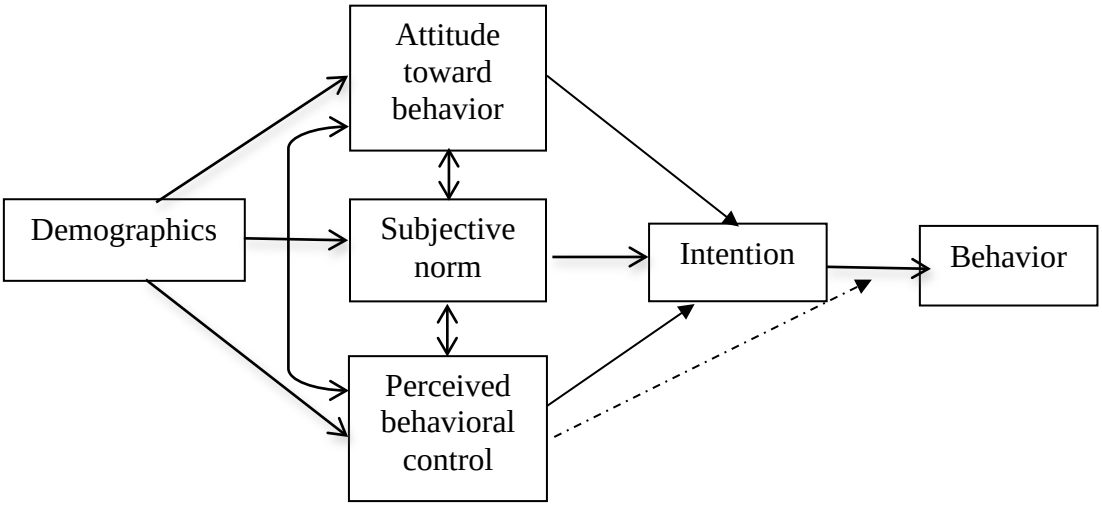

Figure 4.1. Demographics within the Theory of Planned Behavior

Table 4.1

Survey Item Map

	Number of items	Type of items	TPB concept measured	Source informing wording
Demographics	14	Multiple-choice	---	Unpublished survey
Support for delegation of specific tasks	7	Likert-type	Attitude	Unpublished survey
Policies, practices, and available resources related to delegation [b]	8	Multiple-choice	PBC	Unpublished survey
Confidence in abilities related to Five Rights of Delegation	6	Likert-type	PBC	Farnham et al., 2011
Perception of others' [a] support for delegation	5	Likert-type	Subjective norm	Chabot et al., 2010
Past delegation of specific tasks	7	Multiple-choice	---	Unpublished survey
Intention to delegate specific tasks in the future	7	Likert-type	Intention	Chabot et al., 2010
Consequences of increased/decreased nursing staff hours [c]	1	Open-ended	---	Unpublished survey
Comments related to delegation [c]	1	Open-ended	---	Unpublished survey
Comments related to school nursing [c]	1	Open-ended	---	Unpublished survey

[a] school principals, teachers, parents, other Kentucky school nurses, and their state nursing association
[b] excluded from analysis
[c] used in discussion of results
TPB = Theory of Planned Behavior; PBC = Perceived Behavioral control

Table 4.2

Demographic Characteristics of Survey Respondents

	n	%
Experience as School Nurse		
0 – 2 years	17	15.32
3 – 10 years	49	44.14
More than 10 years	45	40.54
Education		
Associate Degree or Diploma in Nursing	59	53.15
Bachelors or Master's Degree	52	46.85
Licensure		
LPN	10	9.01
RN or APRN	101	90.99
Primary Practice Site		
Daycare/Preschool	28	25.23
Elementary School	74	66.67
Middle School	49	44.14
High School	38	34.23
Alternative School	14	12.61
District Office (Administrative Staff)	17	15.32
Schools Covered		
1	47	47.00
2	23	23.00
3 or more	30	30.00
Students Enrolled in School(s) Covered		
750 or less	50	49.02
More than 750	52	50.98
Students with Diabetes		
0	18	17.31
1 – 10	72	69.23
More than 10	14	13.46
Changes in District Nursing Staff Hours		
Increased	24	21.82
Decreased	79	71.82
Unsure or No Change	7	6.36

Table 4.3

Bivariate Tests of Association between Attitudes related to Delegation of Diabetes-Related Tasks, Perceived Behavioral Control, and Subjective Norms

Attitude related to delegation of task	Perceived behavioral control total (p)[a]	Subjective norm total (p)[a]
Carbohydrate counting	0.11 (.269)	0.09 (.344)
Insulin dose verification	0.29 (.002)	0.20 (.037)
Insulin administration	0.15 (.110)	0.09 (.337)
Blood glucose monitoring	0.32 (.001)	0.30 (.002)
Glucagon administration	0.14 (.137)	0.22 (.023)

Note. All bivariate comparisons based on Pearson's product moment correlations.

[a] Perceived Behavioral Control total associated with Subjective Norm total ($r = 0.44$, $p < .01$).

Table 4.4

Attitudes and Intentions to Delegate Diabetes-Related Tasks

	Attitudes about Delegation[a]						Intentions to Delegate in the Future[b]						
	Support or Strongly Support		Neither Support nor Oppose		Oppose or Strongly Oppose		Definitely or probably will		Unsure		Definitely or Probably will NOT		McNemar X^2
Diabetes-related tasks	n	%	n	%	n	%	n	%	n	%	n	%	*p*
Carbohydrate Counting	53	47.75	12	10.81	46	41.44	72	66.06	12	11.01	25	22.94	.003
Insulin Dose Verification	46	41.44	10	9.09	54	48.65	70	64.22	18	16.51	21	19.27	<.001
Insulin Administration	33	29.73	9	8.11	69	62.16	66	61.11	21	19.44	21	19.44	<.001
Blood Glucose Monitoring	85	76.58	11	10.19	12	10.81	96	88.07	8	7.64	5	4.59	.078
Glucagon Administration	97	87.39	6	5.41	8	7.21	100	92.59	3	2.78	5	4.63	.227

Note: McNemar chi-square used to test differences in attitudes vs. intentions for each diabetes-related task.

[a] *:* McNemar chi-square used to test differences in attitudes across tasks; results described in text.

[b] *:* McNemar chi-square used to test differences in intentions across tasks; results described in text.

Table 4.5

Bivariate Tests of Association and Multiple Linear Regression Modeling the Association of Intention to Delegate Diabetes-Related Tasks with Attitude related to the Task, Perceived Behavioral Control, and Subjective Norm

	Attitude related to delegation of task		Perceived behavior control total		Subjective norm total		Model
Outcome: Intention to delegate task	Entered first	Entered last	Entered first	Entered last	Entered first	Entered last	Multiple linear regression
Carbohydrate counting	r^2 = .119, p<.001	r^2 = .119, p<.001	r^2 = .002, p=.626	r^2 = .019, p=.128	r^2 = .015, p=.186	r^2 = .018, p=.137	F=5.88, p<.001, R^2=.145
Insulin dose verification	r^2 = .091, p=.002	r^2 = .099, p<.001	r^2 = .001, p=.779	r^2 = .026, p=.084	r^2 = .015, p=.180	r^2 = .018, p=.153	F=4.80, p=.004, R^2=.123
Insulin administration	r^2 = .055, p=.014	r^2 = .057, p=.012	r^2 = .000, p=.930	r^2 = .017, p=.171	r^2 = .034, p=.051	r^2 = .044, p=.027	F=3.84, p=.012, R^2=.101
Blood Glucose Monitoring	r^2 = .090, p=.002	r^2 = .077, p=.004	r^2 = .016, p=.180	r^2 = .003, p=.567	r^2 = .002, p=.654	r^2 = .002, p=.623	F=3.48, p=.019, R^2=.094
Glucagon Administration	r^2 = .244, p<.001	r^2 = .243, p<.001	r^2 = .004, p=.478	r^2 = .015, p=.154	r^2 = .005, p=.392	r^2 = .003, p=.555	F=11.98, p<.001, R^2=.259

Note. All bivariate comparisons based on Pearson's product moment correlations.

CHAPTER FIVE

Summary

Study One Summary

The purpose of study one was to summarize the results of past research demonstrating the effects of school nurses in American elementary schools on outcomes such as student attendance, academic achievement, immunization compliance, health screenings, obesity prevention, health knowledge, school personnel and parent satisfaction, and teacher and administrator time savings. Four computerized databases (CINAHL, Educational Resource Information Center Database, EBSCO MEDLINE, and Academic Search Elite) were searched by one researcher. Search terms included school nurse, school nursing, primary school, elementary school, and child 6 – 12 years. Only articles reporting original quantitative, qualitative, or observational data or articles describing the activities of school nurses or perspectives of nurses or stakeholders were included. Additionally, only American elementary school-related articles written in English and published from 1937 to June 2013 were included in this synthesis. Thirty articles qualified based on these criteria.

Twenty-two of the studies reviewed were descriptive while 8 were quasi-experimental. Data collection included surveys/questionnaires, student health records, school attendance records, interviews, focus groups, nursing logs, task analysis of nursing activities, and student quizzes. Subjects of the studies ranged from students to school nurses, parents, teachers/administrators, schools, and school districts/counties. Based on the literature identified through the systematic review, activities of school nurses were conceptualized into four major areas: (a) health promotion and disease prevention, (b)

triage and treatment of acute issues (e.g., injuries and infectious diseases), (c) management of chronic conditions, and (d) psychosocial support. School nursing activities were associated with increased attendance, higher quality schools, and cost savings. Stakeholders, including teachers, school administrators, and parents, all viewed the school nurse as an invaluable member of the educational team. Study one was published in the *Journal of School Nursing* (Lineberry & Ickes, 2015).

Study Two Summary

The purpose of study two was to explore school nursing in the state of Kentucky. Three focus groups with school nurses were conducted in three regions (western, central, and southern) of Kentucky. Twenty-five school nurses self-selected to participate in the study. The principal investigator used the following prompts, guided by the aims of the study, for the audio-recorded discussion:

- Tell me about your role as a school nurse.
- How have your duties changed due to budget cuts and legislation?
- What challenges do you face in your role as a school nurse?
- How do you impact students in your role as a school nurse?

After discussion of the four prompts, the PI distributed a survey to each participant and requested feedback on the clarity of the items and answer choices as each was read aloud. All focus group audio recordings were transcribed by the PI.

Data from the four prompts were analyzed separately from feedback on the questionnaire. Preliminary analysis on the focus group data for the four prompts, but not feedback related to the survey items, utilized Dedoose (www.dedoose.com), an online data management/analysis program. The PI and an Assistant Professor in health

education who is experienced in qualitative data analysis independently coded the data based on four themes coinciding with the four focus group prompts.

Results indicated that school nurses in Kentucky fulfill similar roles and face the same challenges (e.g. time, limited resources, language barriers, and communication issues with families) as their colleagues throughout the nation. In this study, school nurses attributed their availability to students, their ability to recognize students' underlying psychosocial problems and health concerns, and their persistence in connecting students with appropriate resources to address those issues as their greatest impacts on students. Finally, although at the time of this study Kentucky school nurses had not yet encountered many changes in their jobs due to new legislation that expanded the diabetes-related tasks that they could delegate to unlicensed school personnel, their statements reflected that some nurses had concerns about possible negative effects on students' health while other nurses expressed support for delegation.

Study Three Summary

The focus of study three was an investigation into Kentucky school nurses' practices and attitudes related to the delegation of diabetes-related tasks and, given the 2015 amendment of KRS 158.838, their intentions to delegate them in the future. Since KRS 158.838 now requires at least one employee on duty at all times at each school to administer insulin injections to students with diabetes, there is the potential for school systems to rely more heavily on unlicensed assistive personnel (UAP; upon delegation by nurses) than on nurses to deliver health services to students with diabetes. There are many serious issues surrounding delegation of diabetes-related tasks including problems that could arise from nurses' unwillingness to delegate certain diabetes-related tasks, or

problems that could arise when delegation does occur. Because there is very little guidance in the research literature regarding this topic, the current study was undertaken. The Theory of Planned Behavior (TPB; Ajzen, 1991) was selected as the theoretical framework for this research given its previous use to study the intentions of school nurses (Chabot, Godin, & Gagnon, 2010; Stretch et al., 2009).

The purposes of study three were to describe the attitudes, perceived behavioral control, and subjective norms of Kentucky school nurses regarding the delegation of diabetes health services to UAP; determine the nature and extent to which health services related to diabetes were being delegated to UAP in Kentucky schools; and determine the demographic profile, attitudes, perceived behavioral control, and subjective norms associated with school nurses' intentions to delegate health services related to diabetes to UAP in Kentucky schools. An email inviting Kentucky school nurses to complete the 57-item, web-based survey was distributed via the Kentucky School Nurses listserv.

The majority of the 111 respondents had at least three years' experience as a school nurse, were licensed as a registered nurse, cared for between one and ten students with diabetes, worked in an elementary school, worked in two or more schools, and had experienced a reduction in school nursing (either number of paid hours decreased or number of school nurses decreased) in the past year. In this study, perceived behavioral control was related to subjective norm as well as attitudes regarding the delegation of insulin dose verification and blood glucose monitoring. In addition to its relationship with perceived behavioral control, subjective norm was also related to attitudes regarding the delegation of insulin dose verification, blood glucose monitoring, and glucagon administration. Comparisons of respondents' intentions to delegate diabetes-related tasks

indicated that nurses had stronger intentions to delegate glucagon administration and blood glucose monitoring than carbohydrate counting, insulin dose verification, and insulin administration. Attitude was a unique and significant predictor of intention to delegate all five diabetes-related tasks. Subjective norm was only predictive of intention to delegate insulin administration, and perceived behavioral control was not a significant predictor for intention to delegate any of the tasks. School nurses' intentions to delegate carbohydrate counting, insulin dose verification, and insulin administration were significantly higher than their support for (attitude related to) delegation of those tasks.

Conclusions

1. Kentucky school nurses spend a considerable amount of time compiling students' health records and corresponding with other care providers to ensure that students' individual health plans are accurate, complete, and feasibly implemented at school. In addition, when students' health issues (including immunizations) are not being addressed due to lack of insurance, no means of transportation to a clinic, or language barriers between providers and students/families, school nurses fill the gaps by offering vaccinations and screenings at school, connecting students with practitioners who will deliver services at a reduced or no cost, and providing school personnel to translate during appointments. Without the time, skill, and resourcefulness of school nurses, these students' health needs may go unmet and result in absences or suboptimal performance in school. School nurses advocate for their students by not only referring them to social services for ongoing help but also by meeting their immediate needs of hygiene, clothing, and food so that they can more confidently and attentively participate in learning activities.

2. Having trained nurses in schools to assess students' symptoms, fill gaps in resources, and provide over-the-counter treatment increases students' time in the classroom.
3. Without the presence of nurses who are trained to safely manage and monitor students' chronic health conditions – and carefully document the care provided – and who have dedicated time to do so, teachers and other school personnel would be responsible for students' health issues in addition to, or possibly at the expense of, their primary instructional and administrative duties.
4. Kentucky school nurses have faced many negative consequences due to budget cuts such as fewer paid working days, vacant nursing positions being eliminated rather than filled, non-competitive salary and benefits packages, and infrequent pay raises. Fewer nursing positions and fewer paid days for school nurses increase the workload while decreasing the amount of time to complete the work – a potential precipitant for nurses' frustration and diminished care for students.
5. Although Kentucky school nurses can now legally delegate injections of insulin to UAP, they have no immediate plans to do so in their schools unless school nursing positions or hours are decreased enough to warrant delegation necessary. Some school nurses are concerned that delegation of injections to UAP is not a viable solution to caring for chronically ill students. Non-nursing staff may refuse to fill this role out of fear of liability, or may be trained as UAP but then refuse to provide care when the time arises to give the injection as nurses have encountered in the past with other delegated tasks. On the other hand, school nurses do appreciate that the new regulation increases the training that UAP must receive,

equating more training with increased awareness of health conditions and the potential for better recognition of signs of distress that chronically ill students may exhibit. The actual consequences of KRS 158.838 will unfold in the coming years as individual districts choose whether or not to exercise the delegation of additional diabetes-related tasks.

6. The Theory of Planned Behavior was useful in providing information about nurses' intentions to delegate diabetes-related tasks to UAP despite the fact that some pieces of the theory explained little variance. Between attitude, perceived behavioral control, and subjective norm, attitude seems to be the strongest predictor of intention to delegate diabetes-related tasks.
7. Nurses' past delegation behaviors and future intentions related to delegation are rooted in the level of skilled decision-making that must occur and the risk to the student if the wrong decision is made. Unfortunately, school nurses' intentions to delegate higher-stakes tasks (e.g. carbohydrate counting, insulin dose verification, and insulin administration) were significantly stronger than their support for (attitude related to) delegation of those tasks, which is disconcerting both for the safety of students as well as for the liability retained by delegating nurses. This disparity between support and intentions indicates that school nurses anticipate that they will have to delegate certain tasks to UAP despite their discomfort with delegating them, most likely due to high workload and lack of resources.
8. Kentucky school nurses are champions of health promotion for children, not only in their provision of health services and health education, but also in the area of school health policy. As Kentucky's new Commissioner of Education holds town

hall meetings across the state in spring 2016 to gather input on the design of a new education accountability system, a group of nurses has organized to ensure that at least one person attends each meeting to advocate that school health services be delivered by nurses.

Implications for Future Research, Practice, and Policy

1. School districts should utilize the expertise of school nurses in a variety of ways beyond individual student visits to the nurses' office. Nurses can educate students in the classroom on topics such as health promotion and disease prevention, and they can serve as consultants as teachers develop and update their health lessons for the classroom. School nurses can also deliver health-related professional development to teachers and school staff in a convenient and cost-effective manner.
2. School districts considering laying off nurses to offset budget cuts should consider the time and money that nurses save. This review revealed that the school nurse saves between 20 minutes to one hour each day for teachers, principals, and clerical staff, amounting to an estimated $133,000 per year (Baisch, Lundeen, & Murphy, 2011; Hill & Hollis, 2012).
3. Universities should collaborate with school districts to design and implement methodologically rigorous studies to demonstrate the efficacy of school nurses in achieving academic and health outcomes with a positive impact on budget.
4. Delegation of health services in schools is a controversial issue nationwide. Given the variability in state laws regarding delegation in schools and the many possible

medical and legal consequences, delegation of school health services should be studied in other states, as well.

5. Since school nurses are so pressed for time and are challenged by not only delivering health services but also documenting and reporting on those services, the regulatory bodies requiring that documentation should convene to discuss opportunities to combine and condense the paperwork. While recordkeeping is critical for student safety, continuity of care, and billing purposes, it may be that a coordinated system of documentation would result in the same result with a lower burden of time. Administrators may also consider collecting data on the utilization of other clerical positions in the school to discern if another staff member may be able to assist the school nurse with paperwork. This strategy would benefit the school nurse but not affect the budget.
6. Local and district school policy makers should be mindful of the full spectrum of duties fulfilled by school nurses. Policy makers and administrators determining budgets should bring school nurses to the table to develop safe and feasible regulations and standards. The nurses in this study certainly made a case for the importance of the duties that are performed prior to the start of the school year and school administrators need to reexamine cost-cutting directed at those days.
7. Additional studies should be undertaken to determine the impact of legislative changes on the delivery of school health services in Kentucky and other states, particularly once school districts and nurses have had adequate time to adjust to new laws. Such studies should investigate to whom nurses are delegating health services, what tasks are being delegated, and the extent and process of training

that UAP receive. Future surveys should utilize perceived behavioral control items that assess situational control (e.g. policy, workload) over delegation rather than, or in addition to, efficacy of individual skills required for delegation of nursing tasks. Researchers must further explore the discrepancies between attitude and intentions; that is, why are nurses planning to delegate tasks to UAP if they do not support the delegation of those tasks?

8. School nurses should train UAP so that more school staff can recognize signs of distress in students with diabetes, but at the same time should advocate and seek funding for a nurse in every school with the help of the Every Student Succeeds Act.

APPENDICES

Appendix 3.1

Invitational Email Text

Dear XXX:

I am a doctoral student at the University of Kentucky in the Department of Kinesiology and Health Promotion (College of Education). In preparation for my dissertation work, which will be an electronic survey of Kentucky school nurses in the fall, I am conducting focus groups in three regions of Kentucky. The ultimate goal of my research is to describe the role of school nurses in Kentucky and how school nursing has changed due to budget cuts and legislation. The focus groups will help me finalize the survey tool so that I can provide an accurate and honest description of school nursing in Kentucky today.

I am writing to ask if, as the district school health coordinator, you will invite the school nurses in your district to participate in a focus group at XXX on XX/XX/2014 at XX:XX a.m./p.m. The focus group will last about an hour and I hope to have 5 – 10 school nurses participate. You should invite all of the school nurses in your district to participate so that all of them have the same opportunity to give me feedback. I will ask participants very general questions about their role as a school nurse, how their duties have changed due to budget cuts and legislation, challenges they face, and how they impact students. I will also ask them to review my survey and provide feedback on items to change, add, or delete. The focus group will be audio-recorded and light refreshments will be served.

Please reply to this message to let me know what questions or concerns you may have, and if you would be willing to invite school nurses to participate. You can also contact my faculty advisor, Dr. Richard Riggs, at richard.riggs@uky.edu with questions. Below is wording that you should paste into an email message to invite school nurses to participate in the focus group.

Thank you in advance for your time; I truly believe that this project will benefit school health in Kentucky!

Michelle Lineberry, MA

University of Kentucky Doctoral Candidate

Department of Kinesiology and Health Promotion

Text of email that district school health coordinator forwards to school nurses:

Dear School Nurses,

I was asked to forward the following message to you by a doctoral student at the University of Kentucky.

Greetings,

I am a doctoral student at the University of Kentucky in the Department of Kinesiology and Health Promotion (College of Education). In preparation for my dissertation work, which will be an electronic survey of Kentucky school nurses in the fall, I am conducting focus groups in three regions of Kentucky. The ultimate goal of my research is to describe the role of school nurses in Kentucky and how school nursing has changed due to budget cuts and legislation. The focus groups will help me finalize the

survey tool so that I can provide an accurate and honest description of school nursing in Kentucky today.

I invite you to participate in a focus group at XXX on XX/XX/2014 at XX:XX a.m./p.m. The focus group will last about an hour and I hope to have 5 – 10 school nurses participate. During the focus group, I will ask very general questions about your role as a school nurse, how your duties have changed due to budget cuts and legislation, challenges you face, and how you impact students. I will also ask you to review my survey and provide feedback on items to change, add, or delete. The focus group will be audio-recorded and light refreshments will be served.

If you would like to participate in the focus group, please send an email to michelle.lineberry@uky.edu or call me at 859-333-3926. I will not disclose your name or any identifying information in my results, so there is no foreseeable harm to taking part. My goal is simply to learn from your stories and feedback so that I can develop a useful survey tool to describe school nursing in Kentucky.

Thank you in advance for your time; I truly believe that this project will benefit school health in Kentucky!

Michelle Lineberry, MA

University of Kentucky Doctoral Candidate

Department of Kinesiology and Health Promotion

Appendix 3.2

Focus Group Informed Consent Form

Consent to Participate in a Research Study

THE ROLE, IMPACT, AND CHALLENGES OF SCHOOL NURSES IN KENTUCKY

WHY ARE YOU BEING INVITED TO TAKE PART IN THIS RESEARCH?

You are being invited to take part in a research study about the role, impact, and challenges of school nurses in Kentucky. You are being invited to take part in this research study because you are a school nurse in Kentucky. If you volunteer to take part in this study, you will be one of about 30 people to do so.

WHO IS DOING THE STUDY?

The person in charge of this study is Michelle Lineberry, MA of the University of Kentucky Department of Kinesiology and Health Promotion. She is being guided in this research by Dr. Richard Riggs.

WHAT IS THE PURPOSE OF THIS STUDY?

By doing this study, we hope to learn the role, impact, and challenges of school nurses in three areas of Kentucky – western, central, and southern. This information will help us develop a survey that will be distributed through the Kentucky School Nurses Association listserv in the fall of 2014 so that we can learn the role, impact, and challenges of school nurses across the state.

ARE THERE REASONS WHY YOU SHOULD NOT TAKE PART IN THIS STUDY?

You should not participate in this study if you are younger than 22 years of age, older than 75 years of age, or if you are not a school nurse in Kentucky.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?

The research procedures will be conducted at XXX. You will need to come to XXX one time during the study. The visit will take a little over an hour (about 15 minutes to review the study and this form, and about an hour for the focus group discussion).

WHAT WILL YOU BE ASKED TO DO?

If you agree to be part of the research study, you will be asked to participate in one focus group session at your local public library. There will be 5 – 10 school nurses in your focus group. The discussion topics will include your role as a school nurse, how your job has changed in the past year or so as a result of budget cuts and new laws, challenges you face as a school nurse, and your impact on students. You will also be asked to review a survey that will be sent to Kentucky school nurses in the fall, and to give your suggestions on survey items to change, add, or delete. Your suggestions will help us finalize a survey instrument that can result in an accurate and honest description of school nursing in Kentucky today.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life.

In addition to the risks listed above, you may experience a previously unknown risk or side effect.

WILL YOU BENEFIT FROM TAKING PART IN THIS STUDY?

There is no guarantee that you will get any benefit from taking part in this study. Some people find sharing their stories to be a valuable experience. Your willingness to take part, however, may, in the future, help society as a whole better understand school nursing.

DO YOU HAVE TO TAKE PART IN THE STUDY?

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering.

IF YOU DON'T WANT TO TAKE PART IN THE STUDY, ARE THERE OTHER CHOICES?

If you do not want to be in the study, there are no other choices except not to take part in the study.

WHAT WILL IT COST YOU TO PARTICIPATE?

There are no costs associated with taking part in the study.

WILL YOU RECEIVE ANY REWARDS FOR TAKING PART IN THIS STUDY?

You will not receive any rewards or payment for taking part in the study. Light refreshments will be provided during the focus group.

WHO WILL SEE THE INFORMATION THAT YOU GIVE?

We will make every effort to keep confidential all research records that identify you to the extent allowed by law. However, confidentiality cannot be assured because the project involves focus group research.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be personally identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team – including school officials - from knowing that you gave us information, or what that information is. We will audio-record the focus group and later transcribe the recording so that we do not miss any of your comments. To protect everyone's privacy, we ask that you do not give individuals' names during the focus. However, if you do, all names mentioned in the recording will be transcribed as "(NAME)". In other words, our notes will not include any identifiable information. The audio-recording and notes from the focus group will be stored separately from signed consent forms to reduce any chance of your comments being connected to your name.

We will keep private all research records that identify you to the extent allowed by law. However, there are some circumstances in which we may have to show your information to other people. For example, the law may require us to show your information to a court or to tell authorities if you report information about a child being abused or if you pose a danger to yourself or someone else. Also, we may be required to show information which identifies you to people who need to be sure we have done the research correctly; these would be people from such organizations as the University of Kentucky.

CAN YOUR TAKING PART IN THE STUDY END EARLY?

If you decide to take part in the study you still have the right to decide at any time that you no longer want to continue. You will not be treated differently if you decide to stop taking part in the study.

We may need to withdraw you from the study. This may occur if you are not able to follow the directions we give you or if we find that your being in the study is more risk than benefit to you.

WHAT ELSE DO YOU NEED TO KNOW?

There is a possibility that the data collected from you may be shared with other investigators in the future. If that is the case, the data will not contain information that can identify you unless you give your consent or the UK Institutional Review Board (IRB) approves the research. The IRB is a committee that reviews ethical issues, according to federal, state and local regulations on research with human subjects, to make sure the study complies with these before approval of a research study is issued.

WHAT IF YOU HAVE QUESTIONS, SUGGESTIONS, CONCERNS, OR COMPLAINTS?

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions, suggestions, concerns, or complaints about the study, you can contact the investigator, Michelle Lineberry, at 859-333-3926 or her advisor, Dr. Richard Riggs, at 859-257-3645. If you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky between the business hours of 8am and 5pm EST, Mon-Fri. at 859-257-9428 or toll free at 1-866-400-9428. We will give you a signed copy of this consent form to take with you.

_____ _____

Signature of person agreeing to take part in the study Date

_____

Printed name of person agreeing to take part in the study

_____ _____

Name of (authorized) person obtaining informed consent Date

Appendix 3.3

Focus Group Survey

1. Do you serve as the District School Health Coordinator?

Yes (If yes, please complete this survey and NOT the one emailed to all District School Health Coordinators.)

No

2. What is the highest level of nursing education that you have completed?

Licensed Practical Nurse

RN - Associates Degree in Nursing

RN - Bachelors Degree in Nursing

Nurse Practitioner - Masters of Science in Nursing

Other - Masters of Science in Nursing

3. In which area development district is your primary practice site?

Barren River: Logan, Butler, Simpson, Warren, Edmonson, Allen, Barren, Hart, Metcalfe, Monroe

Big Sandy: Magoffin, Johnson, Floyd, Martin, Pike

Bluegrass: Franklin, Anderson, Mercer, Boyle, Lincoln, Woodford, Garrard, Jessamine, Scott, Fayette, Madison, Harrison, Bourbon, Nicholas, Clark, Estill, Powell

Buffalo Trace: Bracken, Robertson, Mason, Fleming, Lewis

Cumberland Valley: Rockcastle, Laurel, Whitley, Jackson, Clay, Knox, Bell, Harlan

FIVCO: Greenup, Carter, Boyd, Elliot, Lawrence

Gateway: Montgomery, Bath, Menifee, Rowan, Morgan

Green River: Union, Webster, Henderson, McLean, Daviess, Hancock, Ohio

Kentucky River: Wolfe, Lee, Owsley, Breathitt, Perry, Leslie, Knott, Letcher

KIPDA: Trimble, Oldham, Henry, Jefferson, Shelby, Bullitt, Spencer

Lake Cumberland: Green, Taylor, Adair, Cumberland, Casey, Russell, Clinton, Pulaski, Wayne, McCreary

Lincoln Trail: Grayson, Breckinridge, Meade, Hardin, Larue, Nelson, Washington, Marion

Northern Kentucky: Carroll, Gallatin, Owen, Grant, Boone, Kenton, Campbell, Pendleton

Pennyrile: Livingston, Crittenden, Lyon, Caldwell, Trigg, Hopkins, Christian, Muhlenberg, Todd

Purchase: Fulton, Hickman, Carlisle, Ballard, McCracken, Graves, Marshall, Calloway

4. What is (are) your primary practice site(s)? Please check as many as apply to your job.

Preschool

Elementary School

Middle School

High School

Alternative School

District Administrative Staff

5. During the school year, is your position in the school(s) full-time, part-time, or as needed (PRN)?

Full-time

Part-time

As Needed (PRN)

6. Who is your employer?

Local Health Department

Local Board of Education/School District

Both Local Health Department and Local Board of Education/School District

Other (please describe your employer in the space below)

7. How many students are enrolled in your district?

1000 or less

1001-2000

2001-3000

3001-4000

4001-5000

5001-6000

6001-7000

7001-8000

8001-9000

9001-10,000

10,000-20,000

more than 20,000

8. How many schools nurses work in your district?

1

2

3

4

5

6

7

8

9

10

more than 10

9. In how many schools do you typically work?

0 (oversee district programs)

1

2

3

4

5

6

7

8

9

10

more than 10

10. For how many students are you typically directly responsible?

0 (Oversee district programs)

1-750

751-1500

1501-2250

2251-3000

3001-3750

3751-4500

4501-5250

more than 5250

11. For how many students with life-threatening allergies are you typically directly responsible?

0 (Oversee district programs)

0-5

6-10

11-15

16-20

21-25

26-30

31-35

36-40

41-45

46-50

more than 50

12. Does your district have an emergency protocol for epinephrine?

Yes

No

Unsure

13. Do(es) your school(s) keep epi pens or ampules of epi with orders for intramuscular administration in case of emergency?

Yes

No

Unsure

14. Do all of your students with documented life threatening allergies have epi pens at school?

Yes

No

Unsure

Not Applicable (no students with life threatening allergies or oversee district programs)

15. Have you ever delegated emergency allergy and anaphylaxis treatment plans to unlicensed assistive personnel at the school?

Yes

No

16. For how many students with Type 1 diabetes are you typically directly responsible?

0 (Oversee district programs)

0-5

6-10

11-15

16-20

21-25

more than 25

17. Do you travel between schools during meal times to administer insulin to students?

Yes

No

18. To how many schools do you travel to administer insulin to students?

1

2

3

4

more than 4

19. Have you delegated unlicensed assistive personnel at your school(s) to assist students with diabetes in carbohydrate counting, insulin dose verification, blood glucose monitoring, and/or glucagon administration?

Yes

No

20. To how many unlicensed personnel have you delegated assistance to students with diabetes?

1

2

3

4

more than 4

21. Regarding the unlicensed personnel to whom you have delegated assistance to students with diabetes, what is (are) their occupation(s) or role(s) at the school? (Check all that apply.)

School Nurse

Homeroom Teacher

Physical Education Teacher

Health Education Teacher

School Office (clerical) staff

Principal/administrator

Social Worker/Guidance Counselor/Family Resource and Youth Service Center Staff

Other (please specify below)

varies by school

22. Do you support delegation of diabetes assistance to unlicensed personnel? Why or why not?

Yes

No

23. Have you ever requested diabetes assistance delegation of an unlicensed personnel and the person declined?

Yes (If so, please explain the unlicensed person's reason(s) for declining below.)

No, I have requested diabetes assistance delegation of unlicensed personnel and they have always agreed.

No, I have never requested diabetes assistance delegation of unlicensed personnel.

24. How often do you review updates or attend educational sessions regarding diabetes medications, disease management, insulin delivery devices, case management, etc.?

At least once every year

Every 2 - 4 years

Every 5 + years

Never

25. For how many students with asthma are you typically directly responsible?

0 (Oversee district programs)

0-5

6-10

11-15

16-20

21-25

26-30

31-35

36-40

41-45

46-50

more than 50

26. Does your district have an emergency protocol for students with acute asthma exacerbations?

Yes

No

Unsure

27. Does your school keep albuterol with orders for administration in case of acute asthma exacerbation?

Yes

No

Unsure

28. Do all students with documented asthma bring rescue medication such as albuterol inhalers or nebulizers to school?

Yes

No

Unsure

29. Have you ever delegated acute asthma exacerbation treatment plans to unlicensed assistive personnel at the school?

Yes

No

30. Does your district conduct height/weight screenings on students?

Yes

No

Unsure

31. In what grades are height/weight screenings conducted? (Please check all that apply.)

Preschool

Kindergarten

1st

2nd

3rd

4th

5th

6th

7th

8th

9th

10th

11th

12th

varies by school

32. Who conducts height/weight screenings? (Please check all that apply.)

School Nurse

Homeroom Teacher

Physical Education Teacher

Health Education Teacher

School Office (clerical) staff

Principal/administrator

Social Worker/Guidance Counselor/Family Resource and Youth Service Center Staff

Other (please specify below)

varies by school

33. Who verifies immunization certifications for students? (Please check all that apply.)

School Nurse

Homeroom Teacher

Physical Education Teacher

Health Education Teacher

School Office (clerical) staff

Principal/administrator

Social Worker/Guidance Counselor/Family Resource and Youth Service Center Staff

Other (please specify below)

varies by school

34. Who determines immunization exemptions for students? (Please check all that apply.)

School Nurse

Homeroom Teacher

Physical Education Teacher

Health Education Teacher

School Office (clerical) staff

Principal/administrator

Social Worker/Guidance Counselor/Family Resource and Youth Service Center Staff

Other (please specify below)

varies by school

35. What data are entered into Infinite Campus? (Please check all that apply.)

Allergies

Asthma

Diabetes

Body Mass Index (height/weight)

Immunizations

varies by school

36. Who enters data into Infinite Campus? (Please check all that apply.)

School Nurse

Homeroom Teacher

Physical Education Teacher

Health Education Teacher

School Office (clerical) staff

Principal/administrator

Social Worker/Guidance Counselor/Family Resource and Youth Service Center Staff

Other (please specify below)

varies by school

37. Does your district implement a Coordinated School Health program?

Yes

No

Unsure

38. Are you utilized as part of the Coordinated School Health program?

Yes

No

39. Has your district nursing staff increased in the last year?

Yes

No

Unsure

40. Has your district nursing staff decreased in the last year?

Yes

No

Unsure

Appendix 4.1

Kentucky School Nurses Survey

Are you a school nurse in Kentucky?

❍ Yes

❍ No

If No Is Selected, Then Skip To End of Survey

Please indicate your level of support for delegation of each of the following tasks to unlicensed assistive personnel (UAP) in schools:

	Strongly Support	Support	Neither Support nor Oppose	Oppose	Strongly Oppose
emergency allergy and anaphylaxis treatment plans (e.g. epinephrine administration)	❍	❍	❍	❍	❍
acute asthma exacerbation treatment plans (e.g. albuterol administration)	❍	❍	❍	❍	❍
carbohydrate counting	❍	❍	❍	❍	❍
insulin dose verification	❍	❍	❍	❍	❍
insulin administration	❍	❍	❍	❍	❍
blood glucose monitoring	❍	❍	❍	❍	❍
glucagon administration	❍	❍	❍	❍	❍

Are the following statements true for your school(s)?

	Yes	No	Unsure
My school(s) has an emergency protocol for life-threatening allergies	❍	❍	❍
My school(s) keeps epi pens or ampules of epi with orders for intramuscular injection in case of emergency	❍	❍	❍
All students with documented life-threatening allergies in my school(s) keep epi pens at school	❍	❍	❍
My school(s) has an emergency protocol for asthma	❍	❍	❍
My school(s) keeps albuterol with orders for administration in case of acute asthma exacerbation	❍	❍	❍
All students with documented asthma in my school(s) keep rescue medication such as albuterol inhalers or nebulizers at school	❍	❍	❍
My school(s) has an emergency protocol for diabetes	❍	❍	❍
All students with diabetes in my school(s) keep medications and supplies (e.g., insulin, blood glucose monitors, testing strips) at school	❍	❍	❍

Please indicate your level of agreement with each of the following statements:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
I have control over which school health services to delegate, when, and to whom in my school(s)	❍	❍	❍	❍	❍
I am confident in my ability to decide whether or not to delegate certain school health services	❍	❍	❍	❍	❍
I am confident in my ability to select an appropriate UAP	❍	❍	❍	❍	❍
I am confident in my ability to teach UAP to safely perform certain school health services	❍	❍	❍	❍	❍
I am confident in my ability to supervise UAP who perform certain school health services	❍	❍	❍	❍	❍
I am confident in my ability to monitor students' health outcomes when UAP are delivering their school health services	❍	❍	❍	❍	❍
The principal at my school(s) supports the delegation of school health services to UAP	❍	❍	❍	❍	❍
Teachers at my school(s) support the delegation of school health services to UAP	❍	❍	❍	❍	❍
Parents of students at my school(s) support the delegation of school health services to UAP	❍	❍	❍	❍	❍
Other Kentucky school	❍	❍	❍	❍	❍

nurses support the delegation of school health services to UAP					
My state nursing association supports the delegation of school health services to UAP	❍	❍	❍	❍	❍

Have you delegated the following tasks to UAP?

	Yes	No	Unsure
Emergency Allergy and Anaphylaxis Treatment Plans (e.g., Epinephrine administration)	❍	❍	❍
Acute Asthma Exacerbation Treatment Plans (e.g. Albuterol administration)	❍	❍	❍
Carbohydrate Counting	❍	❍	❍
Insulin Dose Verification	❍	❍	❍
Insulin Administration	❍	❍	❍
Blood Glucose Monitoring	❍	❍	❍
Glucagon Administration	❍	❍	❍

For each of the tasks below, please indicate your intention to delegate to UAP in the future?

	Definitely will delegate in the future	Probably will delegate in the future	Unsure	Probably will NOT delegate in the future	Definitely will NOT delegate in the future
Emergency Allergy and Anaphylaxis Treatment Plans (e.g., Epinephrine administration)	❍	❍	❍	❍	❍
Acute Asthma Exacerbation Treatment Plans (e.g. Albuterol administration)	❍	❍	❍	❍	❍
Carbohydrate Counting	❍	❍	❍	❍	❍
Insulin Dose Verification	❍	❍	❍	❍	❍
Insulin Administration	❍	❍	❍	❍	❍
Blood Glucose Monitoring	❍	❍	❍	❍	❍
Glucagon Administration	❍	❍	❍	❍	❍

In the space below, please comment on any of your answers above related to delegation of school health services.

Has your district nursing staff (or hours worked by school nurses) increased, decreased, or stayed the same in the last year?

❍ Increased
❍ Decreased
❍ Stayed the same
❍ Unsure

What have been the consequences of increased, decreased, or unchanged nursing staff in your district?

How long have you worked as a school nurse?
- ❍ less than 1 year
- ❍ 1 - 2 years
- ❍ 3 - 5 years
- ❍ 6 - 10 years
- ❍ 11 - 20 years
- ❍ more than 20 years

What is the highest level of education that you have completed?
- ❍ Diploma in Nursing
- ❍ Associates Degree
- ❍ Bachelors Degree
- ❍ Masters Degree
- ❍ Doctoral Degree
- ❍ Other (Please describe below) _____

Which of the following best describes you?
- ❍ Certified Nursing Assistant (CNA)
- ❍ Licensed Practical Nurse (LPN)
- ❍ Registered Nurse (RN)
- ❍ Advanced Practice Registered Nurse (APRN)
- ❍ Other (Please describe below) _____

Do you work in more than one county?
- ❍ Yes
- ❍ No
- ❍ N/A – I work in the district office

Answer If Do you work in more than one county? No Is Selected

In which county do you work?

- ❍ Adair
- ❍ Allen
- ❍ Anderson
- ❍ Ballard
- ❍ Barren
- ❍ Bath
- ❍ Bell
- ❍ Boone
- ❍ Bourbon
- ❍ Boyd
- ❍ Boyle
- ❍ Bracken
- ❍ Breathitt
- ❍ Breckinridge
- ❍ Bullitt
- ❍ Butler
- ❍ Caldwell
- ❍ Calloway
- ❍ Campbell
- ❍ Carlisle
- ❍ Carroll
- ❍ Carter
- ❍ Casey
- ❍ Christian
- ❍ Clark
- ❍ Clay
- ❍ Clinton
- ❍ Crittendon
- ❍ Cumberland
- ❍ Daviess
- ❍ Edmonson
- ❍ Elliott
- ❍ Estill
- ❍ Fayette
- ❍ Fleming
- ❍ Floyd
- ❍ Franklin
- ❍ Fulton
- ❍ Gallatin
- ❍ Garrard
- ❍ Grant
- ❍ Graves
- ❍ Grayson
- ❍ Green

- Greenup
- Hancock
- Hardin
- Harlan
- Harrison
- Hart
- Henderson
- Henry
- Hickman
- Hopkins
- Jackson
- Jefferson
- Jessamine
- Johnson
- Kenton
- Knott
- Knox
- LaRue
- Laurel
- Lawrence
- Lee
- Leslie
- Letcher
- Lewis
- Lincoln
- Livingston
- Logan
- Lyon
- McCracken
- McCreary
- McLean
- Madison
- Magoffin
- Marion
- Marshall
- Martin
- Mason
- Meade
- Menifee
- Mercer
- Metcalfe
- Monroe
- Montgomery
- Morgan
- Muhlenberg
- Nelson

- ❍ Nicholas
- ❍ Ohio
- ❍ Oldham
- ❍ Owen
- ❍ Owsley
- ❍ Pendleton
- ❍ Perry
- ❍ Pike
- ❍ Powell
- ❍ Pulaski
- ❍ Robertson
- ❍ Rockcastle
- ❍ Rowan
- ❍ Russell
- ❍ Scott
- ❍ Shelby
- ❍ Simpson
- ❍ Spencer
- ❍ Taylor
- ❍ Todd
- ❍ Trigg
- ❍ Trimble
- ❍ Union
- ❍ Warren
- ❍ Washington
- ❍ Wayne
- ❍ Webster
- ❍ Whitley
- ❍ Wolfe
- ❍ Woodford

Answer If Do you work in more than one county? Yes Is Selected

In which counties do you work? (Select all that apply to your job. Hold down the Ctrl key to choose multiple counties.)

Do you work in more than one school?

- ❍ Yes
- ❍ No
- ❍ N/A - I work in the district office

Answer If Do you work in more than one school? Yes Is Selected

If you are assigned to more than one school, how many schools do you cover?

- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5
- ❍ 6
- ❍ 7
- ❍ 8
- ❍ 9
- ❍ 10
- ❍ more than 10
- ❍ unsure
- ❍ N/A - I work in the district office

What is (are) your primary practice site(s)? (Please check as many as apply to your job.)

- ❑ Daycare
- ❑ Preschool
- ❑ Elementary School
- ❑ Middle School
- ❑ High School
- ❑ Alternative School
- ❑ District Administrative Staff
- ❑ Other (Please specify below.) _____

How many students are enrolled in your school(s)? That is, for how many students are you responsible? (If you work in multiple schools, then add the total number of students in each school to answer this question.)

- ❍ 375 or less
- ❍ 376 - 750
- ❍ 751 - 1500
- ❍ 1501 - 3000
- ❍ more than 3000
- ❍ unsure
- ❍ N/A - I work in the district office

How many students with the following health conditions are in your school(s)?

	0	1 - 10	11 - 20	21 - 50	more than 50	unsure	N/A – I work in the district office
Life-threatening Allergies	❍	❍	❍	❍	❍	❍	❍
Asthma	❍	❍	❍	❍	❍	❍	❍
Diabetes	❍	❍	❍	❍	❍	❍	❍

Anything else you'd like to say about school nursing in Kentucky?

Thank you for your time!

Appendix 4.2

Email Cover Letter

Dear Kentucky School Nurses:

I am a doctoral student at the University of Kentucky in the Department of Kinesiology and Health Promotion (College of Education). My dissertation research involves a study of the delivery and delegation of health services in Kentucky schools. You are receiving this email because you are a subscriber to the KYNURSE listserv, and likely a school nurse in Kentucky. If you are a school nurse in Kentucky, and between 22 and 75 years of age, you are eligible and encouraged to take part in this study by completing an online survey (link below). Please note that the survey will close in three weeks on 11/10/2015. Reminder emails will be sent to you via KYNURSE in one week and then the day before the survey closes.

Although you will not get personal benefit from taking part in this research study, your responses may help us understand more about the delivery and delegation of health services in Kentucky schools.

I hope to receive completed questionnaires from all KYNURSE subscribers that are Kentucky School Nurses, so your answers are important to me. Of course, you have a choice about whether or not to complete the survey, but if you do participate, you are free to skip any questions or discontinue at any time. The survey will take about 15 minutes to complete.

Participants completing the survey will be eligible for one of five $50 VISA gift cards. There is a link at the end of the survey which leads to a separate survey page allowing you to enter your email address to gain entry into the incentive drawing for one of five $50 VISA gift cards. It will not be possible to tie your survey responses to this entry into the drawing. Approximate odds of winning are dependent on the number of participants who complete the survey; however, I anticipate approximately 150 responses (~25% response rate), so odds of winning would be 1/30.

There are no known risks to participating in this study. All responses will be reported in aggregate. Your response to the survey is anonymous which means no names will appear or be used on research documents, or be used in presentations or publications. The research team will not know that any information you provided came from you. Please be aware, while I will make every effort to safeguard your data once received from Qualtrics (the online survey company), given the nature of online surveys, as with anything involving the Internet, I can never guarantee the confidentiality of the data while still on the Qualtrics servers, or while en route to either them or me. It is also possible the raw data collected for research purposes may be used for marketing or reporting purposes by Qualtrics after the research is concluded, depending on the company's Terms of Service and Privacy policies.

If you have questions about the study, please feel free to ask; my contact information is given below. If you have complaints, suggestions, or questions about your rights as a research volunteer, contact the staff in the University of Kentucky Office of Research Integrity at 859-257-9428 or toll-free at 1-866-400-9428.

https://uky.az1.qualtrics.com/SE/?SID=SV_cRX7K7YDuu8tVmB

Thank you in advance for your time; I truly believe that this project will benefit school health in Kentucky!

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VITA

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EDUCATION

University of Dayton
Bachelor of Arts in Psychology with minor in Communication Management (1999)

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Master of Arts in Clinical Psychology with child/adolescent focus (2002)

PROFESSIONAL POSITIONS HELD

University of Kentucky College of Medicine – Curriculum Research & Leadership Development Director (2014 – present)

University of Kentucky College of Public Health – Assistant Dean (2011 – 2014)

University of Kentucky College of Public Health – Adjunct Instructor (2011 – 2014)
- CPH 365 – Live Strong Through Life
- CPH 609 – Public Health Practicum
- CPH 695 – Public Health Practice through Service Learning
- CPH 472 – Public Health Professions and Practice (developed – not yet taught)

University of Kentucky College of Public Health – Director of Practice and Service (2010 – 2011)

University of Kentucky Department of Internal Medicine – Program Coordinator (2008-2010)

University of Kentucky Sanders-Brown Center on Aging – Research Coordinator (2006-2008)

University of Kentucky Department of Internal Medicine – Research Assistant (2002-2006)

University of Kentucky Sanders-Brown Center on Aging – Research Assistant (2002-2005)

SELECTED PUBLICATIONS/RESEARCH

Eating Disorders
- Jessup ML, Reeb RN. Eating disorder tendencies in college women: an examination of family predictors. Poster Presentation, Midwestern Psychological Association, Chicago, IL, May 2003.
- Jessup ML, Reeb, RN. Empirical and conceptual relationships between eating disorder tendencies and other forms of psychopathology. Poster Presentation, Midwestern Psychological Association, Chicago, IL, May 2003.

Elementary School Health

- Lineberry MJ, Fettrow EA, Noland M. School nurses still going the distance despite challenges and policy changes. Poster Presentation, American School Health Association Annual Meeting, Orlando, FL, October 2015.
- Lineberry MJ, Ickes MJ. The role and impact of nurses in American elementary schools: a systematic review of the research. JOSN. 2015; 31(1), 22-33. DOI: 10.1177/1059840514540940.
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Medical Education - Domestic Violence

- Haist SA, Wilson JF, Lineberry MJ, Griffith CH. A randomized controlled trial using insinuated standardized patients to assess residents' domestic violence skills following a two-hour workshop. *Teaching and Learning in Medicine* 2007; 19(4), 336-42.
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- Lineberry MJ, Wilson JF, Gibson JS, Griffith CH, Haist SA. Obstacles to evaluating residents using unannounced standardized patients. *J Investig. Med.* Jan 2005;53(1)S315, presented at the Southern Section, Society of General Internal Medicine Meeting, Oral Presentation, New Orleans, LA, February 2005.
- Rudy DW, Lineberry MJ, Garrett H, Hoffman M, Depp Cline G, Haist SA, Wilson JF. First-year medical students' emotional responses and ability to empathize with victims of domestic violence. *J Investig Med.* Jan 2005;53(1):S296, presented at the Southern Section, Society of General Internal Medicine Meeting, Oral Presentation, Research Abstract, New Orleans, LA, February 2005.
- Haist SA, Jessup ML, Gibson JS, Griffith CH, Wilson, JF. Does a domestic violence or a depression workshop using standardized patients improve clinical skills or increase knowledge long-term? Oral Presentation, Southern Section, Society of General Internal Medicine, New Orleans, LA, February 2004.
- Jessup ML, Gibson JS, Wilson JF, Griffith CH, Haist SA. A domestic violence workshop using standardized patients improves clinical skills and knowledge. Oral Presentation, Southern Section, Society of General Internal Medicine, New Orleans, LA, February 2004.

- Haist SA, Wilson JF, Pursley HG, Jessup ML, Gibson JS, Kwolek DG, Stratton TD, Griffith CH. (2003). Domestic violence: increasing knowledge and improving skills with a four-hour workshop using standardized patients. *Academic Medicine*, 78, S24-S26.
- Haist SA, Wilson JF, Pursley HG, Jessup ML, Gibson, JS, Kwolek DG, Stratton TD, Griffith CH. Domestic violence: increasing knowledge and improving skills with a four-hour workshop using standardized patients. Oral Presentation, AAMC Research in Medical Education Annual Meeting, Washington, D.C., November 2003.
- Haist SA, Wilson JF, Griffith CH, Gibson JS, Pursley HG, Jessup ML. Does a domestic violence workshop as part of a new curriculum increase knowledge or improve skills? Poster Presentation, National Meeting, Society of General Internal Medicine, Vancouver, BC, May 2003.

Medical Education - Sexual History and HIV

- Haist SA, Lineberry MJ, Griffith CH, Hoellein AR, Talente GM, Wilson JF. Sexual history inquiry and HIV counseling: Improving clinical skills and medical knowledge through an interactive workshop utilizing standardized patients. Adv Health Sci Educ Theory Pract. 2008;13:427–434.
- Hoellein AR, Beshear D, Lineberry MJ. Feelings of discrimination in persons living with HIV. Oral Presentation, Southern Section, Society of General Internal Medicine, Atlanta, GA, March 2006.
- Hoellein AR, Talente GM, Jessup ML, Wilson JF, Haist SA. A sexual history/HIV counseling workshop using standardized patients increases knowledge and improves skills. Poster Presentation, AAMC Annual Meeting, Boston, MA, November 2004.
- Haist SA, Hoellein AR, Talente GM, Jessup ML, Wilson JF, Griffith CF. A sexual history/HIV counseling workshop using standardized patients increases knowledge and improves skills. Poster Presentation, National Meeting, Society of General Internal Medicine, Chicago, IL, May 2004.
- Haist SA, Hoellein AR, Talente G, Jessup ML, Wilson JF. Improving students' sexual history inquiry and HIV counseling with an interactive workshop using standardized patients. *J Gen Intern Med.* 2004;19:549-553.
- Hoellein A, Talente G, Jessup ML, Wilson JF, Haist SA. A sexual history/HIV counseling workshop using standardized patients increases knowledge and improves skills. *J Investig Med*. 2004;52(1):S282.

Other Topics

- Feddock CA, Hoellein AR, Griffith CH, Wilson JF, Lineberry MJ, Haist SA. Enhancing knowledge and clinical skills through an adolescent medicine workshop. Arch Pediatr Adolesc Med. 2009;163(3):256-60. doi:10.1001/archpediatrics.2008.559.
- Hoellein AR, Lineberry MJ, Kifer E. A needs assessment of complementary and alternative medicine at the University of Kentucky College of Medicine. Med Teach. 2008; 30:e1-5.
- Blonder LX, Slevin JT, Smith CD, Schmitt FA, Kryscio RJ, Lineberry MJ, Martin CA, Andersen AH. 2008. Increased amygdala activation during emotional processing in unmedicated Parkinson patients. Movement Disorders. Vol. 23/Supplement 1, p. S99.
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- Rudy DW, Haist SA, Wilson JF, Lineberry MJ, Hoellein AR. A geriatric medicine workshop increases knowledge and improves clinical skills: a randomized, controlled trial.

Poster Presentation, Society of General Internal Medicine Annual Meeting, Toronto, ON, April 2007.

- Lineberry MJ, Caudill TS, Hoellein AR, Wilson JF, Haist SA. Does a nutrition and physical well-being workshop using standardized patients increase knowledge and improve skills? J Investig. Med. Jan 2006; 54(1):S316, presented at the Southern Section, Society of General Internal Medicine Meeting, Oral Presentation, Atlanta, GA, March 2006.
- Feddock CA, Hoellein AR, Wilson JF, Lineberry MJ, Haist SA. Does an adolescent medicine workshop using standardized patients increase knowledge and improve skills? J Investig. Med. Jan 2006; 54(1):S293, presented at the Southern Regional Meeting of the American Federation for Medical Research Annual Session, Atlanta, GA, March 2006.
- Haist SA, Rudy DW, Hoellein AR, Lineberry MJ, Wilson JF. Does a geriatric medicine workshop using standardized patients increase knowledge and improve skills? J Investig. Med. Jan 2006; 54(1):S293, presented at the Southern Regional Meeting of the American Federation for Medical Research Annual Session, Atlanta, GA, March 2006.
- Hoellein AR, Wilson JF, Lineberry MJ, Haist SA. Does a complementary and alternative medicine workshop using standardized patients increase knowledge and improve skills? J Investig. Med. Jan 2006; 54(1):S318-9, presented at the Southern Section, Society of General Internal Medicine Meeting, Oral Presentation, Atlanta, GA, March 2006.
- Bailey Seals PD, Feddock CA, Griffith CH, Wilson JF, Jessup ML, Kesavalu SR. Does more time spent with the physician lessen parent clinic dissatisfaction due to long waiting times? Oral Presentation, Southern Section, Society of General Internal Medicine, New Orleans, LA, February 2005.
- Feddock CA, Bailey Seals PD, Wilson JF, Lineberry MJ, Griffith CH. Do pediatric residents adequately answer parent questions during a clinic visit? Oral Presentation, Southern Regional Meeting of the American Federation for Medical Research, New Orleans, LA, February 2005.
- Hoellein AR, Lineberry MJ, Kifer E. A needs assessment of complementary and alternative medicine education: residents versus students. Oral Presentation, Southern Section, society of General Internal Medicine, New Orleans, LA, February 2005.
- Lineberry MJ, Wilson JF, Gibson JS, Griffith CH, Haist SA. Obstacles to evaluating residents using unannounced standardized patients. Oral Presentation, Southern Section, Society of General Internal Medicine, New Orleans, LA, February 2005.