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SCHOOL NURSING DOCUMENTATION: KNOWLEDGE, ATTITUDE, AND BARRIERS TO USING STANDARDIZED NURSING LANGUAGES AND CURRENT PRACTICES

by

Sharon Kay Guthrie Yearous

An Abstract

Of a thesis submitted in partial fulfillment
of the requirements for the Doctor of
Philosophy degree in Nursing
in the Graduate College of
The University of Iowa

July 2011

Thesis Supervisor: Professor Ann Marie McCarthy

ABSTRACT

The independent, complex role of a school nurse requires accurate documentation of assessments, interventions, and outcomes. Consistent documentation by all school nurses is crucial to study the impact of nursing interventions on student's health and success in school. While standardized nursing languages are available, the actual use of these languages by school nurses is in the infancy stages of implementation. This national survey of school nurses reveals diverse practices in school nursing documentation. Using Everett Rogers' (2003) Diffusion of Innovation (DOI) theory, a web-based survey allowed respondents to identify their knowledge and attitude towards the use of standardized languages, including NANDA International (NANDA-I), Nursing Interventions Classification (NIC), and Nursing Outcomes Classification (NOC). Respondents also rated barriers to adopting the use of NANDA-I, NIC, and NOC (NNN). The results of this survey serve as a foundation for moving the practice of school nursing towards consistent documentation. Ultimately, the implementation of NNN will allow school nurses to document more consistently, base practice decisions on evidence, and improve the health and academic success of students in schools.

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Graduate College
The University of Iowa
Iowa City, Iowa

CERTIFICATE OF APPROVAL

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PH.D. THESIS

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This is to certify that the Ph.D. thesis of

Sharon Kay Guthrie Yearous

has been approved by the Examining Committee
for the thesis requirement for the Doctor of Philosophy
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To all school nurses and students in schools.

It is what it is.

Sharon Kay Guthrie Yearous, Dissertation

ACKNOWLEDGMENTS

Thank you to Dr. Ann Marie McCarthy, my dissertation committee members, and Dr. Susan Adams who worked with me and challenged me to complete this dissertation. I want to express my endless thanks to all my family, friends, and school nurse colleagues who supported and encouraged me as I pursued this endeavor. Thank you to my children, Bailey and Jacob, for realizing that I needed to spend hours at the computer to finish this project when I know it would have been more fun to go shopping or play trains.

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CHAPTER I

INTRODUCTION

The primary goal of schools is to educate students. Increasingly, professionals involved in the education of students are recognizing that a wide range of factors, including health, can have an impact on a student's ability to academically succeed. In order for students to reach their academic potential, they must be healthy and ready to learn (Costante, 2002; McKenzie & Richmond, 1998), yet a significant number of students (~20%) attend school with acute or chronic physical, mental and psychosocial health needs that influence their ability to learn (Chevarley, 2005; Child Trends Data Bank, 2004; Percy, 2006). Interestingly, in addition to the overall number of students with health concerns, the number of students classified as having excellent to very good health decreases as students become older (US Department of Health and Human Services, 2007). Lack of health insurance is also a factor that may influence student health and academic success. Recent reports indicate 2.3 million children each year, mostly from low- to middle-income families do not have health insurance (Agency for Healthcare Research and Quality, 2008). The lack of health insurance limits access to primary and preventive health care services. Additional factors influencing academic success include, but are not limited to, limited financial resources, limited access to health care providers, and poor health literacy. All of these factors support the need for school nurses and health services in the school setting.

School Nursing

Increasingly school health advocates recognize that addressing the health needs of students in schools requires the expertise of a school nurse (Lear, 2007; Percy, 2006). In fact, for some students, the school nurse may be the first and only contact with a health care provider (Fryer, Igoe, & Miyoshi, 1997; Percy, 2006). In 2008, there were an

estimated 68,588 school nurses (RNs), (2.6% of all nurses) employed in public school health services (Health Resources and Services Administration, 2004) caring for a projected 49,825,000 students in public schools (elementary and secondary) in the United States (National Center for Educational Statistics, 2008). School nurses provide access to physical and psychosocial health care for all students with acute and chronic illnesses, case management for students as necessary, screening for a variety of health concerns, and referrals to community and state services as needed. Within the larger population of students, a subset of students within the public school system are in special education programs and receive health assessments and direct nursing cares including procedures such as, but not limited to, gastrostomy feedings, suctioning, or catheterization (Cedar Rapids Community School District v. Garret F., (a Minor) and Charlene F. 1999; Percy, 2006; U.S. Department of Education, 2006). In addition, the health services provided by school nurses often encompass faculty and staff at school, families, and the communities in which school nurses practice.

Role of the School Nurse

The National Association of School Nurses (NASN) and the American Academy of Pediatrics (AAP) describe seven roles of the school nurse (American Academy of Pediatrics, 2008; National Association of School Nurses, 2002) (Table 1). These seven roles of the school nurse support and facilitate the development and maintenance of a Coordinated School Health Program (CSHP). The CSHP is a framework that encompasses multiple dimensions of a health program in eight distinctive components. These eight components of the CSHP can be used to develop, support, evaluate, and improve health services in the school setting. The eight components of a CSHP are identified in Table 2.

Table 1: Roles of School Nurse

1) direct care of students and school staff
2) leadership in advancing and delegating health services
3) screening and referring for health concerns
4) monitoring and promoting a healthy school environment
5) overall promotion of health through education of individuals or groups
6) leadership in health programs and health policies
7) acting as a liaison between school, family, community, and other health care providers

Table 2: Components of Coordinated School Health Program

1) school health services
2) comprehensive school health education
3) physical education
4) school nutrition services
5) a healthy school environment
6) family and community involvement in school health
7) school-site health promotion for staff
8) school counseling, psychological, and social services

Source: (McKenzie & Richmond, 1998).

Considering the roles of a school nurse and the framework of a CSHP, school nurses are ideally positioned to influence the development of a CSHP, guide the health of youth, and provide health promotion and disease prevention. These two frameworks, the roles of the school nurse and CSHP, along with the Scope and Standards of School Nursing (American Nurses Association and National Association of School Nurses, 2005) and the Scope and Standards of Nursing (American Nurses Association, 2004) guide nursing care and health services provided in schools. Given these various frameworks and guidance on school nurse practice, it is essential and critical that school nurses document nursing cares, processes used in school health, and outcomes with standardized methods. The standardization of documentation is necessary to aggregate it for the use in research and quality improvement. Without comprehensive standardized documentation practices, it is difficult to ascertain how well actual school nurse practice incorporates all roles of school nursing and the impact of student workloads, multiple school assignments, and other structure and resource issues on the delivery of care. The collection of aggregated data in a standardized manner will assist in the determination of school nurses influence the development and maintenance of a CSHP and the evaluation of school nursing interventions on student health and educational outcomes.

Documentation of Nursing Care in the School

Documenting nursing care is an expected standard of practice for school nurses (American Nurses Association and National Association of School Nurses, 2005). Accurate and systematic documentation is essential for monitoring ongoing care, outcome measurement, evaluating the quality of care, developing health care service programs, reimbursement of services, and creating legal records (Cheevakasemsook, Chapman, Francis, & Davies, 2006; Schwab, Panettieri, & Bergren, 1998; Schwab & Gelfman, 2001). School nurses provide care that can be described as both episodic as well as ongoing care and case management of chronic health conditions. The school

nurse guides the ongoing care for students with chronic health conditions by developing an individualized health care plan (IHP) specifically for an individual student. The documentation methods used by school nurses varies for a range of reasons including, but not limited to, differences in school policies, lack of organizational oversight, and lack of resources for documentation such as computers or computerized documentation programs. Nurses in many other settings, such as primary care, acute care, and home health care, often use *clinical information systems* that, when designed appropriately, guide best practices in care, coordinate care across settings, and establish systematic documentation through the use of *standardized nursing languages* (Barton et al., 2003; de Fatima Lucena & de Barros, 2006; Fischetti, 2008; Shever, Titler, Dochterman, Fei, & Picone, 2007; Westendorf, 2007). The extent that school nurses use clinical information systems and standardized nursing languages is unknown.

Clinical Information Systems

Information systems are used in numerous and various types of organizations. For example, information systems are utilized in K-12 schools to manage education data and information such as attendance and grades. Information systems code or reference data systematically, aggregating data for research and quality improvement. For information systems to optimally operate and provide maximum benefits for organizations, users, and consumers, they require data and information to be standardized or structured in a consistent format. Clinical information systems are used in health care to collect, process, store, and disseminate data and information using various types of technology across a continuum of health care settings (Simpson, 2000). Clinical information systems are used in various health care settings but to date it is unknown if or to what extent clinical information systems have been integrated in school health practices. The ongoing efforts and focus to use clinical information systems will help reach the goal that all Americans to have an electronic health record (EHR) by 2014

(Bush, 2004). As progress is made towards the goal for every individual to have an EHR, it is critical for the EHR to include school health data and information to provide an accurate and complete record of a student's record of health to coordinate student health care across acute, ambulatory, and community settings. A method to begin standardizing student health records is through the use of standardized nursing languages.

Standardized Nursing Languages

Standardized nursing languages describe nursing care concepts (diagnosis, interventions, or outcomes) using common terms to communicate within and across health care systems, health care providers, and other health professionals. The American Nurses Association (ANA) recognizes eleven different standardized nursing languages (terminologies) (American Nurses Association, 2006). Some of these languages are specific to practice settings, and others are more comprehensive and can be utilized in a variety of practice settings. Standardized nursing languages provide consistent terminologies or coding of data which in turn allows for aggregation of data and provides the basis for research, quality improvement, and ultimately helps define best practices and evidence-based guidelines (Rutherford, 2008).

Although use of standardized nursing languages is accepted practice in many healthcare settings, literature does not reveal if or to what extent standardized nursing languages are used in school nursing documentation. NASN recognizes the importance of using standardized languages in efforts to aggregate data and identified one of the association's research objectives as "promote research and knowledge development in child health and school health by improving the reliability, quality, and accessibility of school health data" (NASN, Research Goals).

Ultimately, in order to support NASN research objectives, it is essential for school nurses to be prepared to accurately and uniformly document health related data in the education and health information systems. In addition, it is important that the

documentation school nurses use clearly identifies the nursing process: the nursing diagnoses, interventions, and outcomes indicating students health needs are identified, met, and results of interventions are measured.

Statement of the Problem

School nurses, who practices independently in an educational setting without the structure and standards of the health care system, may lack the organizational oversight and guidance for health records that are provided in traditional health care institutions. Local school district policies and state and federal education laws provide guidance for schools including policies relating to school health services, however, some of these policies fail to address *how* school nurses should document in school health records. While NASN supports the use of standardized nursing languages in documentation (National Association of School Nurses, 2006), it does not have the authority to regulate and mandate how a school nurse practices. To date there is minimal literature describing how standardized nursing languages are incorporated into daily use for school nursing documentation. The literature that does exist describes the practice of school nursing, one or more specific health care concerns, or a select group of interventions or outcomes (Bednarz, 1998; Cavendish, Lunney, Luise, & Richardson, 1999; Cavendish, 2001; Cavendish, Lunney, Luise, & Richardson, 2001; Cavendish, 2003; Lunney, Cavendish, Luise, & Richardson, 1997; Lunney, Parker, Fiore, Cavendish, & Pulcini, 2004; Pavelka, McCarthy, & Denehy, 1999; Sigsby & Campbell, 1995).

The professional documentation standards of nursing are applicable to all nurses, across all settings. School nurses, just as acute and ambulatory care nurses, are accountable for documenting in a manner that captures the nursing process, including assessment, nursing diagnoses, nursing outcomes, planning, implementing interventions, and evaluation to determine if outcomes were met (American Nurses Association and National Association of School Nurses, 2005; American Nurses Association, 2001;

American Nurses Association, 2004). While there is some literature available to guide school nurse documentation (Carvey, Kittell, & Hadeka, 1987; Schwab et al., 1998; N. Schwab & Gelfman, 2001), evidence suggests that school nursing documentation practice varies across states, within states, and even across school districts (National Association of State School Boards of Education, 2009). Anecdotally, school nurses report a wide range of documentation practices including a daily running list of student names (i.e., student log), individual student health charts, self-developed electronic information systems, and commercial electronic health information systems.

The fragmented, inconsistent documentation practices suggested by anecdotal evidence suggest that monitoring individual student progress, aggregating data across school settings, studying the impact of nursing interventions on student health and school success, and ultimately, for guiding the improvement of health services in the school setting is lacking. Standardized nursing languages, combined with efficient and intuitive electronic health records, will document school health services consistently, efficiently, and accurately and support wise use of resources, development of evidence-based practices for school health, and prepare for future trends in healthcare.

Minimal information related to school nursing documentation practices or the knowledge and attitudes of school nurses regarding documentation is found in the literature. The author was unable to identify any objective data on the variety of methods school nurses use for documentation and the knowledge, attitudes, or barriers towards using standardized nursing languages in documentation. Consequently, strategies for preparing school nurses to document using information systems and standardized nursing languages are not grounded on the needs of school nurses. Therefore, the first essential step in this program of research is to identify current school nurse documentation practices including the extent to which standardized nursing languages are used and describe the knowledge, attitudes, and barriers to the use of standardized nursing languages in school nursing practice. In turn, the findings of this study will guide school

nurse leaders in utilizing appropriate strategies to incorporate standardized nursing languages into school nursing documentation.

Purpose

The purpose of this study is to identify school nurses' knowledge and attitude about the use of standardized nursing languages, identify barriers for school nurses to implement the use of standardized nursing languages in their documentation, and describe current school nurse documentation practices. An underlying assumption of this study is that school nurses document the care that they provide to students. For the purposes of this research the standardized nursing languages of interest are nursing diagnosis (NANDA-I hereafter referred to as NANDA), nursing interventions (NIC), and nursing outcomes (NOC). NANDA, NIC, and NOC will be referred to as NNN in this study.

Specific Aims

The specific aims for this study are to:

1. Describe school nurses' knowledge of standardized nursing languages, NNN.
2. Describe school nurses' attitude of standardized nursing languages, NNN.
3. Identify barriers for school nurses to implement standardized nursing languages, NNN, into school nursing documentation.
4. Describe current documentation practices in school nursing.

Significance

The findings of this study will provide the foundation for future efforts and studies regarding the incorporation of standardized nursing languages, specifically NNN, in school nursing documentation. The long-term goal of this research is to identify and facilitate a process by which school nurses consistently use standardized nursing languages in documenting care. In a global sense, the significance of this research is to

improve the health of students, faculty, staff, families, and communities. Ultimately with an EHR that crosses various health care settings and uses a comprehensive documentation method similar to the current standards of documentation as in other health care settings school nursing practices will be visible in the coordination of health services for students. Accurate documentation will provide data that informs school nursing practice and develops knowledge of best practices in school nursing. The use of standardized nursing language to describe, explain, and predict the health of students in school settings will provide an opportunity to improve the quality health care in school settings by allowing for the testing the effectiveness of interventions and development of evidence-based guidelines. Standardization of the documentation process will allow for the development of large data sets for further research, guide policy development, and provide a framework to evaluate nursing interventions in the school setting. Ultimately, the implementation of NNN in documentation will allow school nurses to monitor and improve the health of students and in turn influence the educational outcomes of students in schools.

Conceptual Framework

The theoretical framework for this study is the Diffusion of Innovation (DOI) theory (Rogers, 2003) (Appendix B). Rogers (2003) states that diffusion of a new innovation into practice occurs over five stages: 1) knowledge (or awareness), 2) persuasion (also referred to as attitude), 3) decision, 4) implementation, and 5) confirmation. In this study, the innovation, defined by Rogers (2003) as an idea or concept that is perceived as new by the user, is using standardized nursing languages in school nursing documentation. The survey instrument, developed for this study, School Nursing Documentation: Knowledge, Attitude, and Practice (SND), measures the first two stages in Rogers's theory (knowledge and attitude), identifies barriers for school

nurses in incorporating NNN into school nursing documentation, and describes the current documentation practices of the respondents.

Definition of Terms

Standardized Nursing Languages (specifically NNN)

Conceptual Definition: One or more words to describe concepts recognized by the profession of nursing including nursing diagnoses, nursing interventions, or nursing outcomes (Johnson et al., 2006). The American Nurses Association recognizes ten terminologies that support nursing practice including NNN (ANA, 2006).

Operational Definition: Approved standardized nursing languages in nursing documentation to describe nursing diagnoses (NANDA), nursing interventions (NIC), and nursing outcomes (NOC). The actual use of standardized nursing languages may be in the form of words or the numbers assigned to each nursing concept.

Knowledge

Conceptual Definition: Rogers (2003) defines knowledge as "when an individual is exposed to an innovation's existence and gains an understanding of how it functions" (p. 20). For the purposes of this study, the author defines knowledge of NNN as self-reported degree of understanding and ability to transfer NNN concepts into nursing practice.

Operational Definition: Participants report their self-perceived knowledge of standardized nursing languages, NNN, by selecting "none", "minimal knowledge", "adequate knowledge (can explain concept)", or "superior knowledge (can explain concept and apply it in practice)" in questions 17, 19, and 21 of SND survey (Appendix A). Questions 16, 18, 20, and 22 are to elicit where the participant may have obtained knowledge related to each standardized nursing languages.

Attitude

Conceptual Definition: Rogers (2003) defines persuasion as when "an individual forms a favorable or unfavorable attitude toward the innovation" (pg. 20). Rogers further defines the term attitude as "an individual's beliefs about an object that predisposes his or her actions" (pg. 174-175). In the DOI theory, persuasion is equated to forming an attitude and changing on the part of an individual, but not necessarily in a particular direction as expected by a change agent. For the purposes of this study, the author defines attitude as self-reported rating of positive or negative belief towards standardized nursing languages, NNN.

Operational Definition: Participants rate their attitude about standardized nursing languages, NNN, by selecting "completely agree", "generally agree", "have enough knowledge but neither agree nor disagree", "generally disagree", "completely disagree", "strongly disagree", or "do not have enough knowledge to have an opinion" in questions 23-34 of SND survey (Appendix A).

Barriers

Conceptual Definition: Barriers are costs to the individual (for example, convenience, time, money) that may prevent a desirable behavior from occurring (Pender, Murdaugh, & Parsons, 2006).

Operational Definition: For the purposes of this study, the author defines barriers as circumstances or individuals that respondents report as impacting a school nurses' ability to incorporate the use of standardized nursing languages (NNN) in daily documentation practices. The barriers included in this study were identified by the author through discussion with school nurses and in a focus group in the summer of 2004 (Yearous, 2004). Participants identify barriers to incorporating standardized nursing languages, NNN, by selecting "not a barrier", "small barrier", "moderate barrier", "great barrier", or "no opinion" in questions 35.1-35.9 of SND survey (Appendix A).

Documentation Practice

Conceptual Definition: Documentation is the written or typed word processes record of nursing process that describes the client's physical and psychosocial health assessment, plan of care, response to interventions, education provided to client, and dynamic interactions between clients and their families, health care professionals, and health care organizations (Daniels, Grendell, and Wilkins, 2010).

Operational Definition: Documentation method the school nurse uses to describe their current daily and care plan documentation. Information about school nursing documentation practices are included in questions 46-54 of the SND survey developed for this study (Appendix A).

CHAPTER II
REVIEW OF THE LITERATURE

Overview

The first section of this literature review presents information on a) documentation and the demand for universal electronic health records (EHR), b) nursing practice standards, documentation, minimum data sets, and the use of standardized nursing languages, c) the practice of school nursing, and d) school nursing documentation. This overview presents the foundation for school nurses to document nursing practice using standardized nursing languages. The second section of the literature review focuses on Everett Rogers' Diffusion of Innovation (DOI) Theory as the theoretical framework for this study in measuring school nurses' knowledge, attitude, and barriers of using standardized nursing languages in school nursing documentation.

Documentation and Electronic Health Records

An overview of the EHR is included here as context in which nursing documentation occurs. Care provided in healthcare settings must be documented for numerous reasons including, but not limited to, developing health care service programs, monitoring ongoing care, evaluating the quality of care, measuring outcomes, reimbursement of services, and creating legal records (Cheevakasemsook et al., 2006; Schwab et al., 1998). Accountability for care provided and documenting client responses to care are essential given the current emphasis on health care quality improvement. Nursing documentation is often viewed as a written record of actions or a task completed by a nurse and is typically written in a chronological fashion. This chronological format of recording tasks does not capture the deliberation and knowledge used to support the nursing actions or tasks (Turley, 1992). Paper documentation systems often create fragmented and inconsistent health records that make it difficult to retrieve data and measure outcomes. In addition to the fragmentation of paper health records, the use of

unstructured or narrative documentation limits the use of and ability to demonstrate the linkages or relationships between assessment findings, nursing diagnoses, interventions and expected outcomes in nursing care (Muller-Staub, Needham, Odenbreit, Lavin, & van Achterberg, 2007).

The EHR provides the structure and opportunity to standardize and collect consistent data across multiple health care settings, with the intent of improving the quality of health care. The following discussion reviews the impetus for EHRs, definition and purpose of EHRs, standards of EHRs, and concerns in using EHRs.

Impetus: One reason for the development of EHRs was the recognition of errors in delivery of health care (Institute of Medicine, 1999). Types of errors in the health care system are numerous including, but not limited to, medication administration errors, inadequate use of best practices, poor communication, and lack of coordination of care. In fact, many of the health care errors occur at alarming rates; for example, more than 1.5 million Americans are estimated to adverse effects by drug errors in the health care system (Institute of Medicine, 2006). It is estimated between 44,000 and 98,000 Americans die each year from preventable medical errors (Institute of Medicine, 1999). Errors and poor practices are unacceptable for consumers, providers, and the health care system. Health care consumers should feel confident that health care providers are basing decisions on evidence of best practices and that processes are in place to ensure safe and effective delivery of care. In order to improve health care, President Bush mandated every American should have an EHR by the year 2014 (Bush, 2004). The adoption, use, and continuous improvement of an EHR will be critical to decreasing the multitude of errors in the health care system and addressing universal demands for increased quality health care, minimization of health care errors, improved efficiency in health care system and processes, and decreased health care costs (Dunlop, 2007; Institute of Medicine, 1991; Institute of Medicine, 1999).

In addition to decreasing errors, EHRs have the potential to impact other aspects of health care. Clinically, EHRs allow for communication among providers across various settings resulting in improved continuity of care. EHRs that are accessible to multiple providers in various settings allow providers to see a comprehensive picture of a client's health, review current health concerns, recent test results, and current prescribed and non-pharmacological treatments. Access to EHRs assists all providers in collaboration and continuity of care and requires less reliance on individual consumers to remember and report their health history. In research, EHRs will allow for the development of standardized data sets from multiple sites. Data sets allow researchers to analyze data, conduct research studies, and ultimately develop evidence-based practices. For individual consumers, EHRs provide a comprehensive record of one's health eliminating the burden to remember sometimes extensive and complex health history.

Definition and purpose: An electronic health record (EHR) is described as a repository that electronically maintains an individual's health information and health care for their lifetime and stores the information in a manner that it can serve multiple legitimate users of the record (Healthcare Information Management and Systems Society, 2008; Tang & McDonald, 2006). The purpose of the EHR is to collect, store, and process an individual's health information in a central location (Institute of Medicine, Committee on Data Standards for Patient Safety, 2003). Since health information is in a central location, it is accessible to multiple providers to enhance continuity of care and efficiency and cost effectiveness of care. Health information should include, but is not limited to, an individual's demographics, progress notes, identified health problems, medications, prescribed or recommended plan or care, vital signs, past medical history, immunizations, laboratory data and radiology reports. Health information included in the EHR is entered by primary care providers or other health care professionals who provide services for the individual.

Standards: In order to reach the goal of all American's having an EHR by 2014, it is essential that EHR systems be interoperable which is defined as:

> the ability to communicate and exchange data accurately, effectively, securely, and consistently with different information technology systems, software applications, and networks in various settings, and exchange data such that clinical or operational purpose and meaning of the data are preserved and unaltered (Health Level Seven, 2007).

Interoperability is essential so that data from EHRs can be used across a variety of health care settings including, but not limited to, the acute care system, ambulatory care system, and community practice settings such as home care and schools. One of the elements within the EHR that supports interoperability is the terminology or vocabulary used to describe client data. The terminology or vocabulary to describe client data is coded or standardized and recognized in multiple information systems that can share the information; therefore multiple health care providers have access to the same client data in standardized format. Client data should be collected in a variety of health care settings to encompass many different aspects of health and entered into the EHR by many different health care providers.

Concerns: While there is sufficient support and ongoing effort to make the transition to EHRs, there are ethical concerns with policy implications that need to be considered with the implementation of EHRs. The development and use of an EHR must take into account the underlying principles of health care records which include privacy, confidentiality, and security issues (American Health Information Management Association, 2007). While privacy, confidentiality, and security may seem synonymous, each term has a distinct meaning. Privacy—which pertains to an individual rather than the documents—is a right of an individual to be left alone without intrusion in one's personal affairs (Health Information Management Technology: An Applied Approach, 2002; Medical Informatics, 2001). Confidentiality, on the other hand, relates to information and limits the use, disclosure, or release of personal information.

Confidentiality of health care information includes the duty of data owner or client to control access to or release of any written and oral information that health care worker has access to (Health Information Management Technology: An Applied Approach, 2002; Medical Informatics, 2001). Security relates to the protection of health information from destruction or misuse and includes the physical and computer-based integrity, storage, access, and use of information as well as procedures to protect the health information such as audits (Health Information Management Technology: An Applied Approach; 2002). While privacy, confidentiality, and security relate to different concepts in health care records, it remains essential that all three issues are continuously evaluated and maintained with the ongoing development and adoption of EHRs.

In December 2007, the American Health Information Management Association (AHIMA) released a white paper with recommendations for all consumers, health care professionals, employers, information technology industries, and government agencies to establish and use uniform privacy, confidentiality, and security protections. Fostering privacy, confidentiality, and security of health information includes, building trusting relationships between consumers and providers; uniform confidentiality and security protections; proper violation responses; assuring individuals' rights to full access to their health information; and consumers and providers willingness to contribute to the HER (American Health Information Management Association, 2007). In addition to provider, consumer, industry, and government attention to privacy, confidentiality, and security of health records, it is essential to clarify or eliminate discrepancies in laws while continuing to maintain the principles of privacy, confidentiality, and security of health records. Recent efforts of the Department of Health and Human Services to establish a Health Information Technology Standards Panel offers mechanisms to handle these conflicts over time (Office of the National Coordinator for Health Information Technology, 2011).

In summary, the EHR has been defined, standards have been established, and EHRs are at various stages of being implemented in different health care settings. The

ethical considerations of implementing EHRs are being recognized and will need to be continually reviewed to ensure best practices. Development and refinement of the EHR is an ongoing, complex, and dynamic process, and it is essential that nursing expertise be involved to assure that nursing documentation in the EHR will adequately capture nursing care and outcomes.

Nursing Standards, Nursing Documentation, Nursing Minimum Data Sets and Standardized Nursing Languages

The ANA recognizes and publishes scope and standards of practice for nursing and numerous specialty areas in nursing practice. The scope and standards documents are frameworks to guide the practice of nursing and define the accountability and outcomes that a nurse is responsible for (American Nurses Association, 2004). The *Nursing: Scope and Standards of Practice* (American Nurses Association, 2004) encompasses all nurses in all practice settings and identifies the six standards of practice as the six steps in the nursing process (see Table 3). Under each standard of practice, several measurement criteria are identified. These measurement criteria are indicators of competent practice within each standard. A review of the nursing standards of practice (Standards 1-6) and identification of the measurement criteria specifically associated to documentation is highlighted in Table 3. Nurses are obligated to follow the standards of practice and provide care within the framework of the nursing process; therefore nursing documentation should reflect the nursing process. Although the standards do not provide an extensive description of how to document, documentation is clearly integral to the measurement of these standards of nursing practice and therefore must be adhered to for assurance of quality nursing practice.

Nursing Minimum Data Sets and Standardized

Nursing Languages

As previously stated documenting nursing care is essential for numerous reasons and serves many purposes. In addition to the basic practice of documenting care, there are a number of data elements collected about each client in health care settings that become part of the client's health care record. Identifying and capturing these data elements allows researchers to analyze the relationships between elements in an effort to develop best practices and provide safe and cost effective care. Werley and Lang (1988) and Werley, Devine, Zorn, Ryan, and Westra (1991) identified a set of sixteen data elements related to nursing practice referred to as the Nursing Minimum Data Set (NMDS). These sixteen data elements are grouped into three categories 1) patient or client demographic elements, 2) service elements, and 3) nursing care elements (Table 4).

Table 3: Nursing Standards and Measurement Criteria Identifying Documentation

Nursing: Standard of Practice	**Measurement Criteria Associated with Standard**
Standard 1: Assessment	"**Documents** relevant data in a retrievable format." (ANA, 2004, pg. 21)
Standard 2: Diagnosis	"**Documents** diagnoses or issues in a manner that facilitates the determination of the expected outcomes and plan." (ANA, 2004, pg. 22)
Standard 3: Outcomes Identification	"**Documents** expected outcomes as measurable goals." (ANA, 2004, pg. 23)
Standard 4: Planning	"Uses standardized language or recognized terminology to **document** the plan." (ANA, 2004, pg. 24)
Standard 5: Implementation	"**Documents** implementation and any modifications, including changes or omissions, of the identified plan." (ANA, 2004, pg. 26)
Standard 6: Evaluation	"**Documents** the results of the evaluation." (ANA, 2004, pg. 31)

The NMDS is not obvious in routine documentation practices because many of the client and service data elements, such as the client's date of birth or expected payer,

are captured at different points within the health care system, such as at the point of admission. Therefore a nurse may not realize the NMDS exists or how their documentation of nursing care influences the NMDS. Without understanding the NMDS, the practicing nurse does not realize their documentation includes four specific items related directly to nursing care: 1) nursing diagnosis, 2) nursing interventions, 3) nursing outcomes, and 4) intensity of nursing care (Werley & Lang, 1988). These specific nursing data elements can be documented in a number of ways including narrative documentation or through the use of standardized nursing languages that are also recognized by the ANA (http://nursingworld.org/npii/terminologies.htm). In addition to the NMDS, the Nursing Management Minimum Data Sets (NMMDS) is the other nursing data set recognized by the ANA (http://nursingworld.org/npii/terminologies.htm). The NMMDS includes data elements for nursing management and administration.

Table 4: Nursing Minimum Data Set Elements

Nursing Care Elements
1. Nursing diagnosis
2. Nursing intervention
3. Nursing outcome
4. Intensity of nursing care
Patient or Client Demographic Elements
1. Personal identification
2. Date of birth
3. Sex
4. Race and ethnicity
5. Residence
Service Elements
1. Unique facility or service agency number
2. Unique health record number of patient or client
3. Unique number of registered nurse provider
4. Episode admission or encounter date
5. Discharge or termination date
6. Disposition of patient or client
7. Expected payer for most of this bill (anticipated financial guarantor)

The development of standardized nursing languages began in the early 1970s and has been and continues to be an ongoing process (Lunney, 2009). The need to develop standardized nursing languages or classifications was prompted by the notion that nursing assessment data needed to be organized or clustered for interpretation before a nurse could develop a client's plan of care which would then be implemented and evaluated. Standardized nursing languages provide a classification system to describe nursing concepts and specific aspects the nursing process (diagnoses, interventions, or outcomes). There are currently eleven standardized terminologies recognized by the ANA (http://nursingworld.org/npii/terminologies.htm). As standardized terminologies have developed, some of the terminologies specifically focus on nursing (see Table 5) and others have been developed to be multidisciplinary in nature (see Table 6). Of the eleven nursing terminologies, one of them, Patient Care Data Set (PCDS), has been retired as a recognized language and the information formerly within PCDS has been integrated into LONIC, another of the recognized multidisciplinary terminologies. Each terminology is further described by the practice setting where language was developed and the content of nursing each language can be applied to (see Table 5 and Table 6).

The selection and application of any of the standardized languages in Table 5 and 6 may be determined by a nursing specialty, such as perioperative nurses utilizing the PNDS, or by health care organizations, such as hospitals adopting the use of SNOMED CT. A third way that standardized languages become selected and applied to nursing practice is through endorsement by a professional organization, such as NASN supports the use of NANDA (to describe diagnoses), NIC (to describe nursing interventions), and NOC (to describe nursing outcomes); herein referred to as NNN. Since the population of interest in this research is school nurses and NASN endorses the use of NNN, this literature review and research focuses on NNN.

Each standardized language (NNN) is in a process of continually being developed and revised by researchers and practicing nurses through the use of specific guidelines for

development and approval of new concepts. A concept is defined as "a phenomenon or group of phenomenon" (Meleis, 1997, pg. 12). Concepts within each standardized language attempt to capture a unique aspect of nursing. Examples of concepts within NNN that are applicable to school nurses are "anxiety" (NANDA), "anxiety reduction" (NIC), and "anxiety self-control" (NOC). Measuring concepts allows for research related to individual concepts and to research the interaction between two or more concepts. Standardized languages also allow for the development and use of electronic information systems to aggregate and report nursing care data such as use of specific diagnoses, interventions, or outcomes. Data collection and analysis are critical for future research to explore the most effective means of providing nursing care as well as develop new knowledge in nursing (Brokel & Heath, 2009; Congress of Nursing Practice, 1994; M. Johnson et al., 2006).

Nursing diagnoses

Nursing diagnoses development began in 1973 when a group of nurse leaders assembled to identify a system of labels to describe nursing practice (M. Johnson et al., 2006). The nursing diagnosis became the label to define a "clinical judgment about individual, family, or community responses to actual or potential health problems/life processes" (NANDA International, 2009, p 253). NANDA currently has 206 diagnoses placed within 13 domains of a taxonomic structure (NANDA International, 2009). The nursing diagnosis provides the foundation on which a nurse selects the appropriate nursing outcomes and interventions associated with that diagnosis. The list of approved diagnoses has expanded since its inception through ongoing development, revision, and use of the NANDA language by nurses. The 2007-2008 edition of NANDA included new labels for concepts related to health promotion and communities (NANDA International, 2005; Nanda News, 2004). The addition of NANDA diagnoses related to health promotion and communities and the application to various populations, including

individuals, families, populations, and communities expands the use of nursing diagnoses to include more than just physiological or psychological concerns. A NANDA diagnosis that is particularly applicable to school nursing is Risk for Unstable Blood Glucose. This NANDA is useful for students diagnosed with type I or type II diabetes or for students that have poor management of their diabetes.

Table 5: ANA recognized standardized nursing languages

	Standardized Nursing Languages	**Setting Where Developed**	**Content**
1	Clinical Care Classification (CCC)	Home Care	Diagnoses, Interventions, and Outcomes
2	International Classification of Nursing Practice (ICNP)	All Nursing	Diagnoses, Interventions, and Outcomes
3	NANDA International (NANDA)	All Nursing	Diagnoses
4	Nursing Interventions Classification (NIC)	All Nursing	Interventions
5	Nursing Outcomes Classification (NOC)	All Nursing	Outcomes
6	Omaha System	Home Care, Public Health and Community	Diagnoses, Interventions, and Outcomes
7	Perioperative Nursing Data Set (PNDS)	Perioperative	Diagnoses, Interventions, and Outcomes
8	Patient Care Data Set (PCDS) (RETIRED – content in LONIC)	Acute Care	Diagnoses, Interventions, and Outcomes

Table 6: ANA recognized standardized multidisciplinary languages

	Multidisciplinary Languages	**Setting Where Developed**	**Content**
9	ABC Codes	Nursing and Other	Interventions
10	Logical Observation Identifiers Names and Codes (LONIC)	Nursing and Other	Outcomes and Assessments
11	Systematic Nomenclature of Medicine Clinical Terms (SNOMED CT)	Nursing and Other	Diagnoses, Interventions, and Outcomes

NIC

NIC is a classification system specifically for nursing interventions that was first published in 1992 and included 336 interventions (Iowa Intervention Project, 2008). Through an established process, nurses in practice and academia have expanded this list to now include 542 interventions organized within seven domains (Iowa Intervention Project, 2008). The NIC interventions are grounded in previous research, literature, and practice. Each NIC intervention captures a concept to describe interventions in nursing practice. The NIC terms have application across a broad scope of nursing practice and can be used with individuals, families, or communities. Use of NIC allows a nurse to document specific interventions that have definitions and suggested activities and allow for further testing and research in nursing science. Building on the NANDA of Risk for Unstable Blood Glucose, the nurse would determine the expected outcomes for the client and then several NIC labels, such as Nutritional Counseling, Teaching: Prescribed Diet, Hypoglycemia Management, or Hyperglycemia Management, can be utilized as interventions for a student with a medical diagnosis of diabetes.

NOC

NOC is a nursing classification system with specific labels used to describe outcomes for a client or group of clients. The development of NOC, first published in 1997, is the most recent of the three standardized languages described in this paper (Johnson et al., 2006). The most recent publication lists 385 outcomes categorized in seven domains with the process of developing a new outcome label clearly outlined in the latest edition (Iowa Outcomes Project, 2008). Measurement of outcomes is important to determine if nursing interventions are effective, although it must be recognized that there are other variables, such as client ability and environment that may influence a particular outcome. NOC includes labels or concepts which are measured by indicators on a Likert scale. Each NOC label is measured with an appropriate indicator which allows for

application to specific client or practice settings. The ongoing development and testing of the outcome labels in NOC merge the practice of nursing with the research and advancement of the science of nursing. The application of NOC standardized nursing languages in this section has used Risk for Unstable Blood Glucose as an exemplar. The outcomes for a student with a nursing diagnosis of Risk for Unstable Blood Glucose may include Blood Glucose Level, Nutritional Status: Nutrient Intake, or Diabetes Self-Management and as previously noted there are specific nursing interventions that can be used to reach these outcomes.

A review of the literature reveals standardized nursing languages and nursing minimum data sets have been adopted and are used in various nursing specialties and practice settings. The peri-operative nurses developed a minimum data set, Perioperative Nursing Data Set (PNDS), which describes nursing diagnoses, interventions, and outcomes specifically used in pre-operative, intra-operative, and post-operative settings. The PNDS was recently re-evaluated and revised to meet ongoing client, nursing, and documentation needs (Petersen & Kleiner, 2011). Parish nursing documentation has been mapped to NIC (Burkhart, Konicek, Moorhead, & Androwich, 2005). Home health care agencies and community based nurses often use the Omaha system (Westra, Oancea, Savik, & Dorman Marek, 2010). In other instances, standardized nursing languages have been adopted and implemented by organizations, such as hospitals (Thoroddsen, Ehnfors, & Ehrenberg, 2010; Thoroddsen & Ehnfors, 2007) and cardiac and pulmonary rehabilitation programs, in rural hospitals (Ahern, 2003).

School Nursing

This section explores the practice of school nursing and a review of literature to date related specifically to school nursing and standardized nursing languages. The practice of school nursing began in New York City in 1902 when Lina Rogers documented the care she provided (nursing interventions) for children in the school

environment and during home visits. Rogers' early documentation focused on absenteeism and showed clearly that a school nurse made a significant difference in school attendance rates (outcomes). Documentation by Rogers demonstrated school attendance rates were dramatically improved over the course of one year. In September of 1902, 10,567 students were excluded from school due to illnesses and in September of 1903, only 1,101 were excluded (Denehy, 2003). Lina Rogers' diligence in documenting is one of the fundamental reasons school nursing practices evolved. School nurses today are concerned not only with attendance rates, but also in documenting interventions performed for individual students, including chronic illness management, acute illness management, counseling, and health education, as well as outcomes and health dynamics within the families and communities they serve. The school nurse also has an integral role in identifying health concerns in the school building, such as poor air quality or other health hazards, and assisting with the development of a disaster preparedness plan.

According to National Center for Educational Statistics (2008), there were approximately 49,825,000 students in public elementary and secondary schools (National Center for Educational Statistics, 2008). These students were cared for in the school settings by approximately 68,588 school nurses (Health Resources and Services Administration, 2004). The No Child Left Behind legislation (US Department of Education, 2004) mandates that schools measure student success and make improvements to meet student achievement goals. The Institute of Medicine (1997) identified that students need to come to school healthy and ready to learn because health augments children's learning potential (Institute of Medicine, 1997). The American Academy of Pediatrics (2008) recognizes that the education system's primary mission is to educate youth who will then be ready to enter college or the job market and therefore school need to meet physical, mental and social wellness needs.

National Association of School Nurses (NASN)

The National Association of School Nurses (NASN), has nearly 15,000 members belonging to 51 affiliate organizations, was incorporated in 1977, and exclusively represents school nurses. NASN's mission is to "support the health and educational success of children and youth by developing and providing leadership to advance school nursing practice by specialized registered nurses" (National Association of School Nurses, 2011a). NASN had a task force, which the researcher was a member of, focusing on the use of standardized nursing languages, specifically NNN, in an effort to provide evidence of interventions that move children to optimal health and learning. It is imperative to study the most effective means of implementing the process of documentation using the standardized nursing languages of NNN to avoid fragmented documentation in school nursing. Consistent documentation of school nursing care will provide data to validate that school nurses' impact on the health and educational outcomes of children (NASN, 2011b). NASN was informed of this research study and supported this effort.

Scope and Standards of Professional School Nursing Practice

The scope of practice and standards of care for school nurses are identified in a joint statement by NASN and the American Nurses Association (American Nurses Association and National Association of School Nurses, 2005). The standards of care recognize that the school nurse should collect, manage, and utilize data in a systematic manner when providing care to students, families, school staff, communities, and other providers. These data, as stated earlier in this chapter, are needed to document the assessment, diagnosis, outcome identification, planning, implementation, and evaluation of care provided by school nurses.

School Nursing Documentation

School nursing documentation has been influential in advancing the practice of school nursing. While much of Lina Roger's documentation was related to quantifying the number of student exclusions due to illness (now referred as outcome measurement of attendance), the current demands of school nursing must include documentation of nursing interventions and measurement of outcomes (Denehy, 2003). Simply quantifying the number of students a school nurse interacts with does not provide outcome measurements. Charting in a narrative format may include nursing interventions used and expected outcomes, but makes aggregating the data within a single setting or across several settings a laborious process. For example, a school nurse who uses a mental health screening tool, identifies a student with needs, contacts parents, and provides referral to community services has clearly intervened for the welfare of the student. However, documenting this process as only one nurse visit does not capture the extent of the health care provided and does not facilitate monitoring the child's health outcomes. Using standardized language in this scenario would allow the nurse to identify nursing diagnoses, establish outcomes, determine appropriate interventions, and evaluation of outcomes. Anecdotal evidence suggests that school nurse interventions have an impact on the health and success of children, but the literature to describe current school nursing documentation and the impact of school nurse interventions and outcome measurement is limited (Barcalow, 2006; Cavendish, Lunney, Luise, & Richardson, 2001; Engelke, Guttu & Warren, 2009; Stock, Larter, Kieckehefer, Thronson, & Maire, 2002; Weismuller, Grasska, Alexander, White, & Kramer, 2007). Documenting nursing care and student outcomes in the school setting is necessary to show the critical link between health services and student's ability to achieve wellness and academic success. Accurate documentation is also necessary for school health related research and development of evidence-based practices for school nursing. Ultimately, accurate data will support the health and academic success of all students.

School nursing documentation can be recorded in a variety of ways including paper systems and computerized systems. Paper documentation systems do not allow easy aggregation of data for reporting and researching. While there are a number of school health management computer programs, research on school nurses' use of computerized student health management systems has not been completed since 1998 (Smith, Young-Cureton, Hooper, & Deamer, 1998). The findings of this 1998 study indicate that in a sample of 290 school nurses, only 21% of them used a student health management software program. Vessey (2002) published a review of six commercial school nursing documentation programs, but did not identify if any of these six commercial school nursing documentation programs incorporated standardized nursing languages (Vessey, 2002). The identification of current documentation practices will assist in determining the extent of change that needs to occur to achieve standardized documentation using NNN.

A systematic review of literature related to *school nursing documentation* was completed using electronic information data bases. The data bases searched were CINAHL with Full Text, Health Source: Nursing/Academic Edition, ERIC, and Medline with Full Text. The search was limited to English language and articles that were published between the years of 2000 to 2011. Key words used to search each electronic data base were "documentation OR documenting" AND "school health nursing". The literature search revealed thirty-eight unique articles identified with the key words above. These thirty-eight articles were reviewed and grouped into four categories. The first category references described school nursing documentation and included only two articles (Denehy, 2003; Yearous, 2006). Denehy (2003) described the information that school nurses should document and suggested that the nursing process, which NNN are linked to, should be used to structure school nursing documentation. Yearous (2006) described how NNN can be incorporated into school nursing documentation in an abstract for a poster presented at a NASN conference. The second category included four

articles that discussed school nurse documentation specific to individual models of school nursing (Buddhirakkul, Suchaxaya, Srisuphan, & Chanprasit, 2007; Hawksley, Carnwell, & Callwood, 2003; Mackert & Whitten, 2007). In the third category, eight articles were identified that looked at how school nurses address ethical or legal issues in documentation and included articles by Clausson et al and Schwab et al (Clausson, Kohler, & Berg, 2008; Schwab & Pohlman, 2004). The fourth category, with 24 articles, focused on documentation about specific diseases, such as asthma, seizures, oppositional defiant disorder, or immunizations, or specific interventions or outcomes associated with a disease. The systematic literature search did not reveal any literature describing the linkage of NANDA, NIC, and NOC in school nursing documentation practice. The lack of research on the process and structure of school nursing documentation clearly illustrates the need for further research in this area. The 38 articles related to specific aspects of school nursing documentation are integrated into the remaining sections of this chapter as appropriate.

Nursing documentation has traditionally been in a narrative format until the introduction of computerized systems. Numerous computerized nursing documentation systems exist, but in order to aggregate data for nursing research it is necessary to standardize the terms that describe nursing care into nursing concepts. Standardized nursing languages describe nursing concepts within the framework of the nursing process (Fawcett, 2004; Iowa Intervention Project, 2008; Iowa Outcomes Project, 2008). The use of standardized nursing languages to document nursing diagnosis, interventions, and outcomes will allow for the ability to test the relationship among these nursing concepts.

School nursing presents a unique setting for the use of standardized languages. School nurses are often the only health care provider in a building or a group of school buildings. Typically policies are not in place at educational institutions that dictate what data the school nurse must collect and present related to student contacts using standardized language. Since health is not the primary focus of educational institutions,

it is up to individual school nurses to make the commitment to use standardized languages and generate data in a uniform manner. Benefits of collecting and maintaining records using a standardized nursing languages, NNN, include the generation of databases specific to nursing (diagnoses, interventions, and outcomes) for practice and research, generation of data for reimbursement based on nursing language, not medical language, and to allow for the retrieval of information based on nursing diagnosis, not medical diagnosis (Johnson et al., 2006).

The use of standardized nursing languages such as NANDA, NIC, and NOC are supported by the National Association of School Nurses (NASN) (National Association of School Nurses, 2006). Denehy published a concise guide on how to apply the use of standardized nursing languages to school nursing practice (Denehy, 2004; 2010). This author's review of the literature did not reveal literature that described how school nurses currently document, or any literature describing the use of standardized nursing languages, NNN, across the profession of school nursing. The use of standardized languages such as NNN to define school nursing has been published (Denehy & Poulton, 1999; Denehy, 2004; Hootman, 1996; Pavelka et al., 1999; Redes & Lunney, 1997; Schwab et al., 1998; Stock et al., 2002) but the actual use of NNN are in the infancy stages of implementation and research.

Nursing Diagnosis Related to School Nursing

NANDA nursing diagnoses provide documentation of how the school nurse identifies to a particular student need or concern. The NANDA classification system added new diagnoses to the system since its inception that focus on wellness and health promotion and include labels such as health seeking behaviors, family coping, and potential for growth (NANDA International, 2005). This evolution in the NANDA classification system to encompass diagnoses that better reflect the public health nurse role allows for better application to the area of school nursing. The literature review did

not reveal any articles specific to the use of NANDA nursing diagnosis in school nursing practice.

Nursing Interventions Classification Related to School Nursing:

Nursing Interventions Classification (NIC) provide school nurses an avenue to document the specific interventions that are performed related to a specific diagnosis (Iowa Intervention Project, 2004). However, to date, when nurse researchers have published information about NIC in the school setting, NIC has typically been used to describe the practice of school nurses, not the documentation of school nurses (Cavendish et al., 1999; Lee, Park, Nam, & Whyte, 2011; Lunney, 2006; Pavelka et al., 1999; Redes & Lunney, 1997; Sigsby & Campbell, 1995). In 1999, a study utilizing a convenience sample of school nurses found that 114 of the 433 NIC interventions were used at least monthly (Pavelka et al., 1999). Of those 114 interventions, 8 were used once per day to several times per day, 24 were used at least once per week, and 82 were used at least monthly. Redes and Lunney (1997) showed that 241 of the 433 interventions were used by at least 50% of their sample (n=102). This study identified NIC interventions that are not applicable to school nursing practice but suggests that these interventions remain in the database to maintain accuracy and completeness of the database. Most recently, Lee et al. (2011) compared the NIC identified as core to school nursing practice to the interventions performed by Korean school nurses and determined NIC has utility in both cultures. While these studies have focused on describing school nursing practice with NIC, they confirm the value of NIC for school nurse documentation, since if NIC can describe practice it can also be used to document that practice. NIC also continues to add to its classification system. The original NIC included 336 interventions; the most recent publication includes 542 interventions and a listing of core interventions that are used by school nurses (Iowa Intervention Project, 2008).

Nursing Outcomes Classification Related to School Nursing

Nursing Outcomes Classification (NOC) provides nurses a means to measure the change in patient response or outcome (Iowa Outcomes Project, 2004). This literature review revealed limited literature that addressed the use NOC in school nursing. An editorial by Denehy, (2000) speaks to the importance of using NOC to demonstrate the change in health status of students in the school setting (Denehy, 2000). Stock et al. (2002) recognizes the importance of measuring outcomes in school nursing and summarizes literature indicating school nursing has demonstrated several positive outcomes (Stock et al., 2002). However, this summary of outcomes does not use the NOC classification. NOC uses Likert-like scales to measure client status, behavior and/or perceptions. Application of the NOC classification provides nurses with a measure of change in the Likert scoring based on nursing interventions provided to students. Reporting outcomes using standardized scales, such as NOC, produces data sets that allow research of the effectiveness of school nursing interventions. The support of NASN and the need to show achievement and positive outcomes for students verifies that now is the time to incorporate the use of standardized nursing languages in school nursing.

According to past president of NASN, an effort to diffuse the use of NNN has not taken place on a national level (S. Will, personal communication, November 29, 2005). Standardized language will allow school nurses to describe similar phenomena using standard definitions (Hootman, Houck, & King, 2002; Ryberg, Keller, Hine, & Christeson, 2003). The consistent adoption and use of standardized nursing languages will allow school nursing information systems to collect and store data that can later be retrieved and compared across local, state, and regional areas. Standardized language will facilitate research in the area of school health by allowing the aggregation of student level data into large data sets which will provide practicing school nurses with data that will produce more accurate clinical decision-making and future policy development.

Interventions and policies in school health based on evidence will improve the health and academic outcomes of children. The implementation of standardized nursing language will allow school nurses to clearly communicate with other school nurses, other health professionals, and the general public. Ultimately, the use of standardized language allows for measurable outcomes in student health and improved care for children.

Conceptual Framework

Everett Rogers's (2003) DOI theory (see Appendix B) was selected as the theory to support this proposed research because it provides the steps needed to successfully implement an innovative change. The use of standardized nursing languages, NNN, in school nursing documentation is the innovation of interest in this research. A measurement of the first two steps in the DOI, knowledge and persuasion (attitude) is essential to determine the future steps for implementation of NNN in school nurse documentation. In addition to measuring knowledge and persuasion (attitude), this study also identifies the barriers to knowledge and implementation of standardized nursing languages. The following subsections expand on the first two stages of Rogers' DOI theory and how it relates to school nursing.

Knowledge

According to Rogers (2003, p. 169), knowledge "occurs when an individual (or other decision making unit) is exposed to an innovation's existence and gains an understanding of how it functions". If individuals do not gain knowledge about a new innovation, they will not see the need for it or have the opportunity to adopt the innovation; conversely, if they do not see the need for a new innovation, they will not seek the knowledge. It is difficult to determine if the need for an innovation occurs first or if the awareness of the innovation occurs first. What is clear from Roger's model (2003) is that individuals will selectively attend to and interpret messages about an innovation based on prior conditions such as past practice, perception of need, and the

norms of the social system. Cohen and Levinthal identify that prior knowledge and the ability to acquire new knowledge have a direct relationship to the success of an innovation (Cohen & Levinthal, 1990). The level of knowledge that school nurses have relates to their standardized nursing languages has not been measured to date. The survey instrument developed by the researcher includes questions to measure knowledge related to standardized nursing languages in school nursing practice. Barriers to using standardized nursing languages will also be included in the survey. Data from this section of the survey will direct the intensity of knowledge dissemination that is needed prior to implementation of documentation using NNN.

Attitude

Attitude is described as the persuasion stage of DOI. Rogers (2003, p. 20) describes persuasion as "when an individual forms a favorable or unfavorable attitude toward the innovation." For this study, persuasion will be a measure of attitude. Whereas the knowledge stage of DOI is primarily cognitive thinking, the persuasion (attitude) stage is primarily affective thinking or feeling. During this stage an individual becomes more involved with the idea of the innovation and actively seeks information, deciding what information is credible. An individual in the persuasion stage will think abstractly about the innovation and consider how it fits into their current practice and beliefs. Individuals may seek the input of their peers to see if their thinking and formation of attitude toward a new innovation is reasonable. The outcome of the persuasion stage is the individual's formation of a favorable or unfavorable attitude toward the innovation under consideration. Barriers to persuasion (attitude) may be measured examining the five characteristics of the innovation. These characteristics include 1) relative advantage of the innovation, 2) compatibility of the innovation to the environment in which it is being adopted, 3) complexity of the innovation, 4) trialability or ease of trying the innovation for a period of time, and 5) observability of the

innovation being utilized by others. In reviewing the school nursing documentation literature, one study conducted interviews with school nurses (N=12) in Sweden about their attitudes toward documentation in school nursing (Clausson, Petersson, & Berg, 2003). Their interviews revealed that documenting physical health, such as injuries, was not as difficult as documenting psychosocial health concerns. Although this study was conducted outside of the U.S., it identified lack of time and structure as barriers to documenting health of children in school. Zerwekh, Thibodeaux, and Plesko (2000) used DOI to identify the characteristics of innovation in their study describing the process of implementing a new documentation method for public health nurses (Zerwekh, Thibodeaux, & Plesko, 2000). Their effort to identify each characteristic as they implemented the new documentation method indicated a favorable attitude towards the adoption of the new documentation method. Lee (2004) also examined the characteristics of an innovation in nurses' adoption of technology. Identification of characteristics in the persuasion stage in this study allowed implementation of a computerized care plan system to be successful.

The survey instrument developed for this study attempted to measure the characteristics of the innovation, relative advantage, compatibility, complexity, trialability, and observability, as a measure of the attitude of school nurses towards the use of standardized nursing languages. Identifying barriers towards the attitude (persuasion) stage will be vital to successfully implementing the standardized nursing languages into school nursing.

One cannot assume that knowledge and a favorable attitude toward an innovation will lead to adoption. There are some innovations which individuals are knowledgeable about and have favorable attitudes towards, but are not reflected in their practice. Rogers (2003) identifies this as the "KAP-gap" (Knowledge-Attitude-Practice). In addition to identifying barriers, measuring knowledge and attitude, this research study attempted to identify the existence of a KAP-gap in the use of standardized documentation by school

nurses. It is possible that some school nurses know about, and have a favorable attitude towards the use of NNN, but they do not have the resources to implement this type of documentation into practice. Identifying the KAP-gap of school nurses towards the use of standardized nursing languages will help determine additional steps that are needed to implement this type of documentation. If an attempt is made to implement the innovation without adequate knowledge and favorable attitudes from practicing school nurses, the innovation will likely be unsuccessful.

Summary

This research is essential to establish baseline data of current documentation practices, knowledge, attitude, and barriers related to standardized nursing languages. This research will establish the necessary steps to transition school nurses to use a consistent method and technique of documentation including standardized nursing languages.

CHAPTER III

METHODOLOGY

Design

A cross-sectional, descriptive, tailored designed web-based survey was used for this study. The use of a cross-sectional approach provides descriptive information and is considered the first step in areas in which a limited amount of research is available (Burns & Grove, 2005; Hulley et al., 2001). This research design allowed for collection of information related to all variables at once since the review of literature did not reveal any studies on knowledge, attitude, barriers and current practices of using NANDA, NIC, and NOC (NNN) in school nursing documentation. The use of a tailored designed method provides the "development of survey procedures that create respondent trust and perceptions of increased rewards and reduced costs for being a respondent, that take into account features of the survey situation and that have as their goal the overall reduction of survey error" (Dillman, 2007, pg.4). The letter of invitation to participate in this survey was personalized as recommended in tailored design as a technique to create respondent trust (Dillman, 2007). The use of a web-based survey for school nursing research was a relatively new method of data collection, therefore, it was important that respondents were confident in how the web-based survey was administered and had a positive experience when participating in the research study.

Sample

Three preliminary factors were considered in identifying the sample for this study: the source for obtaining the sample, exposure to standardized nursing languages, and access to the internet. Sampling for this research involved the inclusion of school nurses from across the country, who all had a similar opportunity for exposure to standardized nursing languages, and who had access to a computer with Internet capabilities. The options for obtaining a national sample of school nurses were identified

as 1) working with the state school nurse consultants, 2) contacting the state departments of education, or 3) using National Association of School Nurses (NASN) membership contact information. As of January 2004, only 40 states had a state school nurse consultant (National Association of School Nurses, July 2004), therefore obtaining a comprehensive list of school nurses from all states through the school nurse consultants was not feasible. Identifying school nurses through state departments of education data would involve the cooperation of 50 departments of education, plus the accuracy of the state lists of school nurses is unknown, and almost 20% of school nurses are not employed by state departments of education (Johnson, 2002). NASN is the professional organization specifically representing school nurses with members in all states, and NASN updates membership data monthly, therefore is able to provide the most current contact information for potential respondents. A limitation of using NASN for sampling was that members of the professional organization may differ from non-member school nurses. Considering the options for obtaining a sample, it was decided that NASN provided access to practicing school nurses with relative ease and was the most comprehensive approach to obtaining a national sample of practicing school nurses.

In addition to the rationale for selecting a national sample, consideration was given to school nurses' exposure to standardized nursing languages. Exposure to standardized nursing languages can occur through a variety of methods, however for NASN members there are some consistent methods in which standardized nursing languages are presented. NASN disseminates information about standardized nursing languages to their membership through a position statement on the use of standardized nursing languages NNN posted on the NASN website (National Association of School Nurses, 2006) and articles in *The Journal of School Nursing*. NASN also published a book, *Using Nursing Languages in School Nursing*, specifically outlining how standardized nursing languages (specifically NNN) can be used in school nursing (Denehy, 2010). This book was first published in 2004 (Denehy, 2004), and the second

edition was printed in 2010 (Denehy, 2010). In addition to these methods of exposure to standardized nursing languages, all school nurses, including NASN members, may also have exposure to standardized nursing languages through individual opportunities such as nursing conferences, other professional literature, and advanced education.

The third consideration, access to the Internet, was important because this research was conducted using a web-based survey so respondents needed Internet access to complete the survey. A 2007 NASN membership survey with 4,972 responses indicated that 90% of the respondents of this study had access to the Internet at school and home, 5% had access only at work, 3% had access only at home, and 0.3% did not have access at work or home, (M. Bergren, personal communication, March 21, 2011). The NASN survey was conducted using a web-based survey, therefore a limitation of this NASN data is non-Internet users were not able to respond to the NASN survey. However for the current study, it provides evidence that a substantial number of school nurses likely have access to the Internet and would be able to access the survey for this study.

As stated in Chapter 1, it was estimated in 2008 that there were 68,588 school nurses (RNs), 2.6% of all nurses, employed in public school health services (Health Resources and Services Administration, 2004). For this research, a list of active NASN members, 13,458 active members as of October 10, 2007, and their contact information (name and mailing address) was purchased from NASN. This membership list was sent to the researcher from NASN electronically in an Excel spreadsheet. The member contact information was purchased by the researcher according to NASN policies. These members were from 51 affiliate organizations (49 states, District of Columbia, and the Overseas School Health Nurse Association) and international members. In order to control for variations in school nursing practice, including possible oversight by government agencies, the active members from the Overseas School Heath Nurse Association and active international members were excluded from this sample (n=81).

After exclusion, a sampling frame of 13,377 active NASN members was used for this research.

In an effort to minimize sampling error, the error that occurs because data is not collected from each member, determination of the minimum number of survey responses needed for generalizability of the data required four considerations. These considerations included 1) determination of the amount of sampling error that was tolerable (±3%, ±5%, or ±10%), 2) population size the sample is drawn from, 3) amount of variation in the population with respect to the variables of interest (50/50 or 80/20) and 4) amount of confidence in the results, such as a 95% confidence level, when considering the entire population (Dillman & Smyth, 2007). For this research it was determined ±5% sampling error was tolerable because ±10% sampling error would not allow the data to be as generalizable to NASN membership. A ±3% sampling error required a much larger sample size and considering this a new area of research using a newer method of data collection, the total number of expected responses was uncertain.

The sampling frame was 13,377 after the exclusion criteria were applied. In a population where it may be predicted to have a split in responses such as using yes/no questions, the population is said to have a 50/50 split. If the population of interest is more homogenous and questions are not dichotomous, the population is said to have an 80/20 split. The population of interest in this research was expected to be fairly homogenous; therefore an 80/20 split was predicted. The fourth consideration, confidence level, was established at 95%. In order to calculate the total number of responses to establish "power" or generalizability of the data, the four above considerations are used in a formula.

$$Ns = \frac{(Np)\,(p)\,(1-p)}{(Np-1)\,(B/C)^2 + (p)\,(1-p)}$$

Ns = completed sample size needed for desired level of precision
Np = size of population
p = proportion of population expected to choose one of the two response categories

B = acceptable amount of sampling error; 0.05 = ±5% of the true population value
C = Z statistic associated with confidence level; 1.96 = 95% confidence level

For this study:

$$241.4429 = \frac{(13{,}377)\,(.8)\,(1-.8)}{(13{,}377-1)\,(0.05/1.96)^2 + (.8)\,(1-.8)}$$

Ns = completed sample size needed for desired level of precision
Np = size of population
p = proportion of population expected to choose one of the two response categories
B = acceptable amount of sampling error; 0.05 = ±5% of the true population value
C = Z statistic associated with confidence level; 1.96 = 95% confidence level

Therefore, before the data was collected, the number of participants needed was 241 to minimize sampling error and have enough data to generalize to the NASN membership.

Survey research has traditionally been associated with a lower response rate; however those who are interested in the content area of the survey are more likely to respond (Fowler, 2002; Sheehan, 2001; Yun & Trumbo, 2000). Consideration of strategies to increase the response rate included elements of tailored designed methods for surveys such as a respondent-friendly questionnaire, multiple contacts with sample using first class mail, and personalization of correspondence (Dillman, 2007). Previous survey research with school nurses revealed a response rate of 65% for a mailed survey design study with a national sample of school nurses selected from NASN membership (McCarthy, Kelly, & Reed, 2000). State specific school nurse mailed surveys in Ohio and Pennsylvania had response rates of 64% and 76% respectively (Hillemeier, Gusic, & Yu, 2006; Mosca, Sweeney, Hazy, & Brenner, 2005). While these studies had response rates greater than 60%, participation in other school nurse survey research revealed a lower level of response (34%) (McCarthy, Kelly, Johnson, Roman, & Zimmerman, 2006). Using a conservative estimate of a 30% response rate, it was determined a sample size of 800 was needed from the 13,377 NASN members to ensure responses from 241 participants.

The original Excel file with NASN member information was sorted by states. Using ZRandom for Excel (*ZRandom for excel*), each of the 13,377 members was assigned a random number between 1 and 13,377. After assigning a random number to each active member, the membership list was sorted according to numerical order using the new random numbers. The membership list was then sorted numerically from lowest to highest using the newly assigned random numbers. The first 800 subjects became the sample for this research.

Inclusion/Exclusion Criteria

Inclusion criteria required active membership in NASN. Active NASN membership includes a variety of different professionals including practicing school nurses, nurse educators, consultants, and administrators. The members within these various roles were included in the demographic, knowledge, attitude, and barriers sections of the survey (questions 1-36). Inclusion in the final section of the survey (questions 37-54, documentation) required the respondent to respond 'yes' or 'no' to question #36 which asked if the respondent provided direct nursing care to students, which would therefore require documentation. If the respondent provided direct care, the respondent completed the rest of the survey, which included a series of questions regarding current school nursing documentation practices. A brief explanation at the beginning of the current documentation section was added to remind respondents that the questions were not being asked to critique any individual's documentation practices.

The NASN Overseas School Health Nurse Association and international members were excluded to control for differences in the international health care systems or other regulatory influences affecting these school nurses. As described above in the inclusion criteria, in order to complete the final section of the survey related to current practice, respondents were required to provide direct care in the school setting that requires documentation. Exclusion of respondents that did not provide direct care eliminated

responses from the data related to documentation practices from school nurses who did not document patient care in their school nurse practice.

Instrument

Development

The *School Nursing Documentation: Knowledge, Attitude, and Barriers to using Standardized Nursing Languages and Current Practices Survey (SND)* was developed by the author. The survey development was guided by Rogers' Diffusion of Innovation theory (Rogers, 2003) (see Appendix B for DOI model), a review of literature related to the implementation of standardized nursing language into other nursing practices as discussed in Chapter 2, and literature providing guidelines on instrument development (Lee, 2004; Polit & Beck, 2006; Waltz, Strickland, & Lenz, 2005). The survey questions were developed with attention to using words that are well defined to minimize misinterpretation of questions and to ensure that each question was measuring a single idea (Fowler, 1995). The NASN Executive Director reviewed the preliminary survey and approved the use of NASN membership information for this survey.

The innovation of interest in this research is the use of standardized nursing languages in school nursing documentation. The SND (Appendix A) consists of five sections. These sections were identified through a review of Diffusion of Innovation theory (Rogers, 2003) and are essential variables to measure prior to major efforts to incorporate an innovation such as standardized nursing language into school nursing practice. Question #1 required the respondent to key in the unique identification number which indicated consent to participate. The unique identification number also served as a method to determine who completed the survey and who needed a reminder to complete survey two weeks after the initial invitation. The sections of the survey are: 1) demographics (items 2-15), 2) knowledge (items 16-22), 3) attitude (items 23-34), 4) barriers (items 35.1-35.9), and 5) current documentation practices (items 37-54). Item

#36 determined inclusion in the current documentation practices section as previously described.

The *demographic section* of the survey was developed through review of other surveys used for school nursing research and information the researcher identified as relevant to distinguishing characteristics of nurses responding to this survey. All of these questions provided options for the respondent to select from. These questions included job title, level of education, years of experience as a nurse and as a school nurse, certifications, employer, state of residence, age, gender, race, and ethnicity. Additional questions in this section related to access to the internet and computer(s), where access to computer(s) was located in the work setting such as in the health room, in an office, or laptop, questions related to number of years practicing as a nurse and number of years practicing as a school nurse.

The *knowledge section* questions were designed to measure what Rogers describes as awareness-knowledge. Awareness-knowledge relates to knowing that an innovation exists. The innovation of interest in this research was standardized nursing languages and was measured with questions 16-22. Question #16 was a yes/no question asking if the respondent had ever accessed the NASN position statement related to standardized nursing languages. Questions 17, 19, and 21 asked the respondent to describe their knowledge level of standardized nursing languages (#17 NANDA, #19 NIC, and #21 NOC) and the ability to apply the knowledge in practice. Options for these knowledge questions were none (do not know), minimal (have heard of term but cannot explain concept), adequate (can explain concept but not apply to practice), or superior (can explain concept and apply it to practice). If the respondent identified they had no knowledge of a particular standardized nursing language, the survey used conditional logic to skip the subsequent questions (#18, 20, and 22) that asked where the respondent obtained their knowledge related to that particular standardized nursing language. If the respondent identified they had minimal, adequate, or superior knowledge, the subsequent

questions (#18, 20, and 22) in the survey provided a list of options where knowledge about each standardized nursing language could be obtained from and the respondent was asked to identify the resources used to learn about each standardized nursing languages.

The *attitude section* of the survey was developed by the author incorporating questions related to standards of nursing documentation (questions 23-25) such as documenting according to the nursing process, willingness to change (questions 26-29) to use any of the standardized nursing languages or each specific language (NANDA, NIC or NOC), and the five perceived characteristics of an innovation (questions 30-34) as identified by Rogers (2003). The five perceived characteristics measured were relative advantage (question 30), compatibility (question 31), complexity (question 32), trialability (question 33), and observability (question 34). The responses for the attitude section were developed based on recommendations by Fowler (1995) and DeVellis (2003). Likert scales with six response options were given for all questions in this section (completely agree, generally agree, have enough knowledge but neither agree nor disagree, generally disagree, completely disagree, or do not have enough knowledge to have an opinion). Likert scales are widely used for opinion, attitudes, or beliefs measurement and can be developed to create variability in the responses (DeVellis, 2003). The option "do not have enough knowledge to have an opinion" was provided knowing some respondents in the previous section (knowledge section) may have selected no knowledge about NANDA, NIC, or NOC. The option "have enough knowledge but neither agree nor disagree" allowed the respondent to have a neutral attitude or opinion to the questions. This option was provided as the researcher did not want to force the respondents to be in favor (completely agree or generally agree) or not in favor (generally disagree or completely disagree) of a question.

The *barrier section* of the survey was developed based on common themes identified from a focus group (N=5) conducted by the author at the annual 2004 NASN conference. In the focus group, the author used probe questions related to school nursing

documentation practices and standardized nursing languages to understand other school nurses concerns or challenges with school nurse documentation. The transcribed discussion from the focus group identified themes of barriers to using NNN in school nursing practice. These themes were incorporated into the barriers section of the survey using a matrix format (question 35.1-35.9). Additional questions in the barriers section were developed based on the author's experience and the literature review as noted in chapter 2. The inclusion of identifying and measuring barriers in this survey is essential for further planning of the use of standardized nursing languages. In certain instances, some respondents may have high knowledge and a favorable attitude toward the use of standardized nursing languages, but certain barriers may impede the transition to using standardized nursing languages. In other instances, the lack of knowledge may be one of the most significant barriers to using standardized nursing languages.

The *current documentation section* of the survey was developed based on the author's experience and a lack of literature identifying how school nurses currently document their nursing practice. This section, current documentation practices, was only completed by respondents who identified they provide direct nursing care to students in the school setting (question #36). Respondents who identified they did not provide direct nursing care did not complete this section of the survey. Questions 37-40 were numerical fields that asked respondent to enter the average number of hours per week working as a school nurse (#37), average number of hours per week providing direct 1:1 nursing care (not case management, conferences, classroom teaching, or other meetings) (#38), estimated number of hours per week spent documenting direct care (#39), and estimated number of hours per week spent documenting classroom teaching, attending conferences or meetings, and other non-direct nursing care activities (#40). Question 41 asked for the number of school buildings the respondent was responsible for and provided a drop down menu with single number options (1thru 16 or more). Question 42 provided a list of individual grade levels (K-12), daycare (infant or toddler), preschool, pre-kindergarten,

and special education for which the school nurse provided care. Question 43 asked about total number of students the respondent was responsible for and provided a numeric field that the respondent keyed the number into. Questions 44 and 45 were measures of barriers (financial resources and leadership receptive to new ideas) within the respondent's employment setting. These questions used a Likert scale (6 options) similar to the attitude section of the survey because they were attitude or opinion type questions. Questions 46-49 were measures of current documentation practices (daily documentation and individualized health plans) including documenting according to nursing process (#46) and use of NANDA (#47), NIC (#48), or NOC (#49) in daily documentation practices for episodic visits to the school health office. The optional responses for questions 46-49 were all of the time, most of the time, limited amount of time, or never. Question 50 provided a list of distinctively different documentation systems ranging from paper log with all student information on one form, paper documentation system with each student having own health record, combination of paper and computerized documentation, computerized documentation systems developed by school, district, or state, computerized documentation within school student management program, or computerized documentation using a commercial school nursing software program.

There was also an "other" option which included a free text field that respondent could enter more details. For this question, the respondent was allowed to select only one option that most closely described their documentation system. If the respondent selected that they use a commercial school nursing software program, the survey used conditional logic and the next question (question 51) listed eleven known commercial school nursing software programs and an option to select other and specify the name of the program. If the respondent did not select commercial school nursing software program in question 50, the conditional logic in the survey took the respondent to question #52, which asked respondents to select all of the individuals that were allowed to document in student health records. This list ranged from the school nurse, school nurse

administrator/supervisor, health associate (hired exclusively to help in school health office), other associate (school staff member not exclusively hired for school health office but may provide limited health services to individual students), unlicensed assistive personnel (UAP) which included secretary or principal, and an "other" option allowing entry of free text. Question 53 asked when it was most common for the respondent to document nursing care provided to a student and offered 4 options and other selection. The four options were 1) while student is in health room, 2) immediately after student has left the health room, 3) throughout the day, as time allows, and 4) at the end of each day. The final question of the survey (#54) listed the standardized nursing languages recognized by the American Nurses Association (NANDA, NIC, NOC, Omaha, Clinical Care Classification, International Classification of Nursing Practice, ABCCodes, LONIC, and SNOMED CT) and asked respondent if they consistently used any of the standardized terminologies in daily documentation.

The survey instructed the respondent to select all that applied and also provided "other" field with option to enter free text. When the respondent completed the final question and submitted the survey, their computer was redirected to a web site that provided information on how to contact the researcher if they had further questions or wanted to receive the results of the survey. Following the development of the survey items, a multi-step process was used to establish the validity and reliability of the complete survey.

Validity and Reliability of Survey Instrument

Content validity of the overall survey and individual survey items is essential with the development of a new instrument. Waltz, Strickland, and Lenz (2005, p. 155) define content validity as "whether or not the items sampled for inclusion on the tool adequately represent the domain of content addressed by the instrument". Survey items demand attention to how they are constructed so the respondents can report accurately.

According to Fowler (2002), there are four primary reasons why respondents may not respond accurately including 1) not understanding the question, 2) not knowing the answer, 3) not able to recall information, although they know, and 4) not wanting to report the answer. The researcher considered content validity and individual survey item construction while developing the SND survey.

Methods to measure validity and reliability of the SND survey occurred in several phases and are described below. The first phase of validity testing (survey had 50 questions) occurred with several practicing school nurses and school nurse experts reviewing numerous paper versions of the SND as it was being developed. These experts included practicing school nurses (S. Adams, personal communication, August 2, 2006; B. Allen, personal communication, June 13, 2006; T. Swartzendruber, personal communication, June 13, 2006), school nurse researchers (M. Bergren, personal communication, July 2006), M. Lunney, personal communication, June 29, 2006), a researcher/statistician (R. Baller, personal communication, April 4, 2007) with expertise in survey data and instrument development, and the researcher's advisor. In addition, several references related to survey validity and reliability were reviewed (Best & Krueger, 2004; DeVellis, 2003; Dillman & Smyth, 2007; Fowler, 1995; Fowler, 2002; Schonlau, Fricker, & Elliott, 2002; Waltz et al., 2005).

In *phase one,* five practicing school nurses and ten expert school nurse leaders who were members of the NASN Task Force for standardized nursing languages completed additional content validity testing of the SND survey. This draft of the survey had 53 questions and two vignettes describing a scenario of a student visit to the school nurse. Each vignette asked the respondent to identify and prioritize the NANDA for the scenario and then identify expected outcomes, using NOC terms, and select as many interventions, using NIC terms, as appropriate to achieve expected outcomes. Revisions to the survey were completed based on the feedback shared by these nurses. These included, but were not limited to, clarification of survey question meanings and

comments related to the vignettes. Comments related to the vignettes included concerns that the vignettes were cumbersome and overwhelming to some individuals at this level of validity testing so future respondents of the survey may not be willing to complete the vignettes and may close the survey when in web-based format. A second concern from school nurse leaders on the NASN standardized language task force indicated the information obtained from vignettes may be difficult to interpret since school nurse's knowledge related to standardized nursing languages was unknown prior to this research, and therefore the vignette completion may be a matter of guessing which NOC and NIC are related to the selected NANDA. The third concern related to including vignettes was that web-based survey methods were relatively new for school nursing research and if the vignettes were viewed as cumbersome and overwhelming, they may create a negative image of web-based surveys for school nurses. These concerns were noted by the researcher and after careful consideration the vignettes were included with the second phase of validity testing to confirm or refute the deletion of vignettes from the final web-based survey. The major change after this phase of validity testing was a removal of a question in the documentation practices section related to the sixteen elements of the minimum data set. The reviewers considered this question to be very difficult to understand and questionable if respondents could provide responses. The SND survey included 54 questions and the vignettes after revisions from this stage of validity testing.

Phase two of content validity focused on the knowledge, attitude, barriers, current documentation practices, and vignettes of the survey. Content validity of individual survey items (I-CVI) and of the scales (S-CVI) for each construct of interest was established. Three school nurse research experts who had not previously seen the survey used an item-objective congruence evaluation form (see Appendix D) to rate if each survey item was relevant to the corresponding objective of the survey. The rating scale provided three options: +1 (definitely a measure of objective), 0 (undecided), and -1 (definitely not a measure of objective). Ideally the I-CVI scores should be 1.00 when

there are five or fewer experts "to be considered a reasonable representation of the universe of possible ratings" (Lynn, 1986, pg. 383).

Survey I-CVI scores are reported in Table 7. There were a total of two -1 (definitely not a measure of objective) ratings. The first -1 rating was related to the question in attitude section that asked if the respondent thought it was important that they accurately document the nursing care they provide. This question was included in this section as a measure of attitude and also a measure of the possible assumption that everyone believes the nursing care they provide should be accurately documented. The second question with a -1 rating was in the documentation practices section and the question asked for the number of school buildings the respondent was responsible for. While this question may not seem like a measure of current documentation practices it was left in the survey and in the current documentation practices section because the total number of school buildings that a school nurse is responsible for can vary within states and between states. This information was not asked in the demographic section of the survey because it was only pertinent to those school nurses who provide direct nursing care.

There were a total of three zero (undecided) ratings amongst the three experts and the zero ratings were on different survey items as described in this section. The question about having ever accessed the NASN position statement related to standardized nursing languages was rated zero but left unchanged because it was determined as a possible method to influence a respondent's knowledge about standardized nursing languages. The question about observing someone else using standardized nursing languages in the attitude section was suggested to be changed to having a mentor or learning more but this question was left with word of observing because it was intended to measure one of the five characteristics of an innovation as defined by Rogers (2003). The third question rated as a zero was in the documentation practices section and asked what grade levels the respondent provided nursing care for. This question, similar to question about

number of school buildings, was left within this section and unchanged because number of grade levels cared may vary and it was to capture data from respondent's completing the current documentation practices section.

Three questions (Q# 3, 5, 7) asking where knowledge was obtained were left un-coded in the knowledge section by one expert reviewer. A narrative comment on the form indicated that respondent should be able to skip these questions if they stated they had no knowledge in the respective preceding question. The expert reviewer did not realize the final survey would be developed in web-based format and conditional logic would allow skipping of selected questions if the question was not pertinent. The three school nurse research experts also provided narrative comments on evaluation forms regarding the overall development of the survey which, were taken into consideration.

The expert reviewers provided narrative feedback that the vignettes were confusing and questioned the validity of responses if vignettes were included in survey. One reviewer suggested that the vignettes needed to be a completely separate project and to consider alternative ways to measure a respondent's ability to select appropriate NANDA, NIC, and NOC for a scenario. These comments about the vignettes were similar to previous reviewers and therefore the vignettes were removed from the survey. The final version of the survey consisted of 54 questions.

The I-CVI scores allowed the researcher to compute scale content validity index (S-CVI) scores (see Table 8) to measure constructs of interest (knowledge, attitude, barriers, and current practice). The S-CVI is the "proportion of total items judged content valid" (Lynn, 1986, p. 384). The S-CVI can be calculated using several different methods and for this study the S-CVI was determined by calculating the averages of the I-CVI for all items within each scale. The average of I-CVI then became the S-CVI/Average (Polit & Beck, 2006). The S-CVI/Average score is the same as the average congruency percentage (ACP) and is recommended to be .90 or greater (Waltz, Strickland, & Lenz, 2005, p. 178). The S-CVI scores were .81 for knowledge section, .94

for attitude section, 1.00 for barriers section, and .92 for current documentation practices section.

Finally, additional evidence of the reliability and validity of the SND was obtained from the data collected using the completed survey responses. Internal consistency reliabilities were determined for knowledge, attitude, and barriers subscales by calculating coefficient alphas and are presented in the Results in Chapter 4.

Web-Based Survey Applications

A web-based survey application was used to conduct the SND survey. Web-based surveys are Internet based applications used to conduct surveys with specified populations of interest. Web-based surveys have several advantages over pencil and paper surveys. Participants are able to respond immediately to web-based surveys, and data can be compiled directly into a data management program eliminating the need for data entry and the chance of data entry error. Another benefit is the researcher can set the survey to check for missing data or data that is out of accepted ranges. The web-based survey can be designed to prompt the participant to complete the missing or erroneous data before the survey can be submitted (Best & Krueger, 2004; Cummings, Stewart, & Hulley, 2001; Dillman, 2000). Web-based surveys are more inclusive and less expensive to carry out once they are set up, allowing for a larger sample size (Wyatt, 2000). Fowler (2002) also notes that web-based surveys are advantageous for large samples allowing the participant to provide thoughtful answers, not having to respond directly to an interviewer, have a faster return rate, and have a low cost per unit of data collection. Web-based survey design also allows the researcher to determine which fields must be completed and set range limits as needed for questions to prevent erroneous data. These methods of consistency in survey administration also contributed to the validity of data gathered (Burns & Grove, 2005).

A web-based survey format was selected for this research because it was relatively less expensive then copying and mailing paper surveys, minimized data entry error since respondent information was exported out of web-based survey to Excel software and then to SPSS, and utilized the Internet which is a common method of communication. As a graduate student at The University of Iowa, the author was eligible to obtain a WebSurveyor (www.websurveyor.com) account and therefore used WebSurveyor to conduct this survey. WebSurveyor allowed for multiple choice questions, Likert scales, and free text input from the respondents. A paper version of the SND survey is included in Appendix A. The variables of interest were the respondent's knowledge, attitude, and barriers to using standardized nursing languages and current school nursing documentation practices. The SND web-based survey was developed on a secure web site and initial data (input by respondents) was stored on The University of Iowa's secured web server. The survey and collected data remained on the password-protected secure web server site to maintain integrity of the survey tool and the data.

Pilot Testing for Usability of Web-Based Survey

Research related to web-based survey design demonstrates that approximately 31% of usability problems will be identified with one user (Neilsen & Landauer, 2000). Testing with five users will identify approximately 85% of the potential usability problems. Three separate groups of five non-NASN member school nurses (total N=15) were identified by the researcher and school nurse leaders in several states. Selecting non-NASN members to pilot test the web-based survey ensured potential subjects from the sampling frame would not be selected. The non-NASN members completed the pilot version of the web-based SND prior to the start of data collection to identify usability concerns and additional content face validity of the web-based survey.

Table 7: Item Content Validity Index Rating Scores

Item Content Validity Index (I-CVI)		
Survey Question Number	**1+ rating/total possible**	**I-CVI**
Knowledge Section		
Question 17	2/3	.67
Question 18	3/3	1.00
Question 19	2/3	.67
Question 20	3/3	1.00
Question 21	2/3	.67
Question 22	3/3	1.00
Question 23	2/3	.67
Attitude Section		
Question 24	2/3	.67
Question 25	3/3	1.00
Question 26	3/3	1.00
Question 27	3/3	1.00
Question 28	3/3	1.00
Question 29	3/3	1.00
Question 30	3/3	1.00
Question 31	3/3	1.00
Question 32	3/3	1.00
Question 33	3/3	1.00
Question 34	2/3	.67
Barriers Section		
Question 35	3/3	1.00
Question 36	3/3	1.00
Question 37	3/3	1.00
Question 38	3/3	1.00
Question 39	3/3	1.00
Question 40	3/3	1.00
Question 41	3/3	1.00
Question 42	3/3	1.00
Current Documentation Practices Section		
Question 43	2/3	.67

Table 7: Continued

Question 44	2/3	.67
Question 45	2/3	.67
Question 46	3/3	1.00
Question 47	3/3	1.00
Question 48	3/3	1.00
Question 49	3/3	1.00
Question 50	3/3	1.00
Question 51	3/3	1.00
Question 52	3/3	1.00
Question 53	3/3	1.00
Question 54	3/3	1.00

Table 8: Scale Content Validity Index Rating Scores

Scales - Content Validity Index (S-CVI)		
Section of Survey	**+1 rating/total possible**	**S-CVI/Average (or ACP)**
Knowledge	17/21	.81
Attitude	31/33	.94
Barriers	24/24	1.00
Current Practice	33/36	.92

An evaluation form, Critique of Web Based SND form (see Appendix C), was developed and attached to the e-mail to pilot testers with instructions for pilot testing and accessing the pilot version of the survey. The pilot testers were asked to print the attached evaluation form and note comments on the form while completing the survey. These evaluation form questions were then included at the end of the web-based survey so the pilot testers could enter feedback and submit feedback at the same time as submitting the pilot survey. This separate evaluation form allowed the participants to

identify usability issues and any information that was unclear to the pilot participants so the researcher could clarify or make additional revisions prior to launching the survey to potential participants. Based on pilot testing of the web-based survey, the average time to complete the web-based survey was 20 minutes with a range of 8-35 minutes.

After the first pilot, the researcher made revisions to the survey to clarify the questions related to the number of hours in school nurse role, number of hours providing direct 1:1 care, number of hours spent documenting the 1:1 nursing care, and number of hours spent documenting non-direct school nursing activities. A second pilot with five different school nurses followed after these revisions. No new revisions to the survey or usability concerns were identified after the second round of pilot testing. The five nurses in the third pilot test identified two minor revisions. An additional option, "combination of paper and computerized documentation", was added to the list of possible types of documentation systems. The second revision involved moving the questions related to daily documentation and the use of NNN to immediately follow the question regarding daily documentation using the nursing process. It was determined these questions were similar in nature and should be grouped together. With content validity established and usability pilot testing completed, the survey was finalized and ready for Institutional Review Board approval.

Procedures

This study was reviewed and approved by the Institutional Review Board at The University of Iowa prior to enrollment of participants. A personalized letter of invitation to participate was mailed to the 800 subjects. The letter of invitation included the purpose of the study, introductory information about the web-based survey, identification of IRB approval, a unique subject identification number, and the Uniform Resource Locator (URL) to access the survey (see Appendix E). The subject identification numbers were used to protect identifiable information and allow the researcher to send a

second invitation to participate to non-responders (Yun & Trumbo, 2000). Those who elected to participate accessed the URL to complete the web-based survey.

The following describes the content on each screen of the SND web-based survey.

- Screen 1 explained what to expect by participating, estimated length of time to complete the survey, and consent to participate by selecting an option to participate in the web-based survey.
- Screen 2 prompted the participant to key an identification number located in the letter of invitation. This identification number was used to track respondents. Non-respondents received a second notice about participating in this study at a later date. The use of a unique identifier in a web-based survey is a method to retain control over the number of participants (Wyatt, 2000) and to track responses.
- Screen 3 asked the participant a series of demographic questions that were used for descriptive statistic purposes.
- Screens 4-6 asked a series of questions related to knowledge (screen 4), attitude (screen 5) and perceived barriers (screen 6) related to the use of NNN in school nursing practice.
- Screen 7 asked the potential participant to identify if they provided direct nursing care in the school setting or not. Asking this question prior to the subsequent questions related to current documentation practices allowed the researcher to filter out participants that did not provide direct nursing care. The data from participants that did provide direct care in school setting was necessary to answer aim four of this study.
- Screen 8 asked the potential participants specific questions about documenting the nursing care they provide in their practice as a school nurse.

Upon completion of the SND survey, the participant was thanked and provided with the researcher's contact information in the event they wanted to contact the researcher and request a summary of the survey results.

Two weeks after the letter of invitation to participate was sent to subjects, the researcher reviewed data entered and using unique subject identification number determined which subjects had not completed the SND survey and sent them a reminder letter inviting them to participate in the study and stated the date the survey would no longer accept responses which was four-weeks from the date the survey started.

Data Management

WebSurveyor allowed the survey data to be collected and saved on a secured web server and for the author to review web data periodically as respondents submit their surveys and without jeopardizing the previously submitted responses. When all of the surveys were completed, the data from WebSurveyor was exported to Microsoft Excel and then to SPSS. Once in Excel, the original data file was saved as a password-protected read-only file and any files with sorted data were password protected and saved using different names. Protecting the original file as read-only was to ensure the original data could always be accessed if needed. Password protection of electronic files was to maintain confidentiality of results.

Data Analysis

Data was analyzed based on the specific aims. General analysis included the use of SPSS to calculate descriptive information including frequencies and percentages for item responses. In an effort to analyze the constructs of interest, the responses for the knowledge, attitude, and barriers sections were combined to create composite scores for each construct (composite knowledge, composite attitude, and composite barrier). Explanatory models were developed for each aim. For aims with dependent variables that were continuous, ordinary least squares (OLS) regression was used. For aims with

dependent variables that were categorical, logistic regression was used. Regression analysis was used to determine if there are certain variables that predict the knowledge level and adoption of standardized nursing languages.

Specific Aim 1: *Describe school nurse's knowledge of standardized nursing languages.* Descriptive statistics (frequency and percentages) were used for first level of data analysis. Second level of data analysis involved OLS regression with a model using composite knowledge score as the dependent variable and composite attitude, educational level, total years practiced as a nurse and state of residence as the independent variables.

Specific Aim 2: *Describe school nurse's attitude of standardized nursing languages*. Descriptive statistics (frequency and percentages) were used for first level of data analysis. Second level of data analysis involved OLS regression with a model using composite attitude score as the dependent variable and composite knowledge, educational level, total years practiced as a nurse and state of residence as the independent variables.

Specific Aim 3: *Describe school nurse's barriers to implement standardized nursing languages*. Descriptive statistics (frequency and percentages) were used for first level of data analysis. Second level of data analysis involved OLS regression with a model using composite barriers score as the dependent variable and composite knowledge, composite attitude, educational level, total years practiced as a nurse and state of residence as the independent variables.

Specific Aim 4: *Describe current documentation practices in school nursing.* The data analysis for this specific aim included respondents who answered yes to question #36 that they provide direct care in their role as a school nurse. Descriptive statistics (frequency and percentages) were used for first level of data analysis. Second level of data analysis involved logistic regression with a model using those who used any of the standardized nursing languages, NANDA, NIC, or NOC, (from responses to question #54), as the dependent variable and the independent variables in the model including composite knowledge, composite attitude, composite barriers, educational level, total

years practiced as a nurse, use of a computer, number of students they provide care for, and response to question #44, if they thought health services budget was adequately funded.

In addition to the data analysis to describe the specific aims, this first use of the SND survey provided the opportunity to further explore the reliability of the survey instrument. Crohnbach's coefficient alpha was calculated for each of the subscales—knowledge, attitudes, and barriers—to determine internal consistency. The data analysis obtained from the SND survey for this study will assist with ongoing development of reliability and validity of the SND and possible use with specific populations such as within a particular state.

CHAPTER IV

RESULTS

The results of this study are presented in three sections. The first section describes the demographics of the subjects that participated in this study. The second section addresses the study's specific aims. The third section of this chapter provides the results of statistical analyses related to reliability and validity of the survey tool developed for this study.

Demographics and Characteristics of Sample

As noted in Chapter 3 and suggested by Dillman (2007), 241 responses were needed for this study in order to have ± 5% sampling error with a 95% confidence level. The first random sampling of 800 active NASN members provided 132 responses (16.5% response rate). The researcher, in consultation with the statistician, concluded that since the first invitation to participate provided slightly over half the total number of participants needed, a second random sampling of active NASN members was needed in order to enroll the 108 additional participants. In order to ensure the total number of responses was achieved, 800 plus an additional 100 subjects were included in the second random sampling.

The process to identify the second random sampling of 900 subjects used the original Excel spreadsheet that had random numbers assigned to the 13,377 active NASN members and then sorted the NASN members by the random numbers in numerical order. The first sampling used members that were numbered 1-800. The second random sampling used the subjects randomly numbered 801-1700. One of the randomly selected subjects did not have a mailing address; therefore this subject was removed from the mailing. This created a total sample across both mailings of 1,699 active NASN members who were invited to participate in this study.

The second random sampling provided an additional 149 responses for a response rate of 16.6%. Overall, there were 281 participants (response rate of 16.5%; 281 from 1699 invitations) which was more than the needed 240 participants. Tables 9, 10 and 11 presented below provide the description representing the demographics (Questions 2-7 and 11-15) for the total number of responses (n=281) to the survey. The sample of 1,699 potential participants included at least one or more NASN members from all 49 states and Washington DC, although responses were not received from every state or Washington DC (Table 10).

Computer and Internet Access of Respondents

Questions 8-10 of the survey asked about access to a computer and internet (Table 12). These questions were included to gain basic information about computer use since it is anticipated that standardized nursing language data will be collected through the use of computerized information systems in the future.

Specific Aims

In order to address Aims 1-3, the self-reported categorical data on the knowledge, attitude, and barriers scales were re-coded to numeric values and then computed into composite scores for each construct of interest and to facilitate statistical analyses. For composite knowledge scores, the option "none (do not know)" was the lowest value which converted to numeric coding so it did not skew composite score. For regression models that included composite attitude scores, the category "not enough knowledge to have an opinion" was re-coded to equal the neutral category, "have enough knowledge but neither agree nor disagree" so those without enough knowledge were not negatively affecting the overall attitude composite values. This substitution was controlled for using a dichotomous variable scored one for respondents who did not have enough information to answer and zero for respondents who did. Composite barrier score was determined by adding the sum of the nine barrier items (items #35.1-35.9).

Table 9: Descriptive Statistics for the Respondent Demographics (N=281)

(N=281)	**n**	**%**
Gender		
Females	280	99.6
Males	1	0.4
Ethnicity		
Non-Hispanic/Non-Latino	264	94.0
Hispanic/Latino	6	2.1
Rather not say	9	3.2
Missing	2	0.7
Race		
Caucasian/White	264	94.0
African American	3	1.1
Other or more than one race	8	2.8
Rather not say	6	2.1
Highest Level of Education Completed		
LPN (Licensed Practice Nurse)	1	0.4
ADN (Associate Degree in Nursing)	16	5.7
Nursing Diploma RN	13	4.6
Bachelor Degree in Nursing	124	44.1
Bachelor Degree in major other than Nursing	14	5.0
Master Degree in Nursing	58	20.6
Master Degree in major other than Nursing	50	17.8
Doctorate in Nursing	3	1.1
Doctorate in major other than Nursing	2	0.7
Job Title (select all that apply)		
School Nurse	246	87.5
Nurse Practitioner	10	3.6
Public Health Nurse	10	3.6
School Nurse Consultant	8	2.8
School Nurse Administrator	24	8.5
Faculty of a nursing education program	4	1.4
Retired	3	1.1
Other	25	8.9
Certification (select all that apply)		
NCSN (Nationally Certified School Nurse)	59	21.0
Other certifications	120	42.7
None	120	42.7
Employer		
Public School District	238	84.7
Private or Parochial School District	13	4.6
Hospital	2	0.7
Local Public Health Department	13	4.6
State agency	3	1.1
University or College	1	0.4
Retired	1	0.4
Other	10	3.6

Table 10: States and Response Rates

State	Number Invited	Number Received	Response Rate
Alabama	12	3	25.00%
Alaska	8	0	00.00%
Arizona	21	3	14.29%
Arkansas	11	2	18.18%
California	179	18	10.06%
Colorado	29	3	10.34%
Connecticut	55	10	18.18%
Delaware	27	2	07.41%
Florida	38	3	07.89%
Georgia	13	0	00.00%
Hawaii	1	0	00.00%
Idaho	9	2	22.22%
Illinois	77	13	16.88%
Indiana	25	4	16.00%
Iowa	24	8	33.33%
Kansas	23	5	21.74%
Kentucky	8	0	00.00%
Louisiana	5	0	00.00%
Maine	21	6	28.57%
Maryland	42	6	14.29%
Massachusetts	113	26	23.01%
Michigan	33	2	06.06%
Minnesota	27	5	18.52%
Mississippi	10	2	20.00%
Missouri	34	9	26.47%
Montana	8	2	25.00%
Nebraska	18	0	00.00%
Nevada	17	2	11.76%
New Hampshire	10	1	10.00%
New Jersey	77	14	18.18%
New Mexico	18	6	33.33%
New York	108	15	13.89%
North Carolina	24	8	33.33%
North Dakota	2	0	00.00%
Ohio	59	15	25.42%
Oklahoma	9	3	33.33%
Oregon	24	5	20.83%
Pennsylvania	101	18	17.82%
Rhode Island	13	2	15.38%

Table 10: Continued

South Carolina	21	3	14.29%
South Dakota	9	2	22.22%
Tennessee	24	1	04.17%
Texas	199	25	12.56%
Utah	13	4	30.77%
Vermont	4	2	50.00%
Virginia	35	7	20.00%
Washington	25	6	24.00%
West Virginia	5	0	00.00%
Wisconsin	22	6	27.27%
Wyoming	6	2	33.33%
Washington, DC	3	0	00.00%
Total	**1699**	**281**	**16.54%**

Table 11: Descriptive Statistics for Work Experience

	Mean	**S.D.**	**Minimum**	**Maximum**
Experience				
Years as RN	25.58	9.47	2	52
Years as School RN	12.20	7.63	1	39

Table 12: Computer and Internet Access

	n	**%**
Computer access at work		
Yes	269	95.7
No	11	3.9
Retired	1	0.4
Location of computer access (select all that apply)		
In the health room	206	73.3
In an office adjacent to the health room	37	13.2
In an office separate from the health room	28	10.0
Designated laptop that can be used in multiple locations	37	13.2
Office area unassociated with health room because role does not include direct care to students	19	6.8
Other	12	4.3
Internet access at work		
Yes	269	95.7
Missing response	12	4.3

Specific Aim 1: *Describe school nurse's knowledge of standardized nursing languages.* The first specific aim in this study was to describe school nurse's knowledge of standardized nursing languages (NNN). Respondents were first asked if they had ever accessed the NASN position statement (Question 16) about standardized nursing languages prior to this survey. Review of the NASN position statement prior to completing the survey may have provided the respondent with basic information about standardized nursing languages but most likely would not have provided them with superior knowledge about how to use standardized nursing languages. One hundred twenty-three (43.8%) respondents reported they had reviewed the NASN position statement and 158 (56.2%) respondents reported they had not reviewed the NASN position statement.

Descriptive statistics (frequency and percentages) were used for first level of data analysis (Questions 17, 19, 21) to describe respondents self-reported level of knowledge related to NANDA, NIC, or NOC (see Table 13).

Table 13: Knowledge about NANDA, NIC, NOC

	NANDA		**NIC**		**NOC**	
N=281	**n**	**%**	**n**	**%**	**n**	**%**
None	34	12.1	72	25.6	75	26.7
Minimal Knowledge	97	34.5	97	34.5	98	34.9
Adequate Knowledge	117	41.6	85	30.2	84	29.9
Superior Knowledge	33	11.7	27	9.6	24	8.5
Total	**281**	**100**	**281**	**100**	**281**	**100**

If the respondent indicated minimal, adequate, or superior knowledge, about any of the standardized nursing languages they were then asked to identify the source of where they learned about each standardized nursing language (Questions 18, 20, 22) (Table 14). Participants were able to select all options that applied in these questions.

Table 14: Methods of learning about NANDA, NIC, or NOC

	NANDA		NIC		NOC	
Learning Method	**n**	**%**	**n**	**%**	**n**	**%**
Formal (face-to-face) courses(s) through college	114	40.6	79	28.1	80	28.5
Online course(s) from college or continuing education	46	16.4	36	12.8	39	13.9
Local or state continuing education conference(s)	103	36.7	89	31.7	93	33.1
National Association of School Nurses conference(s)	84	29.9	66	23.5	65	23.1
Other national conference(s)	22	7.8	18	6.4	24	8.5
Nursing textbook(s)	171	60.9	130	46.3	119	42.3
Journal of School Nursing	171	60.9	136	48.4	131	46.6
Other nursing journals	111	39.5	80	28.5	77	27.4
Another nursing job (present or past)	87	31.0	71	25.3	65	23.1
Other	24	8.5	14	5.0	14	5.0

Second level of data analysis for Aim 1 involved ordinary least squares regression with a model using the composite knowledge score as the dependent variable and re-coded composite attitude, educational level, and total years practiced as a nurse as the independent variables (see Table 15). As noted in Table 15, the re-coded composite attitude score and education of the respondent were statistically significant in explaining a respondent's knowledge about standardized nursing languages.

Table 15: OLS Regression of Knowledge Composite (N=281)

Independent Variable	B	Standard Error	p value
Attitude Composite re-coded	.099	.011	.000*
Total Years Practiced as RN	.007	.014	.609
Education	.243	.084	.004*

*$p < .05$

To consider differences between states, the state of residence was also added in as an additional independent variable and was controlled for by 41 dichotomous variables for each state with any responses to the SND survey. Massachusetts was used as a

reference state because Massachusetts had the most responses to the survey. When state of residence was controlled for, education continued to be statistically significant (p=.012) and some states showed statistically significant differences from Massachusetts. The interpretation of state differences should be cautioned because of the small number of responses from each state. For knowledge, South Carolina, New Jersey, and Delaware demonstrated a greater level of knowledge with statistical significance. Contrary to these states, Mississippi had the greatest difference (less knowledge) in knowledge from Massachusetts respondents but this difference was not statistically significant.

Specific Aim 2: *Describe school nurse's attitude of standardized nursing languages*. The second specific aim in this study was to describe school nurse's attitude of standardized nursing languages (NNN). Question 23 was to confirm an assumption that school nurses should accurately document the care they provide. All respondents (n=281) generally agreed (11.0%) or completely agreed (89.0%) that school nurses should accurately document the nursing care they provide. Descriptive statistics (frequency and percentages) were used for first level data analyses of the other attitude questions (#24-34) as shown in Table 16. When considering the responses to attitude questions, all questions have more favorable responses than not. The attitude questions specific to Rogers DOI (2003) should have particular consideration. Rogers (2003) indicates that relative advantage and compatibility are important in explaining the rate of adoption of an innovation. Also note that only 47.3% of respondents agree (generally or completely) that the process of using standardized nursing languages is relatively complex.

Second level of data analyses involved ordinary least squares regression with a model using the re-coded composite attitude score as the dependent variable and composite knowledge, educational level, and total years practiced as a nurse as the independent variables (see Table 17). For this model, unlike knowledge as dependent

variable, the number of years of experience becomes statistically significant and education is not statistically significant.

Table 16: Attitude Measurements (N=281)

	Do not have enough knowledge to have opinion		**Completely disagree**		**Generally disagree**		**Have enough knowledge but neither agree nor disagree**		**Generally agree**		**Completely agree**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
SN should document according to nursing process	3	1.1	3	1.1	21	7.5	18	6.4	117	41.6	119	42.3
SNL should be used by all school nurses	13	4.6	6	2.1	32	11.4	24	8.5	123	43.8	83	29.5
Willing to change to use any SNL	40	14.2	11	3.9	29	10.3	47	16.7	110	39.1	44	15.7
Willing to change to use NANDA	55	19.6	11	3.9	34	12.1	44	15.7	87	31.0	50	17.8
Willing to change to use NIC	78	27.8	6	2.1	28	10.0	41	14.6	86	30.6	42	14.9
Willing to change to use NOC	78	27.8	6	2.1	28	10.0	41	14.6	87	31.0	41	14.6
Recognize the advantages of SNL*	22	7.8	3	1.1	15	5.3	19	6.8	121	43.1	101	35.9
SNL consistent with SN values and needs*	35	12.5	4	1.4	23	8.2	33	11.7	107	38.1	70	28.1
Process of using SNL is relatively complex*	50	17.8	3	1.1	52	18.5	43	15.3	90	32.0	43	15.3
Willing to try SNL for limited time*	25	8.9	7	2.5	16	5.7	29	10.3	131	46.6	73	26.0
Opportunity to observe would help me use SNL*	10	3.6	5	1.8	15	5.3	23	8.2	126	44.8	102	36.3

Note: * measurement of characteristic of an innovation

Table 17: OLS Regression of Attitude Composite (N=281)

Independent Variable	B	Standard Error	p value
Knowledge Composite	.270	.208	.196
Number Years Practiced as RN	-.095	.045	.034*
Education	.103	.282	.716

*p < .05

To consider differences between states, the state of residence was also added in as an additional independent variable and controlled for by 41 dichotomous variables for each state with any responses to the SND survey. Massachusetts was used as a reference state because Massachusetts had the most responses to the survey. When state of residence was controlled for, total years practiced as RN continued to be statistically significant (p=.041), re-coded composite attitude for "don't have enough knowledge to have an opinion" was statistically significant (p=.004) and some states showed statistically significant differences from Massachusetts. The interpretation of state differences should again be cautioned because of the small number of responses from each state. For attitude, Arizona and Alabama demonstrated greater attitude scores (more positive) than Massachusetts although neither state was different in a statistically significant manner. New Hampshire, California, and Arkansas had statistically significant lower attitude scores (p=.011, .009, and .000 respectively) than Massachusetts.

Specific Aim 3: *Describe school nurse's barriers to implement standardized nursing languages*. The third specific aim in this study was to identify the barriers for school nurses to implement standardized nursing languages (NNN) into school nursing documentation. Descriptive statistics (frequency and percentages) were used for first level data analyses (Table 18). Respondents identified organizational or external barriers (e.g., financial resources, lack of understanding by others or lack or mandates to use

standardized language) as a greater barrier than those identified as nurse determined or internal (e.g., knowledge, time to learn, or process of change).

Table 18: Barriers to using standardized nursing languages (N=281)

	Not a Barrier		Small Barrier		Moderate Barrier		Great Barrier		No Opinion	
	n	%	n	%	n	%	n	%	n	%
Lack of knowledge related to standardized nursing languages.	51	18.1	88	31.3	76	27.0	63	22.4	3	1.1
Time to learn a new system of documentation.	32	11.4	62	22.1	103	36.7	82	29.2	2	0.7
Current documentation system does not include standardized nursing languages—NANDA, NIC, and NOC.	41	14.6	43	15.3	60	21.4	114	40.6	23	8.2
Financial resources to pay for necessary equipment, such as a computer, computerized documentation program, or licensing fees.	37	13.2	34	12.1	41	14.6	160	56.9	9	3.2
Lack of reference books, such as NANDA, NIC, & NOC books.	46	16.4	73	26.0	88	31.3	70	24.9	4	1.4
Lack of understanding the standardized nursing languages by others such as principal, superintendent, school nurse administrators, other school nurses, etc.	22	7.8	42	14.9	70	24.9	141	50.2	6	2.1
The process of changing my current documentation practice.	42	14.9	85	30.2	99	35.2	53	18.9	2	0.7
Lack of mentors to help facilitate change to standardized nursing languages.	31	11.0	57	20.3	83	29.5	105	37.4	5	1.8
Lack of mandate from educational system to use standardized nursing languages.	36	12.8	55	19.6	67	23.8	110	39.1	13	4.6

Second level data analyses involved OLS regression with a model using re-coded composite barriers score as the dependent variable and composite knowledge, re-coded composite attitude, educational level, and total years practiced as a nurse as the independent variables (Table 19). In this model, knowledge was the only statistically significant independent variable that predicted the barriers of implementing and using standardized nursing languages.

Table 19: OLS Regression of Barriers Composite (N=281)

Independent Variable	B	Standard Error	p value
Knowledge Composite	-.594	.185	.002*
Attitude Composite - re-coded	.004	.053	.941
Number Years Practiced as RN	.047	.040	.243
Education	-.303	.250	.227

*p < .05

To consider differences between states, the state of residence was also added in as an additional independent variable and controlled for by 41 dichotomous variables for each state with any responses to the SND survey. Massachusetts was used as a reference state because Massachusetts had the most responses to the survey. When state of residence was controlled for, composite knowledge scores continued to be statistically significant (p=.001) and some states showed statistically significant differences from Massachusetts. The interpretation of state differences should again be cautioned because of the small number of responses from each state. For barriers, North Carolina and California demonstrated more barriers (more positive) with statistical significance (.039 and .004 respectively) than Massachusetts. Some states, such as Vermont and Rhode Island, demonstrated fewer barriers (negative B value) in comparison to Massachusetts although none were statistically significant.

Specific Aim 4: *Describe current documentation practices in school nursing.* The fourth specific aim in this study was to describe school nurse's current documentation practices. The data analyses for this specific aim included respondents who answered yes to question #36 (they provide direct care in their role as a school nurse). This included 258 respondents (91.8% of total sampling frame). Since this analysis involved a subgroup of the total number of participants, first the demographic variables for this subgroup are presented (Tables 20 and 21).

Next descriptive statistics (frequency and percentages) for SND survey questions 37-54 are presented (Tables 22-31) and were used for first level of data analyses. There was a notable range of variation in total number of buildings and students respondents are accountable for. In addition, although the amount of time spent documenting each week was estimated by each respondent, school nurses are spending an average of 9.694 hours per week documenting direct care and an average of 5.359 hours per week documenting non-direct care. These fifteen hours per week could be better utilized for additional direct care or planning programs with more efficient documentation processes.

The total number of students cared for were grouped into interval categories for further comparisons (Table 23). The first interval was set for 750 students or less because the NASN recommends a school nurse to well or healthy student ratio of 1:750 (cite). The subsequent internals were determined by doubling and tripling the national recommendation (1:750). The final interval was anything over three times the national recommendation. Slightly more than half of the respondents in this study were caring for a total number of students more than the national recommendation of 1:750.

In addition to the attitude questions (#23-34), the respondents who provide direct care were asked two additional questions (#44 and #45) regarding their perception about the school district or organizational support that may help facilitate the adoption of the innovation—standardized nursing languages.

Table 20: Demographics of Respondents Providing Direct Care (N=258)

	n	%
Gender		
Females	257	99.6
Males	1	0.4
Ethnicity		
Non-Hispanic/Non-Latino	242	93.8
Hispanic/Latino	6	2.3
Rather not say	9	3.5
Missing	1	0.4
Race		
Caucasian/White	241	93.4
African American	3	1.2
Other or more than one race	8	3.1
Rather not say	6	2.3
Highest Level of Education Completed		
LPN (Licensed Practice Nurse)	1	0.4
ADN (Associate Degree in Nursing)	16	6.2
Nursing Diploma RN	12	4.7
Bachelor Degree in Nursing	115	44.6
Bachelor Degree in major other than Nursing	14	5.4
Master Degree in Nursing	51	19.8
Master Degree in major other than Nursing	46	17.8
Doctorate in Nursing	3	1.2
Doctorate in major other than Nursing	0	0.0
Job Title (select all that apply)		
School Nurse	238	92.2
Nurse Practitioner	9	3.5
Public Health Nurse	7	2.7
School Nurse Consultant	2	0.8
School Nurse Administrator	15	5.8
Faculty of a nursing education program	2	0.8
Retired	1	.04
Other	22	8.5
Certification (select all that apply)		
NCSN (Nationally Certified School Nurse)	49	19.0
Other certifications	111	43.0
None	112	43.4
Employer		
Public School District	226	87.6
Private or Parochial School District	13	5.0
Hospital	2	0.8
Local Public Health Department	7	2.7
State agency	0	0
University or College	0	0
Retired	0	0
Other	10	3.9

Table 21: Descriptive Statistics for Work Experience (N=258)

	Mean	S.D.	Minimum	Maximum
Experience				
Years as RN	25.23	9.54	2	52
Years as School RN	11.91	7.56	1	39

Table 22: Workload Related Descriptive Statistics of Respondents that Provide Direct Care (responded "yes" to SND question #36)

	N	Minimum	Maximum	Mean	Standard Deviation
Average hrs/wk work in role	258	1	60	36.34	8.242
Average hrs/wk work providing direct care	258	0	45	25.68	10.853
Estimated time (hrs/wk) documenting 1:1 care	258	0	40	9.694	8.872
Estimated time (hrs/wk) documenting teaching or non-direct care	258	0	40	5.359	7.0602
Number of school buildings accountable for	249	1	14	2.56	2.704
Total number of students accountable for	258	61	24,000	1,414.96	2,413.98

Table 23: Number of Students Care for by Respondent

Number of Students	Number of Respondents	Percent
≤ 750 students	128	49.6
751-1500 students	73	28.3
1501-2250 students	30	11.6
≥ 2251 students	27	10.5
Total	**258**	**100.0**

Documentation practices involve daily documentation for episodic visits to the school health office and documentation on individualized health care plans that are used for ongoing management of health concerns. The use of nursing diagnoses, interventions, and outcome measurements is critical to capture the actual practice of school nursing. The SND questions #46-49 are reported in Table 26 and confirm over

half of the respondents never use standardized nursing languages (NNN) in daily documentation practices.

Table 24: Frequencies of Grade Levels Cared For (select all that apply)

Grade Level	Number of Respondents Caring for Grade Level	Percent
Daycare (infant or toddler)	8	3.1
Preschool	72	27.9
Pre-Kindergarten	84	32.6
Kindergarten	166	64.3
1st Grade	166	64.3
2nd Grade	166	64.3
3rd Grade	168	65.1
4th Grade	165	64.0
5th Grade	160	62.0
6th Grade	140	54.3
7th Grade	130	50.4
8th Grade	127	49.2
9th Grade	104	40.3
10th Grade	103	39.9
11th Grade	102	39.5
12th Grade	103	39.9
Special Education	135	52.3

Table 25: Respondents Perception of Organizational Variables that may affect Documentation Practices (N=258)

	Do not have enough knowledge to have opinion		Completely disagree		Generally disagree		Have enough knowledge but neither agree nor disagree		Generally agree		Completely agree	
	n	%	n	%	n	%	n	%	n	%	n	%
Health services budget in school district is adequately funded	6.0	2.3	69.0	26.7	75.0	29.1	14.0	5.4	82	31.8	12.0	4.7
Leadership in school district is receptive to employee suggestions	5.0	1.9	12.0	4.7	62.0	24.0	30.0	11.6	127	49.2	22.0	8.5

Table 26: Documentation Practices (N=258)

	Never		Limited amount of time		Most of the time		All of the time	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Document according to nursing process for every student (daily visits and individualized care plans)	36	14.0	96	37.2	103	39.9	23	8.9
Document using NANDA in daily documentation	152	58.9	73	28.3	24	9.3	9	3.5
Documentation using NIC in daily documentation	152	58.9	62	24.0	30	11.6	14	5.4
Documentation using NOC in daily documentation	159	61.6	68	26.4	26	10.1	5	1.9

School nursing documentation is completed in several different ways. The respondents of the direct care section of the SND survey were asked to select the statement that best describes their documentation system in question #50. The results are reported in Table 27. The data indicate there is variation in the documentation methods. All text responses in "other" option were reviewed by researcher, statistician, and researcher's advisor and if there was any indication of computerization of documentation, the text response was group into the category of using a computer to document. The paper log, paper documentation responses and the "other" text comments that did not include any indication of computerization were grouped and re-coded as not using a computer for documentation for second level data analyses. The SND survey used conditional logic for the response related to using a commercial school nursing software program. For the commercial software program response, the respondent selected the commercial software program they were using from a list of six commercial programs and an "other" option (see Table 28). Table 29 provides insight as to who documents in student health records and Table 30 provides data about when the survey respondents

document care. The data in both tables 29 and 30 demonstrate a variety of school nursing documentation practices.

Table 27: Documentation Systems Used

Documentation System	Frequency	Percent
Paper log with date, time, name, and reason of all student visits on one form	40	15.5
Paper documentation. Each student has own health record	44	17.1
Combination of paper and computerized documentation	53	20.5
Computerized documentation using school developed program	4	1.6
Computerized documentation using district developed program (all nurses in district are using same program)	32	12.4
Computerized documentation using a state developed program (all nurses in state are using same program)	2	0.8
Computerized documentation using the health application within the school student management program	26	10.1
Computerized documentation using a purchased commercial school nursing software program	44	17.1
Other (free text cell available to specify)	13	5.0
TOTALS	**258**	**100.0**

Table 28: Commercial Software Programs Used by Respondents (n=44)

Commercial Software Program	Frequency	Percent
SNAP Health Center	19	43.2
Health Office	8	18.2
Student Health Manager	4	9.1
STARS	2	4.5
Nurses' Aide	1	2.3
Welligent	1	2.3
Other	9	20.5

The final question on the SND survey (#54) was an opportunity for respondents to identify any of the American Nurses Association recognized and approved standardized nursing languages that they use in daily documentation.

Table 29: Who Documents in Student Health Record (select all that apply)

	Frequency	Percent
School Nurse	254	98.4
School Nurse Administrator/Supervisor	35	13.6
Health Associate (exclusively to help in health office)	73	28.3
Other Associate (provides some limited health services to student(s)	21	8.1
Unlicensed Assistive Personnel (UAP) (includes secretary or principal)	45	17.4
Other	18	7.0

Table 30: When it is Most Common to Complete Documentation

	Frequency	Percent
While the student is in the health room	122	47.3
Immediately after student has left the health room	51	19.8
Throughout the day, as time allows	66	25.6
At the end of each day	11	4.3
Other	8	3.1
TOTALS	**258**	**100.00**

Table 31: ANA Approved Standardized Nursing Languages Consistently Used by Respondents in Daily Documentation (select all that apply)

	Frequency	Percent
None	199	77.1
NANDA	39	15.1
NIC	17	6.6
NOC	17	6.6
Omaha Classification	3	1.2
Clinical Care Classification (CCC)	1	0.4
International Classification of Nursing Practice	2	0.8
ABCCodes	0	0.0
LONIC	0	0.0
SNOMED CT	0	0.0
Other	15	5.8

Second level of data analyses related to current documentation practices involved logistic regression with a model using those who used any of the standardized nursing

languages, NANDA, NIC, or NOC, (from responses to SND question #54), as the dependent variable and the independent variables in the model including composite knowledge, re-coded composite attitude, re-coded composite barriers, educational level, total years practiced as a nurse, use of a computer, number of students they provide care for, and response to question #44, if they thought health services budget was adequately funded (Table 25). Before health services budget was included in this modeling the option "do not have enough knowledge to have an opinion" was re-coded to be a similar to "have enough knowledge but neither agree nor disagree" so the respondents selecting "not enough knowledge" did not create a negative effect on the overall rating of this variable.

The knowledge and attitude composite variables were included in the logistic regression because they are the first two stages of DOI theory (Rogers, 2003). Although barriers are not specifically identified in Rogers DOI theory (2003), barriers may be similar to a perceived problem which is one of the conditions that may or may not precede the knowledge stage of DOI and ultimately the adoption of an innovation. Table 32 demonstrates that the three constructs of interest (knowledge, attitude, and barriers) all had statistical significance.

The second logistic regression model related to predicting who uses NANDA, NIC, or NOC was performed without using the composite concept values of knowledge, attitude, and barriers (see Table 33). Removing the three composite concept values (knowledge, attitude, and barriers) demonstrates that education becomes the independent variable that is statistically significant in predicting who will use standardized nursing languages.

Reliability of SND Instrument

This first use of the SND survey provided the opportunity to further explore the reliability of the survey instrument. Confirmatory analyses using Cronbach's alpha was

calculated for each of the composite variables (knowledge, attitudes, and barriers) to assess the reliability of the composite variables (Table 34).

Table 32: Logistic Regression of Current Documentation Practices to Predict Respondents Using NANDA, NIC, or NOC Including Composite Concept Values

Independent Variable	B	Standard Error	p value
Composite Knowledge	.373	.100	.000*
Composite Attitude re-coded	.148	.036	.000*
Composite Barrier re-coded	-.080	.033	.015*
Education	.140	.134	.295
Number Years Practiced as RN	-.001	.022	.954
Use of Computer at Work	.228	.437	.602
Number of Students	.000	.000	.445
School Health Budget Adequately Funded	-.220	.158	.163

*p < .05

Table 33: Logistic Regression of Current Documentation Practices to Predict Respondents Using NANDA, NIC, or NOC Not Including Composite Concept Values

Independent Variable	B	Standard Error	p value
Education	.288	.115	.012*
Number Years Practiced as RN	-.011	.018	.549
Use of Computer at Work	.301	.368	.414
Number of Students	.000	.000	.399
School Health Budget Adequately Funded	-.109	.133	.411

*p < .05

Table 34: Reliability of SND Instrument

Composite Variable	Cronbach's alpha	Number of items in scale
Knowledge (Items 16-22)	.87	3
Attitude (Items 23-34)	.88	12
Barriers (Items 35.1-35.9)	.81	9

CHAPTER V

DISCUSSION

The purposes of this study were to identify school nurse's knowledge attitude, and barriers to using standardized nursing languages, NANDA, NIC and NOC (NNN), and to describe current school nursing documentation practices. The results of this study establish baseline information for the development of both strategies for educating school nurses on the use of standardized nursing languages in school nursing documentation and for studying implementation strategies to use in changing school nurse practice.

Study Findings

Knowledge about Standardized Nursing Languages: NNN

The self-reported knowledge levels about NNN are comparable to each other. The majority of participants (76.1% for NANDA, 64.7% for NIC, and 64.8% for NOC) have combined minimal (have heard of term) or adequate (can explain concept) knowledge, which according to Rogers (2003), is awareness-knowledge. Since this is the first attempt to identify school nurses' knowledge about standardized nursing languages, it is reassuring that the majority of school nurses have at least awareness-knowledge. Although this study did not measure the two other types of knowledge described by Rogers (2003), how-to-knowledge or principle-knowledge, the respondents that identified themselves as having superior knowledge (can explain concept and can apply in practice) would most likely have these two types of knowledge and be the innovators or early adopters (Rogers, 2003).

According to the data, school nurses have learned about NANDA, NIC, or NOC through a variety of methods, most notably nursing textbooks (60.9%) or *The Journal of School Nursing* (60.9%). Therefore it is essential that NASN continue to disseminate information about standardized nursing languages in NASN publications and include all

levels of knowledge, (awareness-knowledge, how-to-knowledge and principle-knowledge), in publications (Rogers, 2003) for the successful adoption of NNN. In addition to printed resources, it is critical that demonstrations of how to use and apply NNN to school nursing practice (how-to-knowledge) be incorporated in education programs for school nurses.

The point in time when nursing school is completed determines the content or initial nursing knowledge learned. NANDA was developed in 1973 which means the 40 (14.2%) respondents with 36 or more years of practice as a nurse may not have learned about NANDA in their initial nursing education. Therefore, it may then seem understandable that 12.1% of the respondents report knowing nothing about NANDA, although numerous nursing publications incorporate the concept of nursing diagnoses. In contrast, the survey data does not indicate the number of years practicing as a nurse explains if a respondent had knowledge about NIC or NOC. According to the reported number of years of practice as a nurse in the survey, 78.5% of the respondents practiced nursing for 17 or more years which is when the NIC language was developed. The NIC and NOC languages were developed in 1992 and 1996 respectively. Only 25.6% of participants report knowing nothing about NIC, and 26.7% report knowing nothing about NOC. Therefore nurses educated prior to the development of NIC and NOC have learned about the languages through methods other than their initial nursing education.

Attitude about Standardized Nursing Languages: NNN

The self-reported attitude levels about NNN are more favorable (combining the generally agree and completely agree responses) than not in all of the SND attitude questions. The willingness to change to use any of the standardized nursing languages (NNN) ranged from 45.5%-54.8%. It is encouraging that approximately half of the respondents indicated they would be willing to change their documentation practices. In addition, the SND survey measured the five characteristics of innovation at the

persuasion or attitude stage (relative advantage, compatibility, trialability, observability, and less complexity). For the SND survey, 79.0% of the respondents recognize the relative advantage of standardized nursing languages (combining the generally agree and completely agree responses) and 66.2% of the respondents report that standardized nursing languages are consistent with school nursing values and needs (compatibility). According to Rogers (2003), "relative advantage and compatibility are particularly important in explaining an innovation's rate of adoption". The high levels of awareness-knowledge and the favorable attitudes that appear to be present in the majority of the respondents of the SND survey, suggest that school nurses may be ready for the next stage described by Rogers in the DOI theory, the decision stage. For school nurses, this may mean that many are at the point of deciding whether or not to incorporate NNN into their practice and documentation. NASN and others should provide more information about the application of NNN into school nursing practice. However, attention also needs to be given to barriers that may make it difficult to incorporate NNN into practice and will need to be addressed.

Barriers to Using Standardized Nursing Languages: NNN

The two greatest barriers reported in this study were financial resources to pay for necessary equipment to document nursing care (including computer, computerized documentation program, and potential licensing fees) (56.9%) and lack of understanding of standardized nursing languages by other school personnel such as principals, superintendents, school nurse administrators, or other school nurses (50.2%). Perception of adequately or inadequately funded health services was also measured in the last section of the survey (Question #44). In Question #44, the respondents reported agreement or disagreement regarding adequate funding for their school health budget. When combining completely disagree or generally disagree responses, 55.8% of the respondents disagree that their school health budget is adequately funded. This 55.8% of

disagreement of adequate funding is similar to the category in barriers, financial resources, which was reported to be a great barrier 56.9%. The lack of other school personnel understanding the use of and importance of standardized nursing languages may impact the financial resources available to school nurses for incorporating appropriate documentation programs into their practice. However the relationship between these two variables is unknown at this time and need to be explored further.

One potential barrier to the use of standardized languages in a busy school nurse practice is access to a computer and the Internet. This research used a web-based survey so this may have influenced the overall response rate of survey. The majority of participants (95.7%) of this study stated they have computer and Internet access at work. This compares to a 2007 NASN study that reported 90% of NASN members have Internet access at home and work (M. Bergren, personal communication, March 21, 2011). Although NNN can be used without a computer, it is likely with the current move towards electronic health records that computers will be used to capture nursing documentation. Access to a computer and Internet eliminates one technology barrier but does not ensure access to computer software for documentation.

An additional barrier identified after further consideration of the DOI theory relates to authority or lack of authority to make the decision to adopt an innovation. In original DOI research, farmers functioned independently and had the authority to adopt a new type of seed corn if they wanted. Although school nursing is often a relatively independent practice, school nurses may or may not have the authority because of organizational structure or financial limitations to implement new technologies or methods of nursing documentation.

Current School Nursing Documentation Practices

The descriptive data from this study indicate school nurse documentation practices vary significantly and a limited number of practicing school nurses (22.9%) are

actually using any standardized nursing languages. School nurses are also spending a significant amount of time, 15 hours per week according to respondents, documenting direct and non-direct care and many of the documentation methods are not conducive to aggregating data across settings. More than 50% of the respondents are caring for more than the recommended nurse to student ratio of 1:750. This type of caseload demands a method to capture nursing care in an organized, systematic manner and in a manner that data is meaningful and useful to improve school nursing practices and demonstrate the need for additional health professionals when needed. School nurses agree (combined completely and generally agree was 83.9%) and recognize the need to document according to the nursing process (Question #24) although in their reported current documentation practices only 8.9% of respondents are always documenting according to the nursing process. The reported data also validates that unlicensed school staff other than school nurses document in student health records. This creates at least two additional concerns about student health records including the privacy, security, and confidentiality of records and the need for a documentation system that allows school nurses to document nursing care according to nursing standards and non-nursing staff a means to document health care in a way that distinguishes the different level of providers in school health.

In order to better understand documentation practices, two logistic regression models were completed. The first logistic regression model included composite knowledge, composite attitude, and composite barrier values, all of which made significant contributions to documentation (respectively .000, .000, and .015). These three composite variables were removed from the second logistic regression model. In the second logistic regression model using the same variables except without composite knowledge, composite attitude, or composite barrier values, education became the only variable that was statistically significant ($p=.012$) in predicting use of NANDA, NIC, or NOC.

Instrument

The Cronbach's alpha values (>.80) provide evidence of the internal consistency of the SND for the three areas (knowledge, attitude, barriers) and indicate the instrument is measuring the three constructs of interest. The data analyses from the SND survey for this study do not currently suggest a need for further refinement of the survey although with further use of the instrument more evidence of the reliability and validity of the SND may be obtained. The current Cronbach's alpha values support the use of the SND survey to measure the constructs of interest in particular states or with specific populations of school nurses. The SND survey used in specific states or with more focused school nurse populations will identify if certain states or school nurses have characteristics for early adoption of innovations.

Limitations

Limitations have been identified in at least three different areas—the survey, participants, and data analyses—which are further explored in this section. This research focused on the use of NNN although other standardized nursing languages exist. The SND survey used self-reported subjective ratings of knowledge although important to understanding an area that has not yet been researched. The survey did not incorporate a method to measure actual knowledge and application of using NNN through application questions. The current study used a mailed letter of invitation to subjects, which added an additional step for participants to access the web-based survey. Future approaches to using web-based surveys for school nurses should consider including access to web-based survey with an e-mail message if possible minimizing the burden on participant to access instrument.

Limitations of the participants are described next. The participants had to take the initiative to use a computer to access the Internet and visit the web site to complete the survey. In future studies, a method to minimize participant burden of accessing the survey would be to send the invitation to participate via e-mail and include an active link

to the web-based survey within the e-mail message. This process would allow the participant to access the survey directly through the e-mail invitation. Although the method of delivering the invitation is suggested to be via e-mail, the use of a personal identification number is highly recommended so targeted reminder e-mails can be sent and response rates can be determined. The participants were limited to active NASN members for reasons mentioned in chapter 3. Those who belong to professional organizations may have different knowledge, attitudes, or barriers in school nursing practice. In addition, it was also recognized the respondents of this study may have higher educational levels than the general population of school nurses. The low overall response rate (16.5%) is concerning and a recognized limitation of this study. There are several reasons why the response rate may have been so low although it is unknown the extent of these reasons influencing the response rate. Some other possible reasons for the low response rate include month in which invitation to participate was distributed, lack of interest in the topic being researched, length of survey, and possible concerns that a school nurses' current practices are not meeting the standards of practice.

Data analyses for this study were limited to describing the constructs of interest and because of low responses from individual states it is not possible to make inferences about school nursing within states because of the low number of responses from each individual state. In order to understand the constructs of interest with specific populations, the SND survey should be utilized by state school nurse organizations to learn more about innovative characteristics of school nurses within each state.

Implications

In spite of the limitations of this study, the findings of this study have implications for school nursing and school health research, education, practice, and policies.

Research

There are many variables to consider related to the adoption of standardized nursing languages by school nurses. The practice of school nursing varies from state to state, within states, and sometimes within districts. The process for school nurses to adopt and implement standardized nursing languages requires more research. Future research using the SND to gather state specific data would be helpful in determining which states have early adopter characteristics and could be key states to work on further how-to-knowledge and implementation. The method by which adoption and implementation take place is another area of future research. Once standardized nursing languages are adopted and utilized by school nurses, it will be essential that ongoing research is conducted to monitor the effectiveness of interventions based on outcomes. Taking this process one step further will require research comparing the effectiveness of different interventions used in school nursing.

Education

Mass media is most effective in increasing awareness and knowledge about an innovation, but interpersonal channels (face-to-face exchange between two or more people) are a more effective way to persuade an individual to accept a new idea (Rogers, 2003) especially if the interpersonal channels are between people with similarities including education and other characteristics that link together people. Although the majority of participants in this study indicate they have learned about NNN through printed materials, Rogers DOI theory (2003) would suggest that more face-to-face education and demonstration of how to use NNN is essential, especially if the education is delivered by an individual with similar education and values. As Rogers (2003) states, "the heart of the diffusion process consists of interpersonal network exchanges and social modeling by those individuals who have already adopted an innovation to those who are influenced to follow their lead" (p. 35).

Practice

The results of the attitude questions in the SND are clear indications that school nurses are in favor of standardized nursing languages and being able to observe how standardized nursing languages are used by another school nurse could be valuable. Although the use of standardized nursing languages is asking school nurses to document in a structured manner, using accepted terminology, the essence of nursing is to provide individualized care for each client and school nurses will still be able to do this. They will be capturing the individualized care in a manner that uses technology and structure.

Policy

School health is essentially a health system within the education system. School health records need to meet standards of health care records to ensure privacy, confidentiality, and security of health information is maintained. FERPA and HIPAA policies need to be reviewed and consideration for the uniqueness of school health information needs to be addressed. School health documentation guidelines from federal department of education to ensure that all states have similar guidance may seem logical but it could create more complications with department of education because there is not a nurse at the federal department of education to guide regulation of school health records and practice and department of education may not know standards of health care or health care records. Ultimately, school health records should become a part of the school and health providers EHR so school nurses and community health care providers can provide safe, coordinated, comprehensive, effective health care to youth in schools. It is imperative that school nurses know the most current plan of care (physical and emotional) for a student so they can reinforce or support this care plan within the school setting where most youth spend a significant portion of their lives.

Conclusion

The opportunity to incorporate standardized nursing languages into school nursing documentation is present. School nurses have knowledge, favorable attitudes, and recognize barriers to implementing standardized nursing languages. School nurses need to be able to articulate and advocate for standardized nursing languages to describe the care they provide. School nurses need to be involved in the development and implementation of electronic health records (EHR) now, not after the EHR systems are fully implemented. School nursing documentation is at a tipping point. The tipping point determines if school nurses continue to document in various methods that do not allow for aggregation of data and standards of health care records or if school nurses document using standardized nursing languages. School nurses want to provide safe, effective, coordinated, and comprehensive care. In order to do this, school nursing documentation needs to keep up with the standards of health care records and be integrated with the health care system.

APPENDIX A

SND SURVEY

School Nursing Documentation: Knowledge, Attitude, and Barriers to Using Standardized Nursing Languages and Current Practices

School nurses often express concerns about documentation of school nursing practice. Documentation is valuable for early recognition and tracking of health concerns, conducting research, and for legal issues. Your input about school nursing documentation is valuable and critical to assist in better understanding the process of school nursing documentation.

This confidential web-based survey asks questions about your current school nursing documentation practices and your knowledge, attitude, and barriers to using standardized nursing languages (NANDA, NIC, and NOC). The purpose of this survey is to gather information about current school nursing documentation in the school setting. This survey is not a critique of your documentation practices and only aggregated data will be reported. The researchers understand each school nurse has different circumstances that may affect documentation practices. A random selection process from the National Association of School Nurses (NASN) membership database has identified you as a potential participant. This survey may take up to 30 minutes to complete.

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School Nursing Documentation: Knowledge, Attitude, and Barriers to Using Standardized Nursing Languages and Current Practices

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1) Please key in the unique identification number listed on the letter inviting you to participate in this survey. Entering the unique identification number and proceeding to next page indicates your consent to participate in this survey.

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School Nursing Documentation: Knowledge, Attitude, and Barriers to Using Standardized Nursing Languages and Current Practices

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Thank you for participating in this survey. The first section of this survey is to collect **basic demographic information** from participants.

2) What is your job title? (select all that apply)

- ☐ School Nurse
- ☐ Nurse Practitioner
- ☐ Public Health Nurse
- ☐ School Nurse Consultant
- ☐ School Nurse Administrator
- ☐ Faculty of a nursing education program (includes School Nurse Educator)
- ☐ Retired
- ☐ Other (please specify)

If you selected other, please specify:

3) What is your highest level of completed education?

- ○ LPN (Licensed Practical Nurse)
- ○ ADN (Associate Degree in Nursing)
- ○ Nursing Diploma RN
- ○ Bachelor degree in nursing
- ○ Bachelor degree in major other than nursing
- ○ Masters degree in nursing
- ○ Masters degree in major other than nursing
- ○ Doctorate in nursing
- ○ Doctorate in major other than nursing

4) For this survey, "practicing as a nurse" is defined as working in a job that requires a nursing license. How many total years have you practiced as a nurse? (The next question asks about how many years you have practiced as a school nurse.)

5) For this survey, "practicing as a nurse" is defined as working in a job that requires a nursing license. How many total years have you been practicing as a school nurse or in a role related to school nursing?

6) What certifications do you currently hold? (select all that apply)

- [ ] None
- [ ] NCSN (Nationally Certified School Nurse)
- [ ] Other (please specify)

If you selected other, please specify:

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7) In your role related to school nursing, who is your employer?

- ◉ Public School District
- ◉ Private or Parochial School District
- ◉ Hospital
- ◉ Local Public Health Department
- ○ State agency
- ○ University or College
- ◉ Retired
- ◉ Other (please specify)

If you selected other, please specify:

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8) Do you have one or more computer(s) that are designated specifically for your use in your job related to school nursing?

- ◯ Yes
- ◯ No

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9) Health room is defined as the space in which you assess and care for students. Where do you have access to your computer (s)? (select all that apply)

- ☐ In the health room
- ☐ In an office adjacent to the health room
- ☐ In an office separated from the health room
- ☐ Designated computer is a laptop and can be used in more than one location
- ☐ Office area unassociated to health room because role does not include direct care to students
- ☐ Other (please specify)

If you selected other, please specify:

10) Do you have access to the Internet from your computer (at work)?

- ◯ Yes
- ◯ No

11) In what state do you live? (select state from drop down menu)

12) How old were you on your last birthday? (choose numeric response from drop down menu)

13) Are you male or female?

- ◯ Male
- ◯ Female

14) What is your ethnicity (optional to respond)?

- ◎ Rather not say
- ◎ Hispanic/Latino
- ◎ Non-Hispanic/Non-Latino

15) What is your race (optional to respond)?

- ◎ Rather not say
- ◎ Caucasian/White
- ◎ African American
- ◎ Indigenous or Aboriginal Person
- ◎ Asian/Pacific Islander
- ◎ Hispanic
- ◎ Latino
- ◎ Multiracial
- ◎ Other (please specify)

If you selected other, please specify:

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The following questions relate to your **knowledge** about standardized nursing languages. Please answer these questions as accurately as possible.

16) Have you ever accessed the NASN position statement *Standardized Nursing Languages -- NANDA International, NIC and NOC* from the NASN web site prior to this survey?

- ○ Yes
- ○ No

17) Describe your *knowledge* level of nursing diagnosis using NANDA language.

- ○ None (do not know)
- ○ Minimal knowledge (have heard of the term but cannot explain the concept)
- ○ Adequate knowledge (can explain concept)
- ○ Superior knowledge (can explain concept and apply it to practice)

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18) In which of the following ways have you learned about NANDA? Yes indicates a method used to learn about NANDA.

	Yes	No
18.1) Formal (face-to-face) course(s) through college	○	○
18.2) Online course(s) from college or continuing education offering(s)	○	○
18.3) Local or state level continuing education conference(s)	○	○
18.4) National Association of School Nurses (NASN) conference(s)	○	○
18.5) Other national conference(s)	○	○
18.6) Nursing textbook(s)	○	○
18.7) Journal of School Nursing	○	○
18.8) Other nursing journals	○	○
18.9) Another nursing job (present or past) that required use of NANDA	○	○
18.10) Other	○	○

Additional comments:

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19) Describe your *knowledge* level of nursing interventions using Nursing Interventions Classification (NIC) language.

- ○ None (do not know)
- ○ Minimal knowledge (have heard of the term but cannot explain the concept)
- ○ Adequate knowledge (can explain concept)
- ○ Superior knowledge (can explain concept and apply it to practice)

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20) In which of the following ways have you learned about NIC? Yes indicates a method used to learn about NIC.

	Yes	No
20.1) Formal (face-to-face) course(s) through college	○	○
20.2) Online course(s) from college or continuing education offering(s)	○	○
20.3) Local or state level continuing education conference(s)	○	○
20.4) National Association of School Nurses (NASN) conference(s)	○	○
20.5) Other national conference(s)	○	○
20.6) Nursing textbook(s)	○	○
20.7) Journal of School Nursing	○	○
20.8) Other nursing journals	○	○
20.9) Another nursing job (present or past) that required use of NIC	○	○
20.10) Other	○	○

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21) Describe your *knowledge* level of nursing outcomes using Nursing Outcomes Classification (NOC) language.

- ○ None (do not know)
- ○ Minimal knowledge (have heard of the term but cannot explain the concept)
- ○ Adequate knowledge (can explain concept)
- ○ Superior knowledge (can explain concept and apply it to practice)

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22) In which of the following ways have you learned about NOC? Yes indicates a method used to learn about NOC.

	Yes	No
22.1) Formal (face-to-face) course(s) through college	○	○
22.2) Online course(s) from college or continuing education offering(s)	○	○
22.3) Local or state level continuing education conference(s)	○	○
22.4) National Association of School Nurses (NASN) conference(s)	○	○
22.5) Other national conference(s)	○	○
22.6) Nursing textbook(s)	○	○
22.7) Journal of School Nursing	○	○
22.8) Other nursing journals	○	○
22.9) Another nursing job (present or past) that required use of NOC	○	○
22.10) Other	○	○

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Thank you for sharing information related to your knowledge of standardized nursing languages. While school nurses may have varying levels of knowledge related to standardized nursing languages, opinions or attitudes about standardized nursing languages are also important. The following questions relate to **your opinion or attitude** about standardized nursing languages. Please answer these questions as accurately as possible.

23) It is important to me to accurately document my nursing care.

- ◯ Completely Agree
- ◯ Generally Agree
- ◯ Have enough knowledge but neither agree nor disagree
- ◯ Generally Disagree
- ◯ Completely Disagree
- ◯ Do not have enough knowledge to have an opinion

24) I believe school nurses should document according to the nursing process that involves assessment, diagnosis, planned or actual interventions, and expected outcomes.

- ◯ Completely Agree
- ◯ Generally Agree
- ◯ Have enough knowledge but neither agree nor disagree
- ◯ Generally Disagree
- ◯ Completely Disagree
- ◯ Do not have enough knowledge to have an opinion

25) Standardized nursing languages should be used by all school nurses to document the nursing process that involves assessment, diagnosis, planned or actual interventions, and expected outcomes.

- ◯ Completely Agree
- ◯ Generally Agree
- ◯ Have enough knowledge but neither agree nor disagree
- ◯ Generally Disagree
- ◯ Completely Disagree

◯ Do not have enough knowledge to have an opinion

26) I am willing to change my current practice of documentation in school nursing to use any standardized language.

◯ Completely Agree
◯ Generally Agree
◯ Have enough knowledge but neither agree nor disagree
◯ Generally Disagree
◯ Completely Disagree
◯ Do not have enough knowledge to have an opinion

27) I am willing to change my current practice of documentation in school nursing to use NANDA nursing diagnoses.

◯ Completely Agree
◯ Generally Agree
◯ Have enough knowledge but neither agree nor disagree
◯ Generally Disagree
◯ Completely Disagree
◯ Do not have enough knowledge to have an opinion

28) I am willing to change my current practice of documentation in school nursing to use NIC interventions.

◯ Completely Agree
◯ Generally Agree
◯ Have enough knowledge but neither agree nor disagree
◯ Generally Disagree
◯ Completely Disagree
◯ Do not have enough knowledge to have an opinion

29) I am willing to change my current practice of documentation in school nursing to use NOC outcomes.

◯ Completely Agree
◯ Generally Agree
◯ Have enough knowledge but neither agree nor disagree
◯ Generally Disagree
◯ Completely Disagree
◯ Do not have enough knowledge to have an opinion

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30) I recognize the advantages of using standardized nursing languages (NANDA, NIC, & NOC) as opposed to each school nurse using their own language to document.

- ◯ Completely Agree
- ◯ Generally Agree
- ◯ Have enough knowledge but neither agree nor disagree
- ◯ Generally Disagree
- ◯ Completely Disagree
- ◯ Do not have enough knowledge to have an opinion

31) I believe the use of standardized nursing languages (NANDA, NIC & NOC) is consistent with the values and needs of school nursing practice.

- ◯ Completely Agree
- ◯ Generally Agree
- ◯ Have enough knowledge but neither agree nor disagree
- ◯ Generally Disagree
- ◯ Completely Disagree
- ◯ Do not have enough knowledge to have an opinion

32) I think the process of using standardized nursing languages (NANDA, NIC, & NOC) is relatively complex.

- ◯ Completely Agree
- ◯ Generally Agree
- ◯ Have enough knowledge but neither agree nor disagree
- ◯ Generally Disagree
- ◯ Completely Disagree
- ◯ Do not have enough knowledge to have an opinion

33) I could try school nursing documentation using standardized nursing languages (NANDA, NIC, & NOC) for a limited time.

- Completely Agree
- Generally Agree
- Have enough knowledge but neither agree nor disagree
- Generally Disagree
- Completely Disagree
- Do not have enough knowledge to have an opinion

34) The opportunity to observe someone else using standardized nursing languages (NANDA, NIC, & NOC) would help me to use standardized nursing languages.

- Completely Agree
- Generally Agree
- Have enough knowledge but neither agree nor disagree
- Generally Disagree
- Completely Disagree
- Do not have enough knowledge to have an opinion

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35) The left column in the table below includes some perceived barriers to implementing standardized nursing languages in school nursing. Rate the extent to which you believe each perceived barrier is a barrier to your implementation of using standardized nursing languages.

	Not a barrier	Small barrier	Moderate barrier	Great barrier	No opinion
35.1) Lack of knowledge related to standardized nursing languages.	○	○	○	○	○
35.2) Time to learn a new system of documentation.	○	○	○	○	○
35.3) Current documentation system does not include standardized nursing languages—NANDA, NIC, and NOC.	○	○	○	○	○
35.4) Financial resources to pay for necessary equipment, such as a computer, computerized documentation program, or licensing fees.	○	○	○	○	○

35.5) Lack of reference books, such as NANDA, NIC, & NOC books.	○	○	○	○	○
35.6) Lack of understanding the standardized nursing languages by others such as principal, superintendent, school nurse administrators, other school nurses, etc.	○	○	○	○	○
35.7) The process of changing my current documentation practice.	○	○	○	○	○
35.8) Lack of mentors to help facilitate change to standardized nursing languages.	○	○	○	○	○
35.9) Lack of mandate from educational system to use standardized nursing languages	○	○	○	○	○

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The final section of this survey relates to how school nurses document. These questions are not to critique an individual's documentation, but rather to gather information about the current practices in school nursing documentation. It is important to have accurate information about how school nurses currently document.

36) Do you provide direct nursing care to students in a school setting?

- ◯ Yes
- ◯ No

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37) What is the average number of hours per week you work in your role related to school nursing?

hours

38) What is the average number of hours per week you provide direct 1:1 nursing care to students or school employees? (Do not include the hours you attend case management meetings, conferences, classroom teaching, or other school meetings.)

hours

39) Estimate the amount of time in hours per week that you spend documenting the 1:1 direct nursing care you provide to students or school employees.

hours

40) Estimate the amount of time in hours per week that you spend documenting the classroom teaching, attending conferences, attending meetings, and other non-direct nursing care activities.

hours

41) What is the number of school buildings for which you are accountable?

42) What grade levels are the students you care for in? (select all that apply)

- Daycare (infant or toddler)
- Preschool
- Pre-Kindergarden
- Kindergarden

- ☐ 1st
- ☐ 2nd
- ☐ 3rd
- ☐ 4th
- ☐ 5th
- ☐ 6th
- ☐ 7th
- ☐ 8th
- ☐ 9th
- ☐ 10th
- ☐ 11th
- ☐ 12th
- ☐ Special Education

43) Consider all the school buildings that you are accountable for. What is the total number of students for which you are accountable?

_____ students

44) I think the health services budget in the school district in which I work is adequately funded?

- ○ Completely Agree
- ○ Generally Agree
- ○ Have enough knowledge but neither agree nor disagree
- ○ Generally Disagree
- ○ Completely Disagree
- ○ Do not have enough knowledge to have an opinion

45) I think the leadership in the school district in which I work is receptive to suggestions made by employees?

- ○ Completely Agree
- ○ Generally Agree
- ○ Have enough knowledge but neither agree nor disagree
- ○ Generally Disagree
- ○ Completely Disagree
- ○ Do not have enough knowledge to have an opinion

46) Do you document according to the nursing process including assessment, diagnosis, planned or actual interventions, and expected outcomes for every student (includes daily visits and individualized health care plans)?

- ○ All of the time
- ○ Most of the time

○ Limited amount of time
○ Never

47) Which statement best describes your documentation system?

○ Paper log with date, time, name, and reason of all student health visits on one form
○ Paper documentation. Each student has own health record.
◉ Computerized documentation using a school developed program
○ Computerized documentation using a district developed program (all nurses in district are using same program)
○ Computerized documentation using a state developed program (all nurses in state are using same program)
○ Computerized documentation using the health application within the school student management program.
○ Computerized documentation using a purchased commercial school nursing software program.
○ Other (please specify)

If you selected other, please specify:

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48) Please select the computerized documentation program you are using.

- ◯ Dyn-O-Mite
- ◯ Dyn-O-Log
- ◯ Health Office
- ◯ Nurses' Choice
- ◯ Nurses' Aide
- ◯ SNAP Health Center
- ◯ Student Health Manager
- ◯ STARS
- ◯ Welligent
- ◯ eSchool Plus
- ◯ Clinical Fusion (previously known as School HealthCare ONLINE)
- ◯ Other (please specify)

If you selected other, please specify:

49) Which of the following individuals document in student health records in your school(s)? (select all that apply)

- ☐ School Nurse
- ☐ School Nurse Administrator/Supervisor
- ☐ Health Associate (school staff member hired exclusively to help in school health office)
- ☐ Other Associate(s) (school staff member(s) not exclusively in school health office but may provide some limited health services to individual students)
- ☐ Unlicensed Assistive Personnel (UAP) (includes secretary or principal)
- ☐ Other (please specify)

If you selected other, please specify:

50) When is it most common for you to document the nursing care that you provide to a student?

- While student is in the health room
- Immediately after student has left the health room
- Throughout the day, as time allows
- At the end of each day
- Other (please specify)

If you selected other, please specify:

51) Daily documentation refers to the documentation for episodic visits to the school health office, not the documentation used on individual health care plans (IHPs). Do you document NANDA nursing diagnoses in your current daily documentation?

- All of the time
- Most of the time
- Limited amount of time
- Never

52) Daily documentation refers to the documentation for episodic visits to the school health office, not the documentation used on individual health care plans (IHPs). Do you document NIC interventions in your current daily documentation?

- All of the time
- Most of the time
- Limited amount of time
- Never

53) Daily documentation refers to the documentation for episodic visits to the school health office, not the documentation used on individual health care plans (IHPs). Do you document NOC outcomes in your current daily documentation?

- All of the time
- Most of the time
- Limited amount of time
- Never

54) The American Nurses Association recognizes several different standardized languages. Do you consistently use any of the

standardized nursing terminologies listed below in your current daily documentation practices? (select all that apply)

- ☐ No
- ☐ NANDA
- ☐ NIC
- ☐ NOC
- ☐ Omaha Classification
- ☐ Clinical Care Classification (CCC) formerly known as Home Health Care Classification (HHCC)
- ☐ International Classification of Nursing Practice (ICNP)
- ☐ ABCCodes
- ☐ LOINC
- ☐ SNOMED CT
- ☐ Other (please specify)

If you selected other, please specify:

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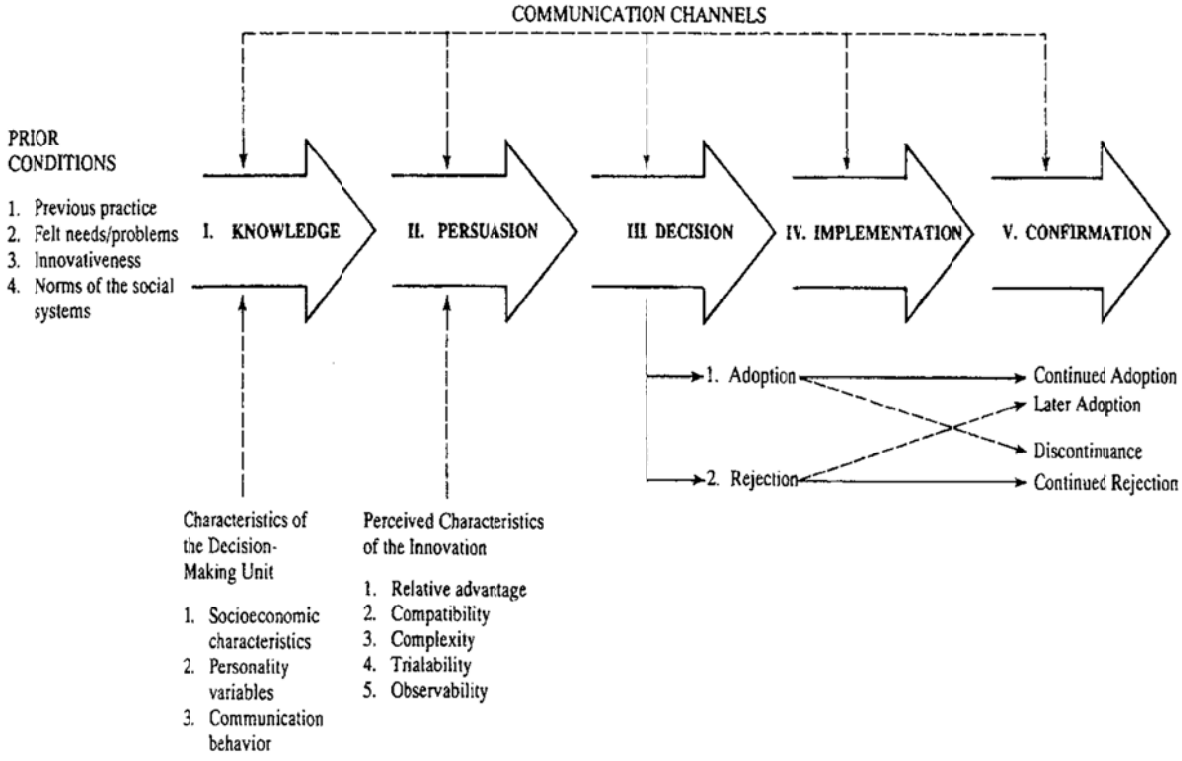
APPENDIX B

EVERETT ROGERS – DIFFUSION OF INNOVATION MODEL (2003)


COMMUNICATION CHANNELS
PRIOR CONDITIONS
1. Previous practice
2. Felt needs/problems
3. Innovativeness
4. Norms of the social systems
I. KNOWLEDGE
II. PERSUASION
III DECISION
IV. IMPLEMENTATION
V. CONFIRMATION
1. Adoption
2. Rejection
Continued Adoption
Later Adoption
Discontinuance
Continued Rejection
Characteristics of the Decision-Making Unit
1. Socioeconomic characteristics
2. Personality variables
3. Communication behavior
Perceived Characteristics of the Innovation
1. Relative advantage
2. Compatibility
3. Complexity
4. Trialability
5. Observability

APPENDIX C

WEB-BASED SND CRITIQUE FORM

School Nursing Documentation (SND) Survey Critique

Thank you for your time and expertise to review the *School Nursing Documentation* (SND) web-based survey. Your feedback about the survey will guide survey revisions before the final survey is launched. **Please write your comments on this form. In order to expedite the review process, these exact questions will be included at the end of the actual survey. You are asked to type your comments into the questions at the end of the survey. If you have any questions during the survey process, do not hesitate to contact me, Sharon Yearous, at 319-533-6290.**

Style & Structure

1. Have you ever completed a web-based survey prior to the *School Nursing Documentation* survey? ____yes _____no

2. Estimate the number of minutes it took you to complete just the survey (do not include the time it takes to write comments on critique form)? _____ minutes

3. Was the survey too long? ____yes____no
   Comments:
   _____

4. Are there aspects of the survey (such as length, web-based, etc.) that you think would discourage respondents from completing the survey? ____yes _____no
   Comments:
   _____

5. Do you think the format or division of sections of the survey made it clear this survey is about knowledge, attitude, and barriers related to the use of standardized nursing languages and current school nursing documentation practices? ____yes ____no
   Comments:
   _____

Content

6. If a respondent does not have any prior knowledge about NANDA, NIC and NOC, do you think they will be able to complete the survey? ____yes ____no
   Comments:
   _____

7. Do you think the survey questions about current school nursing documentation practices were insulting or offensive? ____yes ____no
   Comments:
   _____

8. Did the words used in the survey seem clear and appropriate? _____yes _____no
   Comments:
   _____

9. Are there other questions you think should be asked? _____yes _____no
   Comments:
   _____

10. Are there questions you think should be deleted? _____yes _____no
    Comments:
    _____

11. Please add any additional comments
    _____
    _____
    _____
    _____
    _____

APPENDIX D

ITEM CONTENT VALIDITY INDEX RATING FORM

FOR CONTENT EXPERTS TO EVALUATE

Name of Survey: *School Nursing Documentation: Knowledge, Attitude, and Practice*

Objectives of Survey: Using the items of this survey, the researcher will be able to:

OBJ 1: Describe school nurse's knowledge level of standardized nursing languages
OBJ 2: Describe school nurse's attitudes regarding standardized nursing languages
OBJ 3: Identify barriers for school nurses to implement standardized nursing languages
OBJ 4: Establish data regarding current documentation practices in school nursing
OBJ 5: Respondents can link NANDA, NIC, NOC labels to document a school nurse visit regardless of their knowledge, attitude, or current documentation practice about standardized nursing languages.

Directions: Please judge whether the items in this survey measure the Concept of Interest by meeting the corresponding objective. For the purposes of this study, standardized nursing language includes any one or a combination of NANDA, NIC, and NOC languages. Assign each survey item a value of **+1**, **0**, or **-1** (see code below and at top of each page) in the evaluation column in relation to the stated objective noted immediately below the concept (knowledge, attitude, barriers, current documentation) being measured. Feel free to make comments or suggestions about any survey items on this form.

Coding system: **+1** = definitely a measure of objective
0 = undecided
- 1 = definitely not a measure of objective

Concept of Interest: **KNOWLEDGE** **Objective 1:** Describe school nurse's knowledge level of standardized nursing languages		**Evaluation OBJ 1**
17.	Have you ever accessed the NASN position statement ***Standardized Nursing Languages – NANDA International, NIC and NOC*** from the NASN web site prior to this survey? a. Yes b. No	
18.	Describe your *knowledge* level of nursing diagnosis using **NANDA** language a. None (do not know) b. Minimal knowledge (have heard of term but cannot explain concept) c. Adequate knowledge (can explain concept) d. Superior knowledge (can explain concept and apply it to practice)	
19.	Where did you obtain your *knowledge* about the use of **NANDA** in school nursing documentation? (check all that apply) a. Formal (face-to-face) course through a college b. Online course through a college c. Local or state level continuing education conference d. Nursing diagnosis textbook e. Journal of School Nursing f. Nursing journals g. NASN conference h. Other (text field to insert information)	
20.	Describe your *knowledge* level of nursing interventions using **Nursing Interventions Classification (NIC)** language a. None (do not know) (skip to question 19) b. Minimal knowledge (have heard of term but cannot explain concept) c. Adequate knowledge (can explain concept) d. Superior knowledge (can explain concept and apply it to practice)	

Concept of Interest: **KNOWLEDGE continued** **Objective 1:** Describe school nurse's knowledge level of standardized nursing languages	**Evaluation OBJ 1**
21. Where did you obtain your ***knowledge*** about the use of **Nursing Interventions Classification (NIC)** in school nursing documentation? (check all that apply) a. Formal (face-to-face) course through a college b. Online course through a college c. Local or state level continuing education conference d. NIC textbook e. Journal of School Nursing f. Nursing journals g. NASN conference h. Other (text field to insert information)	
22. Describe your ***knowledge*** level of nursing outcomes measurement using **Nursing Outcomes Classification (NOC)** language a. None (do not know) b. Minimal knowledge (have heard of term but cannot explain concept) c. Adequate knowledge (can explain concept) d. Superior knowledge (can explain concept and apply it to practice)	
23. Where did you obtain your ***knowledge*** about the use of **Nursing Outcomes Classification (NOC)** in school nursing documentation? (check all that apply) a. Formal (face-to-face) course through a college b. Online course through a college c. Local or state level continuing education conference d. NOC textbook e. Journal of School Nursing f. Nursing journals g. NASN conference h. Other (text field to insert information)	

Concept of Interest: **ATTITUDE** **Objective 2:** Describe school nurse's attitudes regarding standardized nursing languages	**Evaluation OBJ 2**
24. It is important to me to accurately document my nursing care. a. Strongly agree b. Agree c. No opinion d. Disagree e. Strongly Disagree f. Do not have enough knowledge to have an opinion	
25. I believe school nurses should document according to the nursing process including assessment, diagnosis, planned or actual interventions, and expected outcomes. a. Strongly agree b. Agree c. No opinion d. Disagree e. Strongly disagree a. Do not have enough knowledge to have an opinion	
26. Standardized labels should be used by all school nurses to document the nursing process including assessment, diagnosis, planned or actual interventions, and expected outcomes. f. Strongly agree g. Agree h. No opinion i. Disagree j. Strongly disagree k. Do not have enough knowledge to have an opinion	
27. I would be willing to change my current practice of documentation in school nursing to use **NANDA** nursing diagnoses labels. a. Strongly agree b. Agree c. No opinion d. Disagree e. Strongly Disagree f. Do not have enough knowledge to have an opinion	
28. I would be willing to change my current practice of documentation in school nursing to use **NIC** intervention labels. a. Strongly agree b. Agree c. No opinion d. Disagree e. Strongly Disagree f. Do not have enough knowledge to have an opinion	
29. I would be willing to change my current practice of documentation in school nursing to use **NOC** outcome labels. a. Strongly agree b. Agree c. No opinion d. Disagree e. Strongly Disagree f. Do not have enough knowledge to have an opinion	

Concept of Interest: **ATTITUDE continued** **Objective 2:** Describe school nurse's attitudes regarding standardized nursing languages		**Evaluation OBJ 2**
30.	I recognize the advantages of using standardized nursing language labels (NANDA, NIC, & NOC) as opposed to each school nurse using their own labels to document. a. Strongly agree b. Agree c. No opinion d. Disagree e. Strongly Disagree f. Do not have enough knowledge to have an opinion	
31.	I believe use of standardized nursing language labels (NANDA, NIC, & NOC) are consistent with the values and needs of school nursing practice. a. Strongly agree b. Agree c. No opinion d. Disagree e. Strongly Disagree f. Do not have enough knowledge to have an opinion	
32.	I think the process of using standardized nursing language labels (NANDA, NIC, & NOC) is relatively complex. a. Strongly agree b. Agree c. No opinion d. Disagree e. Strongly disagree f. Do not have enough knowledge to have an opinion	
33.	I would be willing to try school nursing documentation using standardized nursing language labels (NANDA, NIC, & NOC) for a limited time. a. Strongly agree b. Agree c. No opinion d. Disagree e. Strongly disagree f. Do not have enough knowledge to have an opinion	
34.	I think that observing someone else using standardized nursing language labels (NANDA, NIC, & NOC) would help me to use standardized nursing languages. a. Strongly agree b. Agree c. No opinion d. Disagree e. Strongly disagree f. Do not have enough knowledge to have an opinion	

Concept of Interest: **BARRIERS TO USING STANDARDIZED LANGUAGE** **Objective 3:** Identify barriers for school nurses to implement standardized nursing languages	**Evaluation OBJ 3**
35. Lack of **knowledge** related to standardized nursing languages. a. To no extent b. To a little extent c. To a moderate extent d. To a great extent e. No opinion	
36. **Time** to learn a new system of documentation. f. To no extent g. To a little extent h. To a moderate extent i. To a great extent j. No opinion	
37. **Financial resources** to pay for necessary equipment, such as a computer or computerized documentation program. k. To no extent l. To a little extent m. To a moderate extent n. To a great extent o. No opinion	
38. Lack of **reference books**, such as NANDA, NIC, & NOC books. p. To no extent q. To a little extent r. To a moderate extent s. To a great extent t. No opinion	
39. Lack of **understanding** the standardized nursing languages by others (principal, superintendent, school nurse administrators, other school nurses, etc) in your educational institution. u. To no extent v. To a little extent w. To a moderate extent x. To a great extent y. No opinion	
40. The **process of changing** my current documentation practice. z. To no extent aa. To a little extent bb. To a moderate extent cc. To a great extent dd. No opinion	
41. Lack of **mentors** to help facilitate change to standardized nursing languages. ee. To no extent ff. To a little extent gg. To a moderate extent hh. To a great extent ii. No opinion	
42. **Current computerized documentation system** does not include standardized nursing languages—NANDA, NIC, and NOC. jj. To no extent kk. To a little extent ll. To a moderate extent mm. To a great extent nn. No opinion	

Concept of Interest: **DOCUMENTATION PRACTICE** **Objective 4:** Establish data regarding current documentation practices in school nursing	**Evaluation OBJ 4**
43. What is the number of school buildings for which you are accountable? a. Numeric field in which respondent puts in number	
44. What grade levels are the students you care for in? (select all that apply) a. List of preschool, pre-K, K, through 12, and other field with text box	
45. What is the number of students for which you are accountable? a. Numeric field in which respondent puts in number	
46. Do you document according to the nursing process (including assessment, diagnosis, planned or actual interventions, and expected outcomes) for every student? a. Yes b. Sometimes c. No	
47. How would you describe your documentation system? a. Paper log with date, time, name, and reason of all student health visits on one form b. Paper documentation. Each student has own health record. c. Computerized documentation using a school developed program d. Computerized documentation using a district developed program (all nurses in district are using same program) e. Computerized documentation using the health application within the school student management program. f. Computerized documentation using a purchased commercial school nursing software program. g. Other (text field to insert information)	
48. If yes to question 47f, please select the computerized documentation program you are using from the following list? a. Dyn-O-Mite b. Dyn-O-Log c. Health Office d. Nurses' Choice e. Nurses' Aide f. SNAP Health Center g. Student Health Manager h. STARS i. Welligent j. Clinical Fusion (previously known as School HealthCare ONLINE) k. School or district developed computerized documentation program l. Other program (text field to insert information)	
49. When is it most common for you to document your nursing care that you provide to a student? a. While student is in the health room b. Immediately after student has left the health room c. Throughout the day, as time allows d. At the end of each day e. Other (text field to insert information)	
50. Who documents the nursing care that you provide to students? a. You b. Someone other than you (text field for them to insert job title of this person)	

Concept of Interest: **DOCUMENTATION PRACTICE continued** **Objective 4:** Establish data regarding current documentation practices in school nursing	**Evaluation OBJ 4**
51. Daily documentation refers to the students who visit your health room, not the documentation used on individual healthcare plans (IHP). Do you document **NANDA** nursing diagnoses in your current daily documentation? a. Yes b. No	
52. Daily documentation refers to the students who visit your health room, not the documentation used on individual healthcare plans (IHP). Do you document nursing interventions using **NIC (Nursing Interventions Classification)** labels in your current daily documentation? a. Yes b. No	
53. Daily documentation refers to the students who visit your health room, not the documentation used on individual healthcare plans (IHP). Do you document outcomes using **NOC (Nursing Outcomes Classification)** labels in your current daily documentation? a. Yes b. No	
54. Do you use any of the standardized nursing terminologies listed below in your current daily documentation practice? a. Omaha Classification b. Clinical Care Classification (CCC) formerly known as Home Health Care Classification (HHCC) c. International Classification of Nursing Practice (ICNP) d. ABCCodes e. LOINC f. SNOMED CT g. No	

Important areas not included on the survey:
Comment on readability of survey items:
Other comments:

The final section of the survey is to measure the respondent's ability to correctly link NANDA, NOC, and NIC (NNN) labels together as if they were documenting a visit to the school nurse. An example vignette (child with asthma) (see immediately below) in the survey demonstrates the linkages of NNN labels. Directions ask respondents to link NNN labels for two other vignettes (#1 and #2). Respondents are instructed to prioritize NANDA labels (although my interest is not how accurately they prioritize the NANDA labels). Respondents are then instructed to link the appropriate NOC outcome label(s) to the NANDA label(s) and then select the NIC intervention(s) used to reach the identified NOC outcome(s).

The linkages that follow (Example and Vignette #1 and #2) have been completed by the researcher through a review of NANDA, NOC, and NIC Linkage (2nd Edition), NIC (4th Edition), and NOC (3rd Edition) and experience as a school nurse. Vignette #1 and #2 will not have linkages completed on the actual survey as they do on this form. Please use the above rating scale to code if the vignettes meet Objective 5 as listed below.

Concept of Interest: **NANDA, NOC, NIC Linkages** **Objective 5:** Respondents can link NNN labels to document a school nurse visit regardless of their knowledge, attitude, or current documentation practice about standardized nursing languages.	**Evaluation OBJ 5**
Example vignette (see below)	
Vignette #1 (see page 10)	
Vignette #2 (see page 11)	

EXAMPLE VIGNETTE: An 8 year-old male student enters the school nurses office after playing outside at recess. The student verbalizes that he is "having difficulty breathing". The school nurse accesses his emergency health information form to see that this student has a known history of asthma. The student's respiratory rate upon arrival assessment is 24 breaths per minutes. Inspiratory and expiratory wheezing is auscultated in the initial assessment. Upon further exam, mild subcostal boarder retractions are noted. The emergency health information form states the student has an albuterol inhaler. The student has an albuterol inhaler in his backpack and you have signed permission from the parent and physician to administer as needed.

Diagnoses: (prioritize the nursing diagnosis with numbers, using #1 as highest priority)

1	Breathing Pattern, Ineffective	
2	Health Seeking Behaviors (Asthma Management)	

Outcomes: (using the numbers you assigned to above nursing diagnoses, indicate the nursing diagnosis each outcome is applicable to)

2	Asthma Self-Management	
2	Health Seeking Behaviors	
1	Respiratory Status; Ventilation	
1	Vital Signs Status	

Interventions: (using the numbers you assigned to above nursing diagnoses, indicate the nursing diagnosis each intervention is applicable to)

1	Airway management	
1, 2	Asthma Management	
2	Health Education	
1	Medication Administration: Inhalation	
1	Respiratory Monitoring	
1	Vital Signs Monitoring	

Vignette #1: A 12 year male student limped into the school nurse's office following an ankle injury during physical education class. The student reports he heard and felt a "popping" sensation to right ankle at time of injury. Reports that right ankle is "throbbing with pain" and claims he cannot walk. Upon further assessment, the right ankle noted to be ecchymotic and edematous with limited range of motion. The student rates his pain an 8 on a 1-10 pain rating scale. Pedial and posterior tibial pulses are 2+ on right and left extremities.

Diagnosis: (prioritize the nursing diagnosis with numbers, using #1 as highest priority)

1	Pain, Acute
2	Physical mobility, impaired

Outcomes: (using the numbers you assigned to above nursing diagnoses, indicate the nursing diagnosis each outcome is applicable to)

2	Ambulation
1	Comfort Level
2	Joint Movement: Ankle
2	Knowledge: Treatment Procedure
2	Knowledge: Prescribed Activity
2	Mobility
1, 2	Pain Level
2	Student Health Status

Interventions: (using the numbers you assigned to above nursing diagnoses, indicate the nursing diagnosis each intervention is applicable to)

1, 2	Analgesic Administration
2	Exercise Therapy: Ambulation
2	Exercise Therapy: Joint Mobility
1	Heat/Cold Application
1, 2	Pain Management
2	Positioning
2	Referral
2	Sports Injury Prevention: Youth
2	Teaching: Prescribed Activity/Exercise
1, 2	Telephone Consultation

Vignette #2: A 6 year old female student reports to the school nurse's office for continued complaints of a stomach ache. This somatic complaint has been re-occurring at least three times per week for the last three weeks. Today's abdominal assessment reveals a soft, non-tender flat abdomen with bowel sounds present in all quadrants. A large area of ecchymosis is noted on the student's right lateral thoracic area (approximately 4 inches in diameter). Upon questioning student about this bruise, the student become tearful and avoids eye contact with the school nurse. The student then states that her "step-dad got mad at me because I spilled my milk at dinner last night". The school nurse clarifies by re-stating the child's comment and asks if the step-dad hit her. The student acknowledges that her step-dad did hit her. A generalized exam reveals multiple bruises at different stages on extremities and back. Child confirms that step-dad has hit her numerous times in the past.

Diagnosis: (prioritize the nursing diagnosis with numbers, using #1 as highest priority)

3	Fear
1	Parenting, Impaired
2	Risk for Injury

Outcomes: (using the numbers you assigned to above nursing diagnoses, indicate the nursing diagnosis each outcome is applicable to)

1	Abuse Cessation
1, 2	Abuse Protection
1	Abuse Recovery: Emotional
1	Family Integrity
3	Fear Level: Child
1	Parenting Performance
1, 2	Parenting: Psychosocial Safety
2	Safe Home Environment
1, 3	Student Health Status

Interventions: (using the numbers you assigned to above nursing diagnoses, indicate the nursing diagnosis each intervention is applicable to)

1, 2, 3	Abuse Protection Support: Child
3	Active Listening
3	Anticipatory Guidance
3	Calming Techniques
1, 2, 3	Crisis Intervention
1, 3	Emotional Support
1	Family Integrity Promotion
1	Parent Education: Childrearing Family
1	Parenting Promotion
1	Referral
1, 2	Risk Identification: Childbearing Family
3	Security Enhancement
1, 2	Surveillance: Safety
1	Trauma Therapy: Child

Important areas not included on vignettes (please include vignette number):
Comment on readability of vignettes:
Other comments related to vignettes:

Thank you. Please return this evaluation of Item-Objective Congruence to:

Sharon Yearous
372 Willshire Ct NE
Cedar Rapids, IA 52402

APPENDIX E

LETTER OF INVITATION TO PARTICIPATE

FOR IRB USE ONLY
APPROVED BY: IRB-02
IRB ID #: 200802733
APPROVAL DATE: 02/26/08
EXPIRATION DATE: N/A

Insert Date

«FNAME» «LNAME»
«ADDRESS1»
«ADDRESS2»
«CITY», «STATE» «ZIPCODE»

Dear «FNAME»:

We are writing to invite you to participate in a research study. The purpose of the study is to gather information about school nursing documentation. This survey is not a critique of your documentation methods. The researchers understand that each school nurse has different circumstances that may affect documentation practices.

We are inviting you to be in this study because you are a member of the National Association of School Nurses (NASN). We obtained your name and address from NASN following their policy for researchers to access NASN members. Approximately 800 people will take part in this study at the University of Iowa.

If you agree to participate, we would like you to complete a confidential web-based survey that will ask questions about your current school nursing documentation practices and your knowledge, attitude, and barriers related to the use of standardized nursing languages (NANDA, NIC, and NOC). It is estimated that it may take up to 30 minutes to complete this survey. If you do not want to be contacted again about the opportunity to participate, please e-mail Sharon Yearous at sharon-yearous@uiowa.edu. A reminder to complete the survey will be sent in 2 weeks if you have not completed the survey at that time. The survey will only be available for completion over the next 4 weeks.

You will be asked to enter the subject identification number provided below at the start of the survey. We will use this number to track completion of the survey so that we may send you a reminder about the study. The list linking your name and your assigned number will be destroyed at the end of data collection and the number will be removed before any data is analyzed to protect your identity. Data will be analyzed and reported as group data, not individual responses. If we write a report about this study we will do so in such a way that you cannot be identified. The data we collect for this study will be stored in a password protected database for an indefinite period of time and may be used in the future by this researcher to answer additional research questions about school nurses and their documentation practices.

There are no known risks from being in this study, and you will not benefit personally. However, we hope that the information collected in this study will assist with identification of current school nursing documentation practices and measurement of knowledge, attitudes, and perceived barriers to using standardized nursing languages.

FOR IRB USE ONLY
APPROVED BY: IRB-02
IRB ID #: 200802733
APPROVAL DATE: 02/26/08
EXPIRATION DATE: N/A

You will not have any costs for being in this research study and you will not be paid for being in this research study. Taking part in this research study is completely voluntary. If you decide not to be in this study, or if you stop participating at any time, you won't be penalized or lose any benefits for which you otherwise qualify.

If you are willing to participate, please visit www.isno.org/yearous-survey to start the survey. A brief description of the study is provided and then entering the subject identification number below indicates your consent to participate in this study.

TO COMPLETE THE SURVEY: www.isno.org/yearous-survey

SUBJECT IDENTIFICATION NUMBER: «NUMBER»

If you have any questions about the research study itself, please contact **Sharon Yearous, 372 Willshire Ct NE, Cedar Rapids, IA 52402 or (319) 533-6290**. If you have questions about the rights of research subjects, please contact the Human Subjects Office, 300 College of Medicine Administration Building, The University of Iowa, Iowa City, IA 52242, (319) 335-6564, or e-mail irb@uiowa.edu. To offer input about your experiences as a research subject or to speak to someone other than the research staff, call the Human Subjects Office at the number above.

Thank you very much for your consideration.

Sincerely,

Sharon Yearous, RN, PhD(c), CPNP, NCSN
Doctoral Student, University of Iowa College of Nursing

Anne Marie McCarthy, RN, PhD, FAAN
Professor & Area Chair, Parent Child Family

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