Spring 5-22-2017

Emergency Room Nurses Knowledge of and Experience with Health Literacy and their Patient Teaching Methods

Deborah Kennard
deborah.kennard@student.shu.edu

EMERGENCY ROOM NURSES KNOWLEDGE OF AND EXPERIENCE WITH

HEALTH LITERACY AND THEIR PATIENT TEACHING METHODS

BY

DEBORAH KENNARD

Dissertation Committee

Dr. Eileen Toughill, Chair
Dr. Marie Foley
Dr. Donna Mesler

Submittted in partial fulfillment of the
Requirements for the degree of Doctor of Philosophy in Nursing
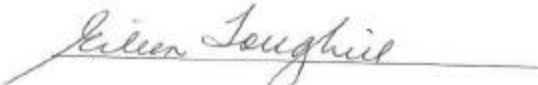Seton Hall University
2017

EMERGENCY ROOM NURSES KNOWLEDGE OF AND EXPERIENCE WITH

HEALTH LITERACY AND THEIR PATIENT TEACHING METHODS

BY

DEBORAH KENNARD

Dissertation Committee

Dr. Eileen Toughill, Chair
Dr. Marie Foley
Dr. Donna Mesler

Approved by the Dissertation Committee:

Date: 4/24/17

Date: 4/24/17

Date: 4/24/17

Submittted in partial fulfillment of the
Requirements for the degree of Doctor of Philosophy in Nursing
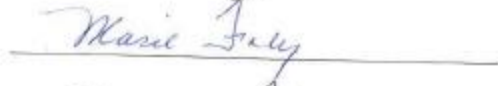Seton Hall University
2017

ACKNOWLEDGEMENTS

I would like to first express my gratitude for all those in my life's path who have encouraged me to reach higher and keep growing beyond what I ever though was possible. There are too many to name because I have been blessed with many mentors.

Specifically, I would like to thank my dissertation committee chair, Dr. Eileen Toughill, who spent endless hours mentoring, encouraging, and overseeing my work. She always had time for me and I will never forget our many breakfast meetings. I would also like to thank my committee members, Dr. Marie Foley and Dr. Donna Mesler, who offered their guidance and service. It is only at this point in my journey that I am able to appreciate the time, commitment and sacrifice that is involved with providing the encouragement to reach my career goals.

There were many teachers in my years of education that have had a great influence on me. In most instances the impact was not so much about what they taught me, but more about the encouragement to keep reaching beyond what I thought I could accomplish. I am fortunate enough to consider them not only mentors, but friends. Specifically I would like to thank Dr. Elizabeth Armstrong, Dr. Virginia Fitzsimons, Dr. Judith Lothian, Dr. Maureen McCreadie, Dr. Elizabeth Speakman, and Dr. Bonnie Sturm. It has been an honor to be associated with them.

Thank you to Dr. Yvonne Wesley who helped me make sense of my statistical data. Dr. Wesley not only helped me through the process of analyzing the often difficult statistical data but became a friend and mentor along the way.

There are several friends I would be remiss not to mention. Two friends, Erin Dooley and Denise Van-Sant Smith jumped into the unknown world of academic research with me. We began our journeys together and remain close as we have attempted to keep life in perspective.

Lastly and most importantly, I give heartfelt thanks to my family. My mother, children, grandchildren, and especially my husband have been extremely helpful, patient and supportive while my attention has been otherwise occupied. We all look forward to getting back to a normal life.

DEDICATION

I wish to dedicate this dissertation to my husband, Francis, who has provided unconditional love and support through this exhaustive process. He has always expressed belief in my abilities and has given input and advice when needed and asked for. He has kept silent and without complaint while my attention and focus has been on my work. My gratitude is endless.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABSTRACT

Health literacy (HL) is the ability one has to understand health information and navigate within the health system. Health literacy is linked to health knowledge and acute and chronic health outcomes. The conceptual model of health literacy outlines the contextual factors related to individual health literacy throughout the health system and the mitigating influence on outcomes. Education is a key factor to health knowledge and behavior changes. Nurses are the primary educators for providing patient teaching and yet research indicates nurses are lacking in knowledge regarding this. One area in the health system where health literacy has a strong effect on patient outcomes is the emergency department (ED). Identifying the association between emergency department nurses knowledge of, and experience with health literacy, and their use of patient education strategies is important for future patient outcomes. This descriptive, exploratory, correlational study examined the HL knowledge, experience and most frequently used teaching methods of ED nurses as well as relationships between and among emergency department nurses' health literacy knowledge, health literacy experience and their patient teaching methods.

Results of this study indicated that ED nurse participants knew less basic facts about HL than about evaluating HL interventions and the consequences associated with low HL. Overall the participants answered 62% of the knowledge questions correctly. There were correlations found between HL knowledge and age, years as a licensed registered nurse (RN) and years worked in the ED with the strongest predictor of HL knowledge being nurses level of education ($\beta = .21$, $p = .012$). A

number of ED nurses (49.8%) indicated they *never* participated in HL strategies such as HL screening, evaluating reading level of written materials or illustrations and very few (4.6%) indicated they *always* participate. The participants indicated the most frequently used teaching methods in the ED were providing written materials, avoiding medical jargon and encouraging questions.

Further research is needed to explore methods to increase health literacy knowledge of ED nurses and strategies to facilitate experiences with health literacy in the ED. Communication is an important component of the relationship between nurses and low health literate patients in the ED. Methods to enhance communication and facilitate patient understanding and retention of patient teaching should also be explored.

Chapter I

INTRODUCTION

Historically, nursing is the discipline that has been charged with the

responsibility of providing patient health teaching (Bastable, 2003). One of the roles

of a nurse is assisting individuals in the healing process. More importantly, nurses can

teach a person about maintaining his/her health and about the prevention of illnesses

and complications, which can potentially help the person to live a long, healthy life.

An important concept related to health teaching and patient outcomes is health

literacy. The concept of health literacy involves many facets but is largely accepted

to mean "the degree to which individuals can obtain, process, and understand the

basic health information and services they need to make appropriate health decisions"

(Selden, Zorn, Ratzan, & Parker, 2000, p.4). The ability to understand health

teaching and act on health information is critical to the health and well-being of

today's population. The concept of health literacy was analyzed using the Health

Literacy Framework developed by the Institute of Medicine (IOM) with special focus

on health outcomes (IOM, 2004).

Health literacy skills are an important influence on individual ability to

maintain health and to manage acute and chronic illnesses. Low health literacy

compromises one's ability to manage health and to navigate the health care system.

This compromised ability results in increased misuse of health care services such as

emergency departments (EDs) in acute care facilities. Many patients use EDs for the

treatment and management of acute and chronic illnesses. Not only are EDs the place

where immediate acute care is often administered, but it is also the place where an increasing number of people come for their primary care (Carret, Fassa & Kawachi, 2007). Education provided by emergency department nurses is vital to patient recovery and management of illness. Scenarios including urgent readmission, disability or even death are possible when the instructions given by the nurse are not understood, or valued and subsequently not applied.

Due to the fast-paced nature of the ED, it is important for ED nurses to recognize patients with low health literacy and to adapt patient education to the individual. Nursing knowledge about health literacy, health literacy assessment tools and the best methods for patient education are important for positive outcomes of emergency department patients (IOM, 2004). Furthermore, ED nurses skilled in patient teaching and communication will provide better patient education. The better the patient teaching and communication skills, the better patients will understand and be able to follow directions to manage their illness, resulting in better patient outcomes. Nurses need knowledge and experience in health literacy to recognize low health literacy and to assess patient capability to understand and utilize the information and resources provided. Emergency department nurses' strategies to assess health literacy and to adapt teaching methods based upon this assessment will provide the patient with optimal opportunities for positive outcomes.

Research indicates that health care professionals, and particularly nurses, lack knowledge about health literacy and communication (Jukkala, Deupree, & Graham, 2009). Nursing is a discipline that has been identified as having gaps in health

literacy research (Macabasco-O'Connell, & Fry-Bowers, 2011). Since a major role in nursing is patient teaching, to which health literacy is vital, it is prudent to examine nursing knowledge of, and experience with, health literacy in various settings. Patient comprehension and ability to act on that teaching is affected by their level of health literacy which, subsequently, affects their outcomes (Paasche-Orlow & Wolf, 2007). Studies have previously explored knowledge and experience of health literacy among several populations of nurses such as nursing students, registered nurses and nurse practitioners (Cafiero, 2013; Cormier & Kotrlik, 2009; Knight, 2011) but there were no studies found in any specialized areas of nursing. Due to the unique arrangement of rapid treatment and discharge of patients in the ED, it was important to examine the concepts of health literacy within the population of ED nurses in order to determine if this was an area where gaps in nursing knowledge and experience existed. Furthermore, an investigation of the knowledge and experience of health literacy among ED nurses identified gaps and provided insights as well as information regarding teaching methods for future improvement.

Purpose

The purpose of this study was to explore relationships among the health literacy knowledge of registered nurses working in the emergency department, their experiences with health literacy strategies and strategies to provide patient teaching at the health literacy level of the patient. When faced with the enormity of health literacy problems, it was important to identify gaps in knowledge for which research may provide answers.

Definitions

The main concepts and study variables are defined below:

Health Literacy is conceptually defined as "The degree to which individuals can obtain, process, and understand the basic health information and services they need to make appropriate health decisions" (Selden, et al., 2000, p.4).

Health Literacy Knowledge is conceptually defined as nurses' knowledge of health literacy which involves knowledge of the risk factors, prevalence and tools used for health literacy assessment as well as patient reading level recommendations. It was operationally defined as the score on the Health Literacy Knowledge and Experience Survey, Part I (Cormier & Kotrlik, 2009).

Health Literacy Experience is conceptually defined as experiences of ED registered nurses (RN) in evaluating appropriateness of written patient material, evaluation of culturally appropriate material and use of assessment tools. It was operationally defined as the score on the Health Literacy Knowledge and Experience Survey, Part II (Cormier & Kotrlik, 2009).

Patient Teaching Methods are conceptually defined as communication enhancing strategies, used formally or informally, that have been shown to be effective with patients with low health literacy such as speaking slowly, using simple language and the teach-back method. (Egbert, & Nanna, 2009). Patient teaching methods was operationally defined by participant response to a question regarding the types of teaching methods they most frequently employ.

Delimitations

This study was limited to registered nurses who were currently providing direct patient care in an emergency department in the United States. In addition, the registered nurses surveyed must have either been formally or informally providing patient teaching to ED patients in their care. The participating nurses had to be English speaking and had to have had access to the Internet.

Conceptual Framework

The conceptual framework for this study was the health literacy framework developed by the IOM (2004). The IOM health literacy framework includes five components: the individual, basic literacy, health outcomes and costs, health context and health literacy. The individual is the person or patient seeking health care or healthcare information. Basic literacy is the ability to read and write simple text and understand directions, and to perform simple mathematical operations. Health outcomes are the consequences that healthcare activities have on individuals. Costs are the healthcare expenditures associated with higher utilization and greater use of resources related to health literacy (IOM, 2004).

Health context is the system or environment in which the individual finds himself such as the office of a health care provider or the emergency department in the hospital. It includes the health care providers who work within these settings.

Health literacy is the skill needed to communicate and understand health information. The extent of health literacy an individual possesses influences his ability to navigate the environment (health context); thus, an individual with limited

health literacy may be restricted in his ability to participate in health context activities. The framework considers health literacy as a mediator between the individual and health contexts (health care providers and their environments and situations related to health). Individuals have different skills and abilities which they bring to the health context.

Although the framework does not describe causal relationships, the areas of education, culture and society, and the health system are seen as influencing the health literacy of the individual. Based on the IOM framework, these areas must be addressed when seeking improvement in health literacy and the framework identifies points of potential intervention where health literacy can be improved.

The education system refers to the K-12 education system, adult education and education for health professionals. The IOM recommends that health education be included in K-12 curriculum. It further recommends that health literacy be a mandatory component of all formative health care provider education as well as continuing education.

Culture is the shared ideas and values of individuals within a society. It influences attitudes and beliefs and how the individual interacts with the health system. Culture influences the health beliefs of individuals within a group. It affects how one feels about health and illness and when and how one seeks care. Culture influences the importance one places on health and how one comes to know, comprehend and make informed decisions regarding health (IOM, 2004).

The IOM report refers to the "health system" as the people performing health related activities in various settings. The health system has become increasingly complex due to public and private financing, new health information and health-delivery settings. The healthcare system consists of complex organizations and programs in which people perform health maintenance activities such as hospitals, clinics, provider offices, homes, accrediting and regulatory agencies. Healthcare personnel working within the healthcare system shape the messages communicated to individuals. Communication is important when relaying health information. For example, both the provider and the individual need to have clear communication when it comes to discharge planning and medication instructions (IOM, 2004).

According to the IOM, although there are many different definitions of health literacy, one definition should be utilized to promote a common understanding. The IOM (2004) adopted the definition for health literacy as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" which was originally developed by Selden, Zorn, Ratzan, and Parker (2000, p.4). This definition addresses incompatibilities between the individuals and the health system.

The IOM health literacy framework provides the overarching framework for the current study which examines health literacy knowledge and experience of ED nurses within the healthcare system. This study sought to identify the patient teaching methods used by ED nurses to assure understanding of health information regardless of the health literacy level of the individual. While the health literacy

conceptual framework was used to guide this study, the study was not designed to directly test the conceptual framework.

Research Questions

The research study questions are as follows:

1. What do emergency department nurses know about health literacy?

2. What are emergency department nurses' experiences with health literacy?

3. What teaching methods do emergency department nurses use to meet patients' health literacy needs?

4. What are the relationships between and among emergency department nurses' knowledge of and experience with health literacy, and their use of individualized teaching methods when providing patient teaching?

Significance

Limited health literacy has been described as a "silent epidemic" (Kindig, 2004, p. xiii). Zarcadoolas, Pleasant & Greer (2006) described low health literacy as the "silent killer" (p. xv) that lurks behind all chronic disease. Witte (2010) indicated that inadequate health literacy has a "devastating effect" when linking it to higher hospitalization readmission rates and increased mortality (p. 5).

The problems surrounding low health literacy are important to consider because they affect a major portion of the United States (U.S.) population. The Institute of Medicine (IOM) (2004) estimates that low health literacy affects more than 50% of the population; however, the estimate is closer to 90% according to the

National Action Plan to Improve Health Literacy (Department of Health and Human

Services, [DHHS], 2010a).

The focus on safe and efficient health care in the U.S. has brought the

problems related to low health literacy to the forefront. The inability to manage

healthcare appropriately has huge implications on the future health of individuals, and

families and further extends to the entire population. Health literacy issues are

considered so large that they are also being addressed as public health problems

(Ratzan, 2001). The United States Department of Health & Human Services (DHHS)

indicates that only 12% of adults have the proficient health literacy skills needed to

manage their health and prevent disease (DHHS, 2010a). Inadequate health literacy

not only impacts individuals and families, it also places a significant burden on the

entire healthcare system.

Another escalating problem associated with low health literacy is the cost

incurred. Studies show a higher rate of hospitalization and higher healthcare costs in

those with limited health literacy (Baker, Parker, Williams & Clark, 1998; Howard,

Gazmarian, & Parker, 2005). Badarudeen and Sabharwal (2010) discussed the

weighty financial consequences that occur when adults do not understand how and

where to seek health care, complete insurance forms, follow discharge directions, or

take prescribed medications. The economic drain from the results of limited health

literacy is estimated to be in the range of $106 to $238 billion annually (Vernon,

Trujillo, Rosenbaum, and DeBuono, 2007).   Vernon et al. (2007) further state that

the future costs of today's low health literacy estimates are "closer in range to $1.6

trillion to $3.6 trillion" (2007, p. 1). Baker et al. (2002) and Mancuso (2009) identified increased healthcare cost resulting from misuse of emergency services, increased admissions to the hospital, and generally higher utilization of health care services by those with lower health literacy levels. Low health literacy has a financial effect on the entire population through increased insurance costs, and the increased use of tax dollars.

The growing epidemic of chronic diseases has led to a shifting focus towards disease control and prevention. The Center for Disease Control (CDC) noted that approximately half of all adults have at least one chronic illness and 25% have two or more (CDC, 2014). Those with chronic illness are more manageable with early detection (Taggart et al., 2012; California Access, n.d.). Many of the effects of chronic diseases are preventable with proper cooperative management between the health care provider and the patient (World Health Organization [WHO], 2005). Chronic diseases are prevalent in those with low health literacy (Schillinger, 2001; Taggart et al., 2012; von Wagner, Knight, Steptoe & Wardle, 2007). People with low health literacy have been found to have poorer self-management skills (Sarker, Fisher & Schillinger, 2006), medication compliance (Keller, Wright & Pace, 2008), and increased risk of hospitalization (Berkman et al. 2004). Poorer management increases healthcare costs. Myers (2010) pointed to nurses as the linchpin in inter-professional healthcare teams caring for those with chronic diseases and as a critical source of health education for patients.

Nurses are the healthcare providers with the majority of patient contact, spending more time with patients than any other group. Nurses provide informal individual patient teaching as well as formal instruction, yet research indicates that nurses are one of the groups lacking in awareness of health literacy risks, indicators, and vulnerable populations (Brown et al. 2004; Jukkala, Deupree & Graham, 2009; Schwartzberg, Cowett, VanGeest & Wolf, 2007). Since it has been shown that nurses lack experience and knowledge about health literacy, it would follow that they are also lacking in experience and knowledge of the use of best teaching methods for patients with few literacy skills.

The emergency department (ED) is one area of healthcare that is greatly impacted by inadequate health literacy and the changing healthcare system (Baker, Parker, Williams & Clark, 1998). The overutilization of most EDs has taxed the resources of hospitals and healthcare staff (Carret, et al., 2007). Those with low health literacy have been shown to use the ED for treatment more often than those with adequate health literacy and not always for emergent health problems (Schumacher et al., 2013). Time is constrained for patient treatment and education in the high anxiety arena of quick turnover and overcrowded waiting rooms. Meanwhile staff are under pressure to treat patients quickly, work to save lives and then move on to the next patient leaving little time for patient education. Due to the fast-paced nature of the ED, it is important for ED nurses to recognize patients with low health literacy and to adapt patient teaching to the individual (Olives, Patel, Patel, Hottinger & Miner, 2011).

Chapter II

REVIEW OF THE LITERATURE

This chapter begins with a discussion of literacy as an overarching construct to health literacy; followed by a discussion of health literacy. An explanation of the framework of health literacy and the progression of the prominence of health literacy in health care issues follows. This chapter also examines what is known regarding health literacy knowledge and experiences with health literacy and the role nurses play in the advancement of health literacy. An examination of the role of nurses in patient teaching and the best teaching methods used for good patient outcomes is also included. Specific nursing populations were examined within these topics. Since the amount of published evidence is small relating to health literacy and nursing, an analysis was needed to explore health literacy and nursing in specific areas such as the emergency department. This chapter concludes by examining health literacy in the emergency department.

The relevant literature was reviewed by searching electronic databases including PubMed, ProQuest and Cumulative Index to Allied Health Literature (CINAHL). A search of reference lists of prominent articles was done manually for additional relevant studies. Early seminal works are discussed when exploring history, but in order to provide a current analysis of the literature pertaining to the variables, empirical articles within the period of 2006 to 2014 were reviewed. There is a plethora of literature available related to health literacy but this search was

confined to studies related to nursing, health literacy knowledge and experience, health literacy in the emergency department (ED), and patient education.

Literacy

An exploration of the history of health literacy begins with examination of basic literacy. The criterion for being literate in the U. S. has evolved from the ability to write one's own name in the early 19th century to the ability to read a complex text to gain new information and relate it to other text in this century (Resnick & Resnick, 1977). The U.S. census bureau tracked literacy from 1840 – 1930 as a self-described status. The validity is questionable since no literacy test was administered (Kaestle, Damon-Moore, Stedman, Tinsley, & Trollinger, 1991). Literacy has always been difficult to assess as the meaning and criterion has continuously evolved and standards have not always been consistent (Kaestle et al., 1991). Literacy testing did not begin on a large scale until 1918 when it was used to assess Army recruits. It was found that of those recruits entering World War I (WWI), 30% were unable to even take the general intelligence test, Army Alpha, due to lack of literacy (Resnick & Resnick, 1977). Literacy expectations continued to grow during the 20th century, initially focusing on the ability to recognize and pronounce words and moving to developing skills of understanding text and obtaining new information (Resnick & Resnick, 1977). It was inevitable that literacy assessment would continue given the previous findings and the growing need for literacy in society.

Literacy needs, in terms of health, grew during the 20th century as public health campaigns utilized marketing methods to promote information about halting

the spread of disease such as polio and tuberculosis (Zarcadoolas, Pleasant, & Greer, 2006). Movement toward independent thinking and self-determination grew in the mid-1900s as attention to social justice and equal rights became a national focus (Berkman, 2009; Eysenbach & Kohler, 2002; Jordan, Osborne, & Buchbinder, 2011) and marked an era of advocacy for one's own health (Zarcadoolas et al., 2006).

In 1992, the U.S. Department of Education initiated the National Adult Literacy Survey (NALS), which demonstrated that almost half of all Americans were functionally illiterate (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993). Functional literacy involves more than just reading and writing. It encompasses broader skills including prose literacy (reading a short article), document literacy (deciphering charts and forms) and quantitative literacy (math computation). This survey suggested that almost half of U.S. adults could not read or write well enough to functionally perform tasks such as completing a bank deposit slip or refer to brief and uncomplicated text. The 2003 National Assessment of Adult Literacy (NAAL), follow-up of the NALS, expanded the survey to include questions related to health and health related tasks and examined more than 19,000 U.S. adults providing a statistically valid representation of the census (Mayer and Villaire, 2007). Mayer and Villaire (2007) compared results from both surveys and found only 13–15% of the population scored proficiently literate. Ranking of health literacy included *proficient* (skills for complex and challenging literacy activities); *intermediate* (moderately challenging literacy activities); *basic* (simple tasks); and *below basic* (only simple and concrete tasks). Subsequently, the large proportion of the population not

proficiently health literate makes examining the effect of low literacy on health extremely important (Kirsch et al., 1993).

Health Literacy

The phrase "health literacy" was initially coined in 1974 by Simonds in an attempt to bring attention to the need for health education to be included in primary and secondary education (Simonds, 1974; Ratzan, 2001). This early link between education and health demonstrated recognition of an important association between health education and health literacy that needed further attention (Williams, et al., 1995). Simonds (1978) advocated for health education, naming social justice as the reason health policy development was needed to promote knowledge and awareness of self-care activities by consumers.

This period marked the onset of an information-based world where the newly computerized society explored their needs, including health needs, through global communication and internet networking (Berkman, Davis & McCormack, 2010). Historically, patients deferred to physician recommendations regarding health decisions due to their "arduous training and experience" and patient "incapacity" due to illness (Katz, 1994, p. 75). Total trust in the expertise of the physician began to shift when patients attempted to exert some control in their own self-care (Dickerson, Boehmke, Ogle, & Brown, 2005; Redman, 1997). This prompted researchers in public health (Sorensen et al., 2012), as well as other health related disciplines, to become involved in assessing patient understanding of their health status (Hepburn, 2012).

Health literacy is a relatively new concept developed over the past thirty years. Seminal work in health literacy demonstrating gaps between patient education materials and the reading level of patients was reported by Doak, Doak and Root (1985). In the 1990s, public health and medical disciplines explored relationships between illiteracy and health outcomes and strategies to enhance understanding in patients who could not read (Mayeaux et al., 1996; Weiss, Hart, & Pust, 1991; Weiss, Reed & Kligman, 1995; Weiss et al., 1994). These studies sparked increased discussion and research on the topic by other disciplines (Speros, 2005). The subsequent conceptualization of health literacy has evolved into varied definitions stemming from multiple disciplines with emphasis on healthcare navigation and access. The lack of consensus on a definition illustrates the complexity of the concept (Berkman et al., 2010). The Institute of Medicine bases its health literacy conceptual framework on *literacy* but also indicates that the term literacy is complex (IOM, 2004).

Much of the early general studies of health literacy found culture to be important due to its strong influence on issues surrounding health communication (Rudd, 2007). Culture is an important dynamic because it influences how health is perceived as well how disease processes are managed (Ingram, 2011). Culture also shapes communication styles along with how and when one seeks healthcare intervention. Language and health perception differences often lay a foundation for health communication problems (Andrulis & Brach, 2007). These communication

issues prove to be important since ethnic and minority populations are particularly affected by lower health literacy levels (Kirsch et al., 1993; Schloman, 2004).

Individuals from all incomes, ages, races, and educational backgrounds have been found to be affected by low health literacy. Yet the NAAL (Kutner, Greenberg, Jin, Paulsen, & White, 2006) results indicated that those with limited health literacy were more likely to be elderly, less educated, poor or a member of a minority. Ecob and Smith (1999) examined the relationship between income and morbidity in a large adult population ($N = 6,186$). The results demonstrated a linear relationship that showed a proportionate increase in better health to income. Greene and Murdock (2013) studied a diverse population of adult students (aged $18 - 60$). Their findings supported the findings of Ecob & Smith (1999) regarding the gradient effect of socioeconomics on physical health outcomes. The higher the socioeconomic status, the higher the level of health status. While there are more white, native-born Americans with low health literacy in total number, ethnic minorities represent a disproportionate percentage of the low health literate overall population (Schwartzberg, VanGeest, & Wang, 2005; Vernon et al., 2007). The vulnerable populations are more likely to have limited health literacy skills and are in need of identification through assessment.

Health Literacy Measurement Instruments

Assessment tools to measure literacy in the context of health were developed to assist health professionals to determine the level of understanding that patients had about their health information. One of the initial assessment tools, the Rapid

Estimate of Adult Literacy in Medicine ([REALM] Davis et al., 1993), assesses

recognition and pronunciation of common health-related and medical words such as

flu, infection, and medication. The 66-item instrument estimates grade range by the

number of correct responses, and takes approximately seven to fifteen minutes to

administer. The shortened version takes approximately two minutes. Criterion

validity was established based on correlations with three widely used, standardized

reading tests: Peabody Individual Achievement Test-Revised ([PIAT-R] Markwardt,

1989), Wide Range Achievement Test-Revised ([WRAT-R] Jastek & Wilkinson,

1987), and Slosson Oral Reading Test-Revised ([SORT-R] Slosson, 1990). The

REALM correlated highly with the three other standardized reading tests (correlation

coefficients = 0.97, 0.96, 0.88, $p<$ .0001) (Davis et al., 1993). The REALM can be

administered quickly, but it does not measure numeracy which is an important part of

health literacy.

      The Test of Functional Health Literacy in Adults (TOFHLA) (Parker, Baker,

Williams, & Nurss, 1995) is often used to assess health literacy. It consists of 50

reading comprehension items and 17 numerical ability items and takes approximately

23 minute to administer. It established high correlation validity with the REALM ($r =$

0.84) and the WRAT ($r = 0.74$) reading test and high reliability (Cronbach's $a = 0.98$)

(Parker et al., 1995).

      These initial health literacy assessment tools were useful although

cumbersome to administer, and neither the REALM nor the TOFHLA address the

complexity of the current system. One of the newest assessment tools, Newest Vital

Sign (NVS) was developed by Weiss et al., (2005). Unlike the TOFHLA and REALM, the NVS addresses literacy and numeracy, with the capability of being administered in less than three minutes. It consists of six questions based upon a nutrition label. The internal consistency was reported as good (Cronbach's $\alpha > 0.76$), as was the criterion validity when compared with the TOFHLA ($r = .59$, $p < .001$) (Weiss et al., 2005).

The Fry method is a tool that evaluates patient education materials for appropriate reading level. Although not directly measuring health literacy, the Fry graph readability method provides a basis to determine the level of readability and grade level of written materials to determine grade level and it has been used since 1968. It uses a formula to determine reading level based upon the number of sentences and syllables in a passage and has been validated with materials from schools (Grundner, 1978).

Jordan, Buchbinder & Osborne (2010) point out that while many view health literacy as a societal problem which requires development of programs and initiatives that help the masses, others focus on improvements in individual capacity for understanding and utilizing the healthcare system. The need for solutions to the immense problems associated with health literacy has drawn widespread attention which includes national initiatives. The Department of Health and Human Services ([DHHS] 2010b) has included goals for health literacy improvement in its Healthy People 2010 and 2020 campaigns. The Joint Commission ([TJC] 2012) accrediting agency includes health literacy as a part of the patient-centered communication

standard, and the Robert Wood Johnson Foundation has included health literacy as part of the Quality and Safety Education for Nurses (QSEN) initiative (2005). Not only do these organizations, along with the IOM (Brach et al., 2012), advocate for the inclusion of health literacy awareness into healthcare organizations, but they have added objectives to increase the health literacy skills of healthcare providers, including nurses. The extent of preeminent authoritative agencies that now include health literacy in their goals and competencies is indicative of both the extent of the problem and the prevailing need for focus on this topic.

Health Literacy Framework

To further the knowledge of clear communication in healthcare, the IOM established the Committee on Health Literacy (Committee) to report on health literacy problems and to look for possible solutions to this "silent epidemic" (IOM, 2004, p. xiii). The purpose of the Committee was to examine the existing evidence on health literacy and recommend initiatives that would support health literacy by increasing knowledge and awareness in the community and among health service providers in an attempt to reduce the problems of limited health literacy. The landmark report entitled *Health Literacy: A Prescription to End Confusion* provides a health literacy conceptual framework that describes the extent of the problem, obstacles to overcome, attempted approaches and goals for improvement (IOM, 2004). The Committee adopted the definition of the National Library of Medicine, "The degree to which individuals can obtain, process, and understand the basic health information and services they need to make appropriate health decisions" (Selden et

al., 2000, p. 4) for its work. Although there have been many definitions of health literacy, this definition has become widely accepted. It is used to define health literacy in Healthy People 2020 (DHHS, 2010b) and was used in this study.

The health literacy framework, developed by the Committee on Health Literacy, focuses on the areas of culture, education and the health care system which influence health literacy. It is within the spheres of these three components that potential interventions may affect health literacy and patient outcomes. Many health literacy studies report a relationship between health literacy and patient outcomes (DeWalt, Berkman, Sheridan, Lohr & Pignone, 2004; Serper et al., 2014; Berkman et al., 2004). The Committee indicates that the health system includes all health care providers whatever the arena for providing care. These areas include, hospitals, clinics, and even patient homes (IOM, 2004). Nurses who practice in any of these areas of the health system may affect health status and outcomes in patients. The Committee places equal importance on the communication skills of healthcare providers. They emphasize that the interaction between individuals and the providers within the health contexts influences health literacy. This places a significant responsibility on members of the health system to improve health literacy.

The *Health Literacy: A Prescription to End Confusion* report further illustrates links between health knowledge and health outcomes as well as financial costs (IOM, 2004). Low health literacy is linked to poor chronic disease management, delayed diagnoses, and overuse of the emergency department (Baker et al., 1998; Schillinger et al., 2002; Williams, Baker, Honig, Lee & Nowlan, 1998). The

IOM report also recognizes that the responsibility for health literacy skills does not

rest solely with the individual, but is a shared responsibility between the patient and

the health care provider, a representative of the health system. The report describes

the health system as complex and difficult to navigate (IOM, 2004). Confusing

medical jargon adds to the difficulties of understanding insurance forms, informed

consent documents, and medical instructions. Poor health may make an individual

more vulnerable to these complexities.

The IOM identifies communication and chronic disease management affecting

health outcomes as emerging issues in the health system (IOM, 2004). These issues

include but are not limited to "chronic disease care and self-management, patient-

provider communication, patient safety and health-care quality, access to health care

and preventive services and provider time limitations" (IOM, 2004, p. 171). Health

status is often reflective of patient ability and willingness to manage health activities

that are vital to the treatment of chronic diseases. Chronic disease management is a

continuous, ongoing process that is made more difficult when patients do not

understand or remember directions. Communication skills are influenced by health

literacy through several factors such as language barriers, communication styles,

cultural barriers, variability of symptom reporting, and brevity of time spent with a

provider (IOM, 2004). Patient safety can be compromised by low health literacy

through poor health knowledge and understanding of health conditions, poor

treatment adherence and medication errors. The link between miscommunication and

medication administration has led to many unnecessary errors with clinical

consequences (Flores et al., 2003; Lindquist et al., 2011). Patients with low health literacy are more likely to have poorer health status (Schillinger et al., 2002; Williams et al., 1998; Kalichman & Rompa, 2000). "Socioeconomic, cultural and health literacy factors are associated with higher costs …. and expensive tertiary care where emergency department services become necessary" (IOM, 2004, p. 180).

Health Literacy Knowledge, Experience and Patient Teaching Methods

Although numerous studies have focused on health literacy from the viewpoint of public health, epidemiology, medicine, pharmacy and health promotion, studies from a nursing perspective are fewer in number and breadth (Speros, 2005; Mancuso, 2009). This section discusses studies examining knowledge of health literacy, health literacy experiences, and patient teaching methods within populations of health care providers, nursing students and registered nurses.

Health Literacy Knowledge

Since it is established that nurses have a major role in patient care, patient–provider communication, and patient education (American Association of Colleges of Nursing [AACN], 2008), it is important to look at their knowledge and awareness of problems associated with health literacy. Knowledge of health literacy includes awareness of basic health literacy facts, consequences associated with low health literacy, screening methods, guidelines for written material and evaluation of interventions (Cormier, 2006). Knowledge is frequently stated as the first step towards attitude and change in behavior (Durant, Evans & Thomas, 1992; Ghisi, Abdallah, Grace, Thomas & Oh, 2014).

Health literacy knowledge of health care providers. Jukkala et al., (2009) examined general health care provider basic health literacy knowledge to determine the need for further education on the topic. The Limited Literacy Impact Measures (LLIM) survey was distributed to 230 health care professionals, including 82 nurses, 15 dentists, 31 physicians, 40 healthcare students, prior to a presentation on health literacy at a university medical center. Validity of the LLIM was established by health literacy experts in nursing and medicine. An analysis of scale reliability was not done because the authors did not intend the survey to be a scale (Jukkala et al., 2009). Overall, participants were found to be lacking in knowledge of health literacy, its prevalence and its cost. Only 11.7% of respondents answered correctly to questions about the prevalence of low health literacy and only 19.6% understood the costs associated with low health literacy. Furthermore, results indicated that nurses had the least prior knowledge of health literacy ([*n*=14; 17.1%] Jukkala et al., 2009).

Knowledge and awareness was the focus of a descriptive study by Mackert, Ball and Lopez (2011) using pre and post test surveys to measure the health literacy knowledge of health care providers (N=166), before and after attendance at a health literacy training program (nurses = 20.3% of sample). Prior to training on health literacy, a 12-item, researcher developed, Likert style survey was administered to assess baseline knowledge of health literacy, communication strategies and perceived ability to identify patients with low health literacy. The post-test survey examined the intended use of communication strategies and perceived ability to deal with low health literate patients, which the researchers determined a useful predictor of future

behavior. Paired sample t-tests used to analyze the perceived knowledge of health literacy demonstrated significantly higher mean scores of the understanding of health literacy (t=13.3, $p < .001$) and of the prevalence of health literacy (t=17.4, $p < .001$) after the training program. One notable finding was that health care providers participating in the study acknowledged a previous overestimation of their knowledge of health literacy (M=5.8; SD=1.5). No validity or reliability was reported (Mackert, Ball & Lopez, 2011).

Macabasco-O'Connell and Fry-Bowers (2011) examined knowledge and perception of health literacy among nursing professionals (n=76) in a cross-sectional descriptive mixed methods study. Their web-based survey, Nursing Professional Health Literacy Survey (NPHLS), was randomly distributed to registered nurses and nurse practitioners licensed in California. The self-created survey was based upon surveys by Jukkala et al., (2009) and Schlichting et al., (2007) regarding provider health literacy knowledge and assistance techniques. The NPHLS also qualitatively measured participant knowledge of health literacy by asking them to define health literacy. Although no reliability information was offered, nursing expert review established content validity.

Results indicated that 20% of the nurses surveyed had never heard the term health literacy and 59% had never received any formal training on health literacy. Only 50% of the respondents believed that low health literacy impacted patient understanding of health information and their ability to follow through with treatment. The majority of the respondents (53%) believed that implementing a health

literacy program would be of low importance and too expensive. Some of the stated barriers included not enough time and difficulty in implementing a program. More than 80% of the respondents revealed they had never used a tool such as the NVS or REALM to assess health literacy and preferred to rely on gut feelings. Interestingly, there was some reported understanding of health literacy: 77% of respondents reported utilizing teaching methods appropriate for limited health literacy patients, and 65% had used teach-back. Limitations of the study included a small convenience sample of 76 (Macabasco-O'Connell & Fry-Bowers, 2011).

Studies of health literacy knowledge among healthcare providers, including nurses, found that providers, overall, lack health literacy knowledge. Many nurses noted they had never heard the term "health literacy" nor had received any education on the subject (Macabasco-O'Connell & Fry-Bowers, 2011). Nurses were consistently found to be a group with little knowledge of health literacy in working with low health literate populations, assessment tools, or communication strategies (Jukkala, 2009; Mackert, Ball & Lopez, 2011). Healthcare providers acknowledged previous overestimation of their own health literacy knowledge (Mackert, Ball & Lopez, 2011).

Health literacy knowledge of nursing students. McLeary-Jones (2012) examined the effect of a health literacy presentation on health literacy knowledge of students in a Bachelor of Science in Nursing (BSN) program through five-item pre and post tests. The intervention included an online powerpoint presentation with embedded video that defined health literacy, identified tools to assess health literacy

such as the NVS, REALM and TOFHLA, and discussed the relationship to patient outcomes and strategies for teaching low health literate patients. A test blueprint was used to ensure test items matched the objectives of the content establishing content validity. A low alpha was reported ($a = .178$). The pretest score (M=60.9) indicated that the respondents had relatively little knowledge of health literacy prior to the intervention. A dependent t test demonstrated a significant improvement from the pretest mean score (60.9) compared to the post test mean of 92.8 ($t(10.15) = 52$, $p < .001$).

Sand-Jecklin, Murray, Summers and Watson (2010) examined the understanding of health literacy in 103 BSN nursing students before and after attending a brief education session. Education included information such as the prevalence of low health literacy, costs incurred, increased rates of hospital and ED admissions, how to screen patients and strategies to improve patient understanding. The session reviewed patient screening questions to identify patients with low health literacy and strategies for interventions such as using simple terms, and teach-back method to ensure patient understanding. A case study was included in the education session to enhance application of the material. Along with the information session pre and post testing, the study examined student assessment of the health literacy status of their patient during clinical interactions and the identified interventions the student used based upon the health literacy assessment.

The results of the exploratory study indicated a significant increase in health literacy knowledge. Mean scores on the 10 item survey increased from 6.5 to 8.4 ($p =$

.000). Limitations included using a convenience sample of patient data and

retrospective data analysis without a control group. Generalizibility was limited due

to the relatively small sample size of nursing student participants (*N*=103).

Cormier and Kotrlik (2009) reported on the health literacy knowledge of

senior baccalaureate nursing students (*n*=360) from eight Louisiana State

Universities. The research utilized Part I of the Cormier self-created Health Literacy

Knowledge and Experience Survey (HLKES) to measure health literacy knowledge.

The 29-item multiple choice questionnaire scores ranged from 3 to 26 with a median

score of 17.76 (SD - 3.93). Interquartile analysis revealed that 25% of participants

scored under 15 and only 25% scored over 25. The majority of participants responded

correctly to items concerning consequences of low health literacy and evaluation of

health literacy; however, half of the participants answered just three of six basic

health literacy knowledge and health literacy screening questions correctly.

Torres and Nichols (2014) assessed the health literacy knowledge of associate

degree nursing students (*n*= 391) in a cross-sectional study using the Health Literacy

Knowledge and Experience Survey Part 1. The internal consistency reliability of the

study was good (Cronbach's alpha = .82). Participant scores ranged from 5 to 24 of

29 with a mean score of 15.52 (SD – 3.709).

The findings by Torres and Nichols (2014) again demonstrated that there were

inconsistencies in participant knowledge among the five content areas. Participants

were most knowledgeable in the areas of consequences of low health literacy (68%)

and the evaluation of health literacy interventions (73.4%). They were least

knowledgeable in the basic facts of health literacy (41%). Only 30% of respondents answered three of six questions in the basic facts of health literacy content area correctly. Eighty-six percent of nursing students responded correctly that patients with low health literacy are often diagnosed late and have less treatment options, yet only 14% knew that literacy was the best predictor of health status, more so than gender, socioeconomic status or education level.

Researchers indicated the importance of health literacy knowledge in nursing by examining student nurse knowledge of health literacy. McLeary-Jones (2012) and Sand-Jecklin et al. (2010) found students were mostly uninformed about health literacy until education sessions on health literacy were provided. Cormier (2006) and Torres and Nichols (2014) also found health literacy knowledge gaps in nursing students.

Health literacy knowledge of registered nurses. Nurses are commonly known as the defacto health educators (Fetter, 1999) and have held that role for a very long time (Kruger, 1991). They are on the front line of patient care; therefore, it is important to look at their knowledge of health literacy.

Knight (2011) studied experienced registered nurses (*n*=141) in Georgia to find the extent of their health literacy knowledge using the HLKES, Part I. A random sampling of the Georgia State Registered Nurse Registry resulted in a 9.4% response rate. Good reliability was reported ($\alpha = .81$).

Results demonstrated that 80% of the nurses understood that health literacy levels are associated with ethnicity and socioeconomic levels, while 63.2%

demonstrated no knowledge of the low health literacy levels that are prevalent in the elderly. A notable finding was that only 28.4% of nurses surveyed knew that the best indicator of health status was the literacy skill level of the person and only 19% of participants displayed knowledge of the commonly used health literacy screening tool, TOFHLA. Less than half of the participants knew that the Fry Method was used to assess the readability and the difficulty level of written literature. Almost half (49.6%) did not know the recommended reading level for written health care material and only 43% knew about guidelines for developing written health care. Likewise, only 45% of the respondents knew the best way to ensure that written healthcare material is culturally appropriate. According to Knight (2011), a majority of participants answered three out of six basic knowledge facts correctly and the other three questions incorrectly. This indicates that a large number of the participants had little basic knowledge of health literacy. Specific gaps included areas surrounding health literacy screening and written patient education materials. Overall, Knight found inconsistencies and gaps in the health literacy knowledge of registered nurses in Georgia (Knight, 2011).

Cafiero (2013) used the HLKES and the Health Literacy Strategies Behavioral Intention Questionnaire in a descriptive correlational study of nurse practitioners (NP) (*n*=456) currently practicing in an outpatient setting. The NPs were voluntarily recruited at an annual education conference where they were interviewed for inclusion criteria and then asked to complete the surveys. The results of Part I of the Health Literacy Knowledge and Experience Survey which includes only health

literacy knowledge are included in this section. Unacceptable reliability was reported for Part I (α = .57).

As part of the overall healthcare delivery system, nurse practitioners have frequent encounters with patients where clear communication and appropriate teaching techniques are vital, yet only 12% knew the most prevalent age group with low health literacy. A large percentage (84%) of the participants correctly recognized the ethnic group most likely to have low health literacy (Cafiero, 2012). Participants overwhelmingly responded that they knew how best to approach someone to initiate health literacy screening (95%) but were unable to identify two of the common screening tools (39.5% and 19.6%). The scores on the 29 item Part I of the Health Literacy Knowledge and Experience Survey ranged from a low of 6 to a high of 28. The overall median score for knowledge of health literacy was 19.94 out of 29 (*SD* = 3.50) or an average of 68% correct responses (Cafiero, 2013).

The results of studies by Jukkala et al., (2009), Mackert et al., (2011), Macabasco-O'Connell and Fry-Bowers (2011), McCleary-Jones (2012), Sand-Jecklin et al., (2010), Cormier (2006), Torres and Nichols (2014), Knight (2011), and Cafiero (2013) support the idea that there are gaps in nurse and nursing student knowledge and understanding of the basic concepts of health literacy. The studies demonstrate that there is a considerable lack of health literacy knowledge in nursing.

Experiences with Health Literacy

It is important to examine the health literacy experiences of healthcare providers currently practicing within the healthcare system in order to identify

existing gaps. Although there were no studies found examining general healthcare

providers, there were studies found examining nurses and nursing student experiences

with health literacy. The IOM (2004) viewed the healthcare system as an integral part

of the health literacy framework. They acknowledge that the healthcare system has

become very complex and many find it difficult to navigate. Nurses have many

opportunities to utilize their health literacy skills to assist with the navigation because

they spend so much time with patients. Skills may include screening a patient for

health literacy level, assessing written material for reading level prior to handing to

patient, or using the types of patient education media that best suit patient needs. In

this study utilization and frequency of utilization of the health literacy skills

constitutes health literacy experience.

Health literacy experiences of student nurses. The 2010 study by Scheckel,

Emery & Nosek describing the health literacy experiences of student nurses was the

only qualitative study found. The study used the Benner hermeneutic interpretive

phenomenological approach to understand the meanings of these health literacy

experiences. Eight students were recruited using purposive sampling after the

investigator had them as students in at least one nursing class. The sample consisted

of Caucasian females aged 21 – 28 years old. Through personal interviews, students

were asked to relate a story that reflected what it meant to learn and provide

patient education. After reading the data multiple times to gain a comprehensive

understanding, the investigator interpreted the findings and then asked eight different

students who were also known to her, to assist in the interpretation. As these students

discussed their interpretation of the interviews, the main theme of "striving to ensure patients' understanding of healthcare information to facilitate tertiary prevention" (p. 797) emerged. Subthemes helped exemplify meanings including; respecting languages, helping patients understand, and promoting engagement. Scheckel, Emery, and Nosek (2010) considered these selected eight student nurses to be competent in addressing health literacy. These findings are different than those found in the quantitative literature.

Cormier (2006) measured the health literacy experiences of 361 Louisiana State senior baccalaureate nursing students with the nine item HLKES, Part II, developed by the researcher regarding health literacy skills such as use of screening tools and written material. This Likert style questionnaire measures the frequency of use of health literacy skills. Good reliability was reported ($\alpha = 0.82$). The content validity index of the instrument was calculated at 98% agreement among experts (Cormier and Kotrlik, 2009). The answers were scored using values of 1 to 1.49 = never, 1.50 to 2.49 = sometimes, 2.50 to 3.49 = frequently, and 3.50 to 4= always. Mean scores ranged from 1.51 to 2.83 with an overall mean of 2.04 ($SD = 0.53$) indicating that participants engaged in health literacy experiences "sometimes". The most frequent health literacy experience engaged in by the students was the use of written materials (mean = 2.83); however, they only evaluated the reading level of the written material "sometimes" (mean = 1.96).

Torres and Nichols (2014) studied the health literacy experiences of associate degree nursing students (n=391) using the HLKES Part II. The cross-sectional study

included students in all four clinical semesters of their nursing education. The students participated in both parts of the Knowledge and Experience Survey, however, little statistical data was given regarding the health literacy experiences. Participants demonstrated some health literacy experience in some content areas but there were gaps in other areas. Gap areas included use of screening tools, evaluation of cultural appropriateness and reading level of healthcare materials, and use of multimedia (audiotapes, videotapes and computer software) to provide patient education.

Cormier (2006) and Torres and Nichols (2014) found nursing students had some experience with health literacy although both found knowledge gaps existed. While both studies found similar gaps in the use of screening tools and evaluation of healthcare materials provided to patients, both indicated strong experience in providing patient literature. Scheckel et al. (2010), qualitatively described students who were actively engaged in patient teaching. This study offered an indepth view of how student nurses demonstrated HL skills and experience, but was not designed to quantify levels of experience across a range of nursing students.

Health literacy experiences of registered nurses. Knight (2011) used the Health Literacy Knowledge and Experience Survey, Part II to study the health literacy activities of registered nurses (*n*= 141) licensed in Georgia. Internal consistency measured by Cronbach's alpha was .81. Factor analysis found that 53% of total variance was found with one factor, experience.

Knight (2011) reported gaps in nurse use of health literacy screening tools. Approximately half of the participants indicated they had never used a screening tool, while 33% stated they only used screening tools sometimes. While 31.2% stated they had never evaluated written material, 42.6% stated they evaluated written material sometimes. Although the correlation was not given, Knight reported an unexpected, significant inverse relationship between health literacy knowledge and experience (p = 0.01).

Cafiero (2013) explored the health literacy experience of nurse practitioners (NP) (n=456) in a correlational study using the Health Literacy Knowledge and Experience Survey, Part II. Participants were licensed NPs currently working in an outpatient setting who attended an educational conference. Unacceptable reliability was reported (α=.69). Further testing was explored using three models of fit tests with a confirmed fit of the data to the two-factor structure. Results showed that 76% of sampled NPs reported using written patient education materials "frequently" or "always" and 42 % stated they ensured that the materials were culturally appropriate "frequently" or "always". Despite the common use of written materials, 68% responded that they "never" or only "sometimes" looked at appropriateness of the reading level of the written material for the patient. Cafiero (2012) found a statistically significant correlation between intention to use health literacy strategies and health literacy experience (r = .212, p = .01).

In summary, research studies examined health literacy experiences by observing the frequency of use of health literacy skills. Although a qualitative study

by Scheckel et al., (2010) revealed that a small number of student nurses were competent and active in health literacy experiences, quantitative studies by Cormier (2006) and Torres and Nichols (2014) found that nursing students were not consistently engaged in health literacy experiences. The discrepancies in findings may be a result of the purposive sampling of the qualitative study. Knight (2011) and Cafiero (2013) found inconsistencies in registered nurses and nurse practitioners health literacy experiences. These may be attributable to a lack of health literacy education, the amount of time passed since nursing school or perhaps the time constraints of providing patient education. There were no studies found that examined general healthcare providers experience with health literacy.

Patient Teaching Methods

Research indicates that better communication between patient and provider significantly improves patient understanding of the education provided (Anderson & Klemm, 2007; Samuels-Kalow, Stack & Porter, 2012). Brooks (1998) outlined several teaching methods, especially helpful in the ED that can be adapted to accommodate patients who have a difficult time grasping the message being conveyed by the nurse including avoiding medical jargon and using common words and simple language. Bastable (2003) advocates using pictures and examples in patient education. Using the teach-back method helps the provider see if the patient has understood the important points of instruction by repeating back those points he can remember and understand (Tamura-Lis, 2013). The Joint Commission (2007) adds that providers should limit important points to two or three during each

education encounter, use drawings or models to illustrate, and encourage patients to ask questions. A universal precaution approach should be taken in providing instruction since it is not known initially how much the patient understands. All patients should initially be approached as if they have limited health literacy (The Joint Commission, 2007). This challenge becomes even greater when the environment for learning and comprehending information is a frequently chaotic one such as the emergency department (Zavala & Shaffer, 2011).

Patient teaching methods of health care providers. Mackert, Ball and Lopez (2011) examined communication techniques and health literacy knowledge in a sample of 166 healthcare workers: nurses (14.0%), nurse practitioners (6.3%), social workers (14.7%), health educators (7.7%), office staff (21%), and administrators (30.1%). Healthcare workers participated in a 90-minute health literacy training session. A pre-and post-test was used to assess perceived health literacy knowledge and communication strategies such as teach-back technique, plain language, limiting the amount of information provided in a session, and providing handouts with low health literate patients. The communication strategies component of the survey was comprised of six Likert style items asking the frequency of use ranging from 1 (Never) to 7 (Frequently) on the pre survey to 1 (Very unlikely) to 7 (Very likely) on the post survey. Pre-test results indicated the most common choice of communication strategies was using plain language and the least was using pictures. Participants indicated they intended to use all of the communication strategies at a similarly high level in the post-test survey. A limitation of the study

was that it assessed participant intention to use communication strategies not actual

behavior. Validity and reliability were not reported (Mackert et al., 2011).

Groundbreaking research by the American Medical Association (AMA)

explored the communication techniques used in patient education with a population

of physicians (n=99), pharmacists (n=87) and nurses (n=121) (Schwartzberg et al.,

2007). Based upon findings that low health literacy has a strong correlation to poor

health outcomes, the AMA examined interventions used by healthcare professionals

to empower patients. The 14 item Likert style survey, entitled *Communication*

Techniques, was developed and administered to healthcare professionals attending

health literacy conferences in 12 states asking respondents to assess the use and

effectiveness of techniques they had used in the past week to improve communication

with patients. Validity and reliability were not reported. The most frequently

utilized methods were using simple language (94.7%) and handing out printed

materials (70.3%). The least utilized techniques were drawing pictures (15.1%),

using models (10.4%), and following up with telephone calls to check understanding

(12.4%). Nurses used the teach-back method ($X^2 = 23.43$, $p < .000$) and asked

patients about their plans for follow-up at home ($X^2 = 20.78$, $p < .000$) more

frequently than the other healthcare professionals. Nurses also wrote out instructions

($X^2 = 40.79$, $p < .000$), handed out written materials ($X^2 = 12.96$, $p < .002$) and

followed up with telephone calls (X^2=14.03, $p <$.001) more often than any other

professionals (Schwartzberg et al., 2007).

The healthcare professionals in the Mackert et al. (2011) study indicated an increase in intention to use all teaching methods after receiving an education session, while Schwartzberg et al. (2007) indicated simple language and giving printed materials were the most used teaching methods. Nurses in the AMA survey used the teach-back method and asking patients about follow-up more frequently than other healthcare professionals (Schwartzberg et al., 2007).

Patient teaching methods of registered nurses. Payne (2009) studied the teaching techniques of registered nurses (n=257), their frequency of use of the techniques and their perceived effectiveness by adapting the *Communication Techniques* tool that was originally designed by the AMA for general healthcare providers into a tool for nurses. The survey was mailed to a randomly generated list of 1000 registered nurses working in the state of Texas and 259 were completed and returned. The 14 item Likert scale responses ranged from never to always. Results overwhelmingly demonstrated that the most frequently used techniques in the previous week were the use of simple language (97.3%, M=4.63, SD = 0.55) and assessing what the patient already knows (88.4%, M=4.28, SD=.68). The most infrequently used teaching techniques included using visual aids such as pictures or videos (28.8%, M=2.93, SD 1.14) and referring the patient to an education class (33.2%, M=3.01, SD 1.22). Only 57.7% used the teach-back method (M=3.61, SD=1.02). A qualitative component of the survey asking for comments that were not included as items in the survey revealed four themes. The first theme that emerged was the importance of using repetition in patient teaching. Nurses also responded that

listening was a very important aspect because it was needed to assess what the patient understood, and that being tactful was important because patients can be offended if not approached tactfully and carefully in teaching and assessment. The survey reported frequency of individual items but no reliability and validity evaluation were determined. Limitations included self-reporting of frequency of use of teaching techniques. Data was consistent with the AMA findings of teaching techniques used by nurses.

Cafiero (2012) measured the intention to use health literacy teaching strategies with the researcher-developed 14-item Health Literacy Strategies Behavioral Intention (HLSBI) questionnaire. She found that nurse practitioners (n=452) recruited at a national convention had high intention to use strategies such as plain language and teach-back method (M = 5.12 out of 1 to 7 Likert scale). Although the survey showed an overall internal consistency (α = .76), two of the subscales were individually less consistent (behavior control scale α = .53 and subjective norms scale α = .37). The survey outlined effective strategies and asked the respondents for their level of agreement with a statement claiming these methods improved patient outcomes and helped patients stay healthy. It also asked for the level of likelihood that these health literacy strategies would be used by the nurse practitioners and if they expected to have time to use them. The overall mean score was 5.44 out of 7 on the 7 point Likert scale. The survey was divided into four subscales based upon the Theory of Planned Behavior which included M = 6.27 on the Attitude subscale, M = 4.62 on the Subjective Normative Beliefs subscale, M = 5.48 on the Perceived

Behavioral Control Subscale, and *M* = 5.12 on the Intention subscale. A favorable

attitude and strong intention to use health literacy teaching strategies was found in

this investigation, although knowledge of health literacy, health literacy teaching

strategies and health literacy experience was low (Cafiero, 2012).

In summary, research studies have examined teaching methods used by health

care professionals as well as nurses. Mackert et al. (2011) revealed that years of

practice gave health care professionals confidence that their patient teaching methods

were effective, although additional training in health literacy strategies improved their

intention to use these strategies. Schwartzberg et al. (2007) found mixed results in

strategies to provide patient education. Even though approximately two thirds of the

respondents routinely practiced some of the strategies, they may not have used them

effectively. Schwartzberg et al. (2007), Payne (2009) and Cafiero (2012) found that

nurses and nurse practitioners often used the teaching techniques of simple language

and assessment of what the patient already knows. Nurses intended to use health

literacy teaching strategies, but whether this was done was often determined by the

time allotted.

Health Literacy and Emergency Departments

Health literacy has a great impact on patient outcomes in the emergency

departments, which are directly linked to health care costs. This section discusses the

increased use of the ED, the impact of health literacy on the readability and

understanding of discharge instructions, and the resulting outcomes in patients with

low health literacy. It also talks about the relationship between low health literacy,

low patient understanding, recidivism and higher health care costs.   Research studies of many different populations are examined along with reports from early groundbreaking studies that influenced more current research. The emergency department is an important healthcare area to examine since ED services are utilized more frequently by patients with marginal and inadequate health literacy (Baker et al., 2004). This exploration can benefit nursing care and patient outcomes in an area where health literacy has a profound effect on patients and the healthcare system.

A systematic review of literature by Herndon, Chaney and Carden (2011) examined research regarding what is known about the health literacy of ED patients. They found approximately 40% of ED patients had limited health literacy. Their review of 413 studies, of which 31 were used for analysis, also found that ED discharge instructions were commonly written at a ninth-to-eleventh grade reading level while the reading level of 40% of ED patients was below the ninth grade. These findings demonstrate a risk of poor patient understanding of discharge instructions in the ED and may explain poor ability to adhere to care instructions which may lead to return ED visits (Herndon et al., 2011).

The emergency department is a major point of entry for many to receive health care, and health literacy skills may affect a decision to seek care at an ED. A groundbreaking study (N = 2,659) by Williams et al. (1995) using the TOFHLA literacy instrument, found that 48% of patients presenting to an ED in Atlanta, Georgia and 40% of patients presenting to an ED in Torrance, California had inadequate or marginal health literacy. The participants were also asked what

healthcare information was understood by them and what was confusing. Results

indicated that a high percentages of patients in the ED were unable to read adequately

or understand basic medical instructions. Over 40% were unable to follow directions

for taking medication on an empty stomach, 26% were unable to understand

information regarding when a next appointment was scheduled, and 60% did not

understand a standard informed consent document. This seminal research assessing

the capability of patients to perform basic tasks related to their health demonstrated

the widespread effect of low health literacy (Williams et al., 1995).

Baker, Parker, Williams, Clark and Nurss (1997) examined the relationship of

patient reading ability to self-reported health in two urban EDs through previously

acquired data. The Los Angeles hospital English speaking participants (odds ratio =

2.23; 95% CI = 1.44, 3.45), and the Los Angeles hospital Spanish speaking

participants (odds ratio = 1.89; 95% CI = 1.33, 2.66), with inadequate health literacy

were more likely to report poor health. Similarly, the patients with inadequate health

literacy in the Atlanta hospital were also more likely to report poor health (odds ratio

= 2.55; 95% CI = 1.77, 3.69).

Using secondary analysis of previously acquired data, Baker et al. (1998),

examined 958 ED patients who had previously been administered the TOFHLA

health literacy assessment. After adjusting for age, gender, race, socioeconomic level

and self-reported health, Baker et al., reported that those patients with limited health

literacy were more likely to have been admitted to the hospital in the previous twelve

months than those with adequate health literacy (31.5% vs. 14.9%, $p < .001$).

Electronic medical records in the hospital information system were then examined for hospitalization and diagnosis over the previous year. Many chronic disease patients were found to have been treated in the ED for exacerbations of their ongoing illness. In the opinion of Baker et al. (1998), this is likely a result of difficulty understanding basic elements of their care plan and difficulty following medication directions resulting in poor self-management of their disease.

Schumacher et al., (2013) reported the decision to be evaluated and/or treated at the ED for a health condition that one believes to need immediate attention is influenced by one's health literacy skills. The cross sectional, observational study (N=492) using the REALM assessment instrument, a structured interview, and the electronic medical record to obtain data was done in a diversely populated ED of a medical center that served 75,000 patients annually. The reasons patients with limited health literacy reported that the ED was the right place to go for treatment included: medical records were at the ED (47%); worried (90%); liked the ED environment (38%); financial reasons (26%); always get healthcare in the ED (60%); and no need for an appointment (46%). The authors found that those with limited health literacy were more likely to report more than one ED visit in the past six months (odds ratio 1.6, 95% CI, 1.0-2.4), and more potentially preventable hospital admissions (odds ratio 1.7, 95% CI, 1.0-2.7). Those with limited health literacy (60%) were significantly more likely than patients with adequate health literacy (40%) to state they always receive their health care in the ED ($p < 0.001$).

Morrison, Schapira, Gorelick, Hoffmann, and Brousseau (2014) examined the relationship between caregiver low health literacy and child (age < 13 years) ED visits at a Midwest children's hospital. Their cross-sectional study (*n*=495) used the NVS to measure health literacy levels and the Children With Special Health Care Needs (CSHCN) questionnaire to determine chronic illness status. The CSHCN instrument was originally pilot tested but no alpha was reported (Bethell et al., 2002). Morrison et al. (2014) examined multiple health system data bases to extract the number and urgency of previous ED visits within the last year and found that 55.7% (95% CI 51.2, 59.9) of the participants had low health literacy and had more ED visits (adjusted incidence rate ratio 1.5, 95% CI 1.2, 1.8) as well as increased odds of a non-urgent index ED visit (adjusted odds ratio 2.4, 95% CI 1.3, 4.4).

Mitchell, Sadikova, Jack and Paasche-Orlow (2012) examined the association between health literacy and 30-day reutilization rates (readmission or return to the ED within 30 days) in a sample of 703 adults at the largest safety net hospital in New England. The authors, using the REALM instrument, found that 20% of the 703 participants had low health literacy, 29% had marginal health literacy and 51% had adequate health literacy. The hospital reutilization rate ratio for subjects with low health literacy compared to subjects with adequate health literacy was 1.76 (95% CI 1.21, 2.55). The study found that patients with low health literacy were 1.67 times more likely to be readmitted to the hospital ($p < .06$) and 1.71 times more likely to be readmitted to the ED within 30 days ($p < .05$). This study's findings are extremely relevant since, beginning in 2012, the Centers for Medicare and Medicaid Services

has decreased payments to hospitals with high rates of rehospitalization within 30 days of discharge (Center for Medicare and Medicaid Services, 2012).

Pitts, Carrier, Rich and Kellermann (2010) used data from the annual National Ambulatory Medical Care Survey (NAMCS), the National Hospital Ambulatory Medical Care Survey (NHAMCS) and the NHAMCS emergency department subsample to examine how health literacy affects patient ability to understand health information and obtain appropriate healthcare. Patients with low health literacy are frequently unable to distinguish between urgent and non-urgent conditions. Pitts et al., (2010) found that 28% of all new onset health problems were treated in the ED although many were not emergent. Of the estimated 97.9 million patients treated in EDs in 2004, 17.3 million were treated for non-urgent problems such as headaches, stomachaches and upper respiratory complaints.

In summary, research studies indicate health literacy has a profound impact on the ED, patient outcomes, recidivism and health care costs. When health literacy is not properly addressed in the ED it perpetuates a vicious cycle. Approximately 40% of patients visiting an ED had limited health literacy (Herndon, Chaney & Carden, 2011). ED patients with limited health literacy reported poorer health than those with adequate health literacy (Baker et al., 1997), were more likely to use the ED to receive their healthcare whether emergent or not (Schumacher et al., 2013), were more likely to use the ED as their point of entry for healthcare (Williams et al., 1995), and were more likely to be unable to follow medication and follow-up directions (Williams et al., 1995). Readmission to the hospital within 30 days was increased in

low health literate patients (Mitchell et al., 2012). This drastically affects the

financial health of hospitals since the Centers for Medicare and Medicaid Services

has cut reimbursement for patients readmitted within 30 days for specific conditions.

Summary

Evidence supports that there is an overwhelming number of people in this

country with inadequate health literacy skills (Kirsch et al., 1993; Schwartzberg et al.,

2005). This has an adverse effect on the health of the nation. Since there is no

systematic approach to treating patients who may have limited health literacy, it is

important to focus on how healthcare providers can adapt patient education to

improve health literacy and outcomes. Research (Baker et al., 1998; Berkman et al.,

2004; Mitchell et al., 2012; Morrison et al., 2014; Schumacher et al., 2013; Williams

et al., 1995) shows that those with limited health literacy utilize the emergency

department more frequently, have increased hospitalizations, use less screening and

preventative health services, have poorer chronic disease management and have poor,

often tragic, health outcomes. Low health literate patients have a difficult time

understanding health information especially during times of illness and injury such as

visits to the ED (Ginde, Weiner, Pallin, & Camargo, 2008).

Nursing is a segment of the healthcare system that can have a strong impact

on health literacy because nurses are involved with the provision of healthcare

information. The literature demonstrates the need for healthcare providers, and

especially nurses, to be competent in health literacy assessment and adaptation of

patient teaching techniques. Although recent studies point to a need for nurses to

become involved in health literacy initiatives such as patient screening and modified

patient teaching (Mackert et al., 2011; Schwartzberg et al., 2007; Payne, 2009;

Cafiero, 2012), nursing has been slow to take action (Torres & Nichols, 2014; Knight,

2011). Empirical evidence is lacking when it comes to preparedness of nurses to

manage the health literacy of patients today. The gap in research involving

emergency room nursing and health literacy is evident and serves as the basis for this

study.

Chapter III

Methods

The purpose of this study was to explore the relationships between and among emergency department (ED) nurses' knowledge of and experience with health literacy and their use of teaching methods specific to health literacy when providing patient teaching. This chapter discusses the design of the study, research procedures and methods including subject and setting, recruitment, instrumentation, data collection procedures, data analysis, and protection of human subjects for the investigation. In addition, each of the data collection instruments is described in detail including the known reliability and validity of the instruments.

Design of the study

This descriptive, exploratory, correlational study investigates the relationships between and among the variables of health literacy knowledge, health literacy experience, and patient teaching methods used by ED nurses as well as selected demographic information. No studies were found examining relationships among patient teaching related to health literacy and the health literacy knowledge and experience of ED nurses. This design was chosen to examine the possible relationships between and among the variables.

Research procedures and methods

Population and subjects. The population for this study was registered nurses employed in emergency departments who participate in patient teaching. The coalition of Nurses for a Healthier Tomorrow (n.d.) reports that there are

approximately 90,000 emergency department nurses in the United States and

approximately 40,000 are members of the Emergency Nurse Association (ENA)

(ENA, 2016). A convenience sample of ED RNs was solicited through the ENA.

Participation was unrestricted as to gender, age or ethnicity but inclusion required

registered nurses to be currently working in an area of emergency nursing and

providing patient education. Excluded from participation were ED nurses who do not

provide patient education.

Sample size and statistical power. A power analysis using the G*Power

statistical software program was calculated to determine the number of participants

needed to test the research question. The question includes three variables: health

literacy knowledge, health literacy experience and the use of patient teaching

methods. The number of participants was determined based upon an alpha set at 0.05,

a power of .80, and a medium effect size ($f^2 = 0.15$). The size needed to meet these

criteria was determined to be 131 participants (Faul, Erdfelder, Buchner, & Lang,

2009).

Setting. All data collection was accomplished utilizing the Academic Survey

System Evaluation Tool (ASSET$_{TM}$). ASSET$_{TM}$ is an online survey tool that collects

data that can be imported into the Statistical Package for Social Sciences (SPSS) for

analysis. Surveys were completed by participants in whatever setting they chose that

had a computer and internet access. This afforded the participant the choice of time

and location.

Recruitment. A convenience sample of emergency nurses was recruited through the ENA organization after receiving permission from the Institutional Review Board (IRB) at Seton Hall University (SHU). Approval was from the ENA through the Institute for Emergency Nursing Research (IENR), which approves research for the ENA. This was obtained prior to posting the letter of solicitation and surveys to their website as per ENA requirement. Also, per ENA requirement, the researcher acknowledged that the ENA neither sponsors nor endorses any particular study. The Letter of Solicitation was posted on the External Research Opportunities tab on the ENA website. The posted Letter of Solicitation (Appendix A) provided a link to the survey via ASSET$_{TM.}$ The letter of solicitation described the purpose of the voluntary study as well as the means to provide participant anonymity, the procedures to follow and the estimated time it would take to complete the survey. It also explained that confidentiality would be maintained at all times and that the participant was free to choose to stop the survey at any time prior to completion. Participants were asked to complete the survey along with demographic questions used to identify items such as age, gender, years of nursing experience, years of ED experience, and level of education.

Instrumentation and Measurement Methods

There were three main variables in this study: ED nurses knowledge of health literacy, ED nurses experience with health literacy and ED nurses patient teaching methods. Health literacy knowledge was operationally defined as the score on The Health Literacy Knowledge and Experience Survey (HLKES) Part I, (Part 1: Health

Literacy Knowledge) (Appendix B). Health literacy experience was operationally

defined as the score on the HLKES, Part II (Part 2: Health Literacy Experience)

(Appendix C). The instrument HLKES was chosen because of the overall

appropriateness for measuring the study variables of health literacy knowledge and

health literacy experience. Patient teaching methods was operationally defined by

participant response regarding the types of teaching methods he or she most

frequently employed. The question included eight response choices and an option to

fill in the blank (Appendix D). Demographic questions were also included in

Appendix D.

Health literacy knowledge and experience survey. Cormier (2006)

developed the Health Literacy Knowledge and Experience Survey (HLKES) Part I

and II after finding no studies to investigate health literacy knowledge or health

literacy experience in nursing students. The HLKES Part I focuses on knowledge of

health literacy through a multiple choice survey. The HLKES Part II focuses on

experiences with low health literate patients through a Likert style frequency survey.

This section discusses the development of the instrument, results of other research

using the instrument along with the reported reliability and validity data that is

generated from each use.

Cormier (2006) utilized the 29-item Health Literacy Knowledge and Health

Literacy Experience tools to investigate how nursing students were being prepared to

provide health literacy assessment and interventions. Five experts in health literacy

examined the content of the Health Literacy Knowledge and Experience Survey for

validity. These experts included a physician nationally recognized as a leader in health literacy research who served on the Interagency Task Force on Health Literacy in Louisiana, a professor in the Department of Internal Medicine and School of Public Health at a state university, and three doctorally prepared registered nurses with expertise in public health, nursing education and immigrant health issues. The content validity index (CVI) was calculated from the experts' ratings of each item of the instrument and then again for the instrument as a whole in terms of relevancy and appropriateness to the construct (Cormier, 2006). The 30 multiple-choice items that include guidelines for presenting written information, basic health literacy facts, screening, consequences of health literacy and evaluation of healthcare information content areas were evaluated by the experts. All items of the health literacy knowledge survey received a 1.0 rating with the exception of two items receiving a .80 rating from the experts. The overall instrument CVI was .98 indicating that the expert panel was in 98% agreement of the content validity. The CVI should be at least .80, according to Davis (1992), to be considered a valid instrument. No further reliability information was provided for HLKES, Part I.

Item analysis was performed on data collected from a pilot study administered to 57 lower level nursing students (Cormier, 2006). Item difficulty index was set at nothing less than .30 or greater than .70 and items with a discrimination index of less than 0.19 were evaluated. After evaluation of the pilot study results, several item stems and distracters were revised to reduce the time needed to take the survey and to

improve the quality of the instrument. A single item was removed, leaving 29 items in the HLKES, Part I.

Health literacy knowledge and experience survey, Part I.

The HLKES Part I assessed the health literacy knowledge of ED nurses (Appendix B). This section discusses the development, reliability and validity of the HLKES Part I instrument and its use in research. Questions in the Health Literacy Knowledge Survey were developed according to the Bloom cognitive levels of *knowledge*, *comprehension,* and *application* (Billings & Halstead, 2009). Guidelines for written material was the focus of 11 items and were developed to fit under one of the three cognitive levels. Six items were based on health literacy facts and they were classified under knowledge and comprehension. Another six items assessed health literacy screening and fit under knowledge, comprehension and application categories. Effects of health literacy were assessed by four items that fit in the knowledge and comprehension level. The remaining two items assessed the effectiveness of healthcare information and fit under the application level (Cormier, 2006). Table 1 represents the content areas in the HLKES, Part I.

Table 1.

Content Area, Number of Test Items, and Cognitive Level for Health Literacy Knowledge and Experience Survey, Part I.

Content	Number of test items	Cognitive level		
		Knowledge	Comprehension	Application
Guidelines for presenting written healthcare info	11	5	2	4
Basic facts on health literacy	6	4	2	
Health literacy screening	6	2	2	2
Consequences associated with low health literacy	4		4	
Evaluating the effectiveness of healthcare information	2			2

The Health Literacy Knowledge and Experience Survey, Part I (Cormier, 2006) measures areas of importance for nurses and areas needing to be incorporated into nursing practice. The five content areas include guidelines for presenting written healthcare materials, basic facts regarding health literacy, recognizing health literacy screening tools, consequences of limited health literacy, and intervention evaluation (Cormier, 2006).

The HLKES Part I was used by additional researchers examining health literacy knowledge in other populations. Knight used the instrument in an evaluation of the health literacy knowledge in a convenience sample of 141 registered nurses in Georgia (Knight, 2011). Knight (2011) reported reliability and internal consistency

using Cronbach's alpha ($\alpha = .81$). It was also used by Cafiero (2012) in an evaluation of health literacy knowledge in a convenience sample of nurse practitioners attending a national convention. Cafiero reported a less than adequate reliability and internal consistency using Cronbach's alpha ($\alpha = .57$). This study further separated the reliability measures by content areas and found they ranged from ($\alpha = .08$) to ($\alpha = .37$) (Cafiero, 2012). Torres and Nichols (2014) used the HLKES Part I in an evaluation of health literacy knowledge in a convenience sample of 390 associate degree nursing students. Torres and Nichol reported an acceptable reliability and internal consistency using Cronbach's alpha ($\alpha = .82$). The authors reported the reliability measures by five content areas and found they ranged from ($\alpha = .71$) to ($\alpha = .78$) (Torres & Nichols, 2014). This was consistent with the Knight study of registered nurses ($\alpha = .82$).

In summary, the HLKES was used four times in studies of different education levels of student nurses and registered nurses. Interestingly, the associate degree students and the registered nurse populations reported good and almost identical reliability ($\alpha = .82$ and $\alpha = .81$ respectively). Yet the higher educated nurse practitioners reliability was reported at a suboptimal level of $\alpha = .57$. Cafiero (2012) noted that the differences in reported reliability among the studies using the same instrument may have been due to the differences in the populations (ranging from nursing students to nurse practitioners). The study of baccalaureate nursing students did not report reliability data.

Health literacy knowledge and experience survey part II. This section discusses the development, reliability and validity of the HLKES Part II instrument and its use in research. The HLKES Part II is a nine-item Likert scale instrument that was used to assess the frequency of ED nurses' participation in health literacy related activities (Appendix C). The four options range from "Never" to Always".

The HLKES Part II was created by Cormier (2006) to assess health literacy experiences in the nursing profession. The nine-item scale in the Cormier study demonstrated good overall reliability rating ($\alpha = .82$). Factor analysis found two distinct construct sub-scales within the scale that explained 57% of the variance in experiences. One construct was found to measure basic health literacy activities and was labeled Core Health Literacy Experience while the second addressed patient teaching aides such as computer software and videos and was labeled Technology Health Literacy Experience. The Cronbach's alpha for the Core Health Literacy Experience was reported at $\alpha = .79$ and Technology Health Literacy Experience measured was reported at $\alpha = .76$. The validity of the scale was accomplished through a five person expert panel as previously discussed. The content validity index (CVI) was determined to be .98 representing a 98% agreement among the panel that the instrument accurately reflected the construct being examined (Cormier, 2006).

The HLKES Part II has subsequently been used to measure the health literacy experiences of several other populations. It was used by Knight (2011) in an evaluation of health literacy experiences in a convenience sample of 141 registered nurses in Georgia. Factor analysis through extraction with oblique rotation found that

53% of total variance was found with one factor, experience. Cronbach's alpha measured internal consistency ($\alpha = .81$) (Knight, 2011). The HLKES, Part II was also used by Cafiero (2012) in an evaluation of health literacy experiences in a convenience sample of nurse practitioners attending a national convention. The reliability and internal consistency was measured using Cronbach's alpha for the Core Health Literacy Experience sub-scale and was reported at $\alpha = .66$ and the Technology Health Literacy Experience sub-scale was reported at $\alpha = .59$. Cafiero (2012) reported the reliability on the nine item scale to be less than adequate ($\alpha = .69$). Validity was confirmed by confirmatory factor analysis. A goodness of fit analysis was performed with findings that the "two-factor model adequately fits the data and confirms the factor structure of the instrument" (Cafiero, 2012).

Although, the HLKES was used by Torres and Nichols (2014) in an evaluation of health literacy experiences in a convenience sample of 390 associate degree nursing students, there was no reported information specifically relating to the HLKES, Part II portion of the survey.

In summary, the HLKES was used four times in studies of differing education levels of student nurses and registered nurses. Interestingly, with the exception of one study, reliability and validity information was reported more consistently among the users of the HLKES, Part II than of HLKES, Part I. The results of the Cronbach's alphas ranged from .69 to .82. It is important to note that scores directly reflect the instrument specific to the sample being tested. (Burns & Grove, 2012; Lindell & Ding, 2013).

Permission to use the HLKES, Parts 1 and II was received from the author, Dr. Catherine Cormier (Appendix E).

Patient teaching methods. The patient teaching methods was measured by participant responses to question 20, within the demographic questionnaire (Appendix D), "Which three of the following teaching methods do you use most frequently?" The responses were drawn from an extensive review of the literature of patient teaching techniques found to be helpful in teaching patients with low health literacy (Bastable, 2003; Doak, Doak, & Root, 1985; Payne, 2009; Schwartzberg et al., 2007; Tamura-Lis, 2013). There were eight options to answer the question including: Assess what the patient understands; using simple language; including a friend or family member in the discussion; speaking slowly; inclusion of only two or three main points; encourage questions; providing written material; using pictures; and using the teach-back technique. There was an additional option for the participant to fill in an otherwise unaccounted for possibility. The answers were examined for frequency of use. The patient teaching method data was also examined for correlations to ED nurses' Health Literacy Knowledge and Health Literacy Experience.

Protection of Human Subjects

Prior to initiating the study, approval was obtained from the Seton Hall University (SHU) Institutional Review Board (IRB). Approval was also obtained from the ENA through their Institute for Emergency Nursing Research (IENR), per ENA requirement, prior to posting the link to the letter of solicitation and surveys to

their website. The solicitation letter explained the purpose of the study and that the

survey was completely voluntary and the participants were able to withdraw at any

time without any consequences. Members could elect to participate by clicking on

the survey link provided in the solicitation letter. Participation was voluntary and

completion of the survey implied consent to participate. It also explained that their

responses were not accompanied by any identifying information making their

participation completely anonymous. Data was kept on a separate memory key and

stored in a locked file cabinet in the home office of the researcher for a period of

three years.

Data Collection Procedures

Following IRB approval, participants accessed the anonymous electronic

survey created in ASSET$_{TM}$ by way of a solicitation letter, which contained a link to

the survey via the ENA website. This ENA website link took participants to a

solicitation letter from the researcher and informed them about the study and that the

survey was completely voluntary and confidential, and that participants could

withdraw at any time without any consequences (Appendix A). Members could elect

to participate by clicking on the survey link provided in the solicitation letter. The

online questionnaires provided anonymity that allowed participants to feel

comfortable in answering honestly (Cantrell & Lupinacci, 2007). Participation was

voluntary and completion of the survey implied consent to participate.

Access to the surveys was initially for a period of 90 days but was kept

available until adequate responses had been received to meet the power analysis.

Analysis of the Data

Collected data was directly imported from ASSET$_{TM}$ into SPSS Version 22 for Windows. Rigorous checks for data integrity were conducted looking for accuracy in data entry, missing data, and outliers. Initially, descriptive statistics were used to describe the demographic information. Descriptive statistics were used for all continuous variables computing for total scores along with the mean, median and mode, range of scores, standard deviation and frequency. Histograms were used to communicate the distribution of the variables. Descriptive statistical analysis was also used to evaluate categorical information obtained through the demographic questions. As appropriate, inferential analyses were employed to understand patterns within the demographic variables in order to best characterize the sample. The Pearson product moment correlations were calculated to determine relationships among the variables as well as demographic information. Internal consistency reliability was computed using Cronbach's alpha coefficients for all surveys.

Data were analyzed to see if they met the assumptions for multiple regression testing. A test for normality examined the distribution of scores using Kolmogorov-Smirnov and Shapiro-Wilk tests. A boxplot determined if any outliers existed. Where distribution was not normal data transformation was performed to make the distribution of scores more normal and a histogram was used to convey the new normal distribution. Pearson correlation coefficients were used to ascertain whether relationships existed among the dependent variable and the independent variables. When relationships were found, the strength and direction was examined. The

Pearson correlation was also used to determine if a problematic degree of multi-collinearity existed prior to multiple regression analysis. Where multi-collinearity problems existed, Spearman Rho correlations were used.

Measures of central tendency (mean, median and mode) were used to analyze the following research questions: 1) What do emergency department nurses know about health literacy?, 2) What are emergency department nurses' experiences with health literacy?, and 3) What teaching methods do emergency department nurses use to meet patients' health literacy needs? Bivariate correlations and multivariate regression were used to analyze the research question 4, What are the relationships between and among emergency department nurses' knowledge of health literacy, their experience with health literacy, and their use of teaching methods to meet patients' health literacy needs?

Chapter IV

FINDINGS

Introduction

The purpose of this study was to describe health literacy knowledge, the use

of health literacy (HL) strategies, and patient teaching techniques among registered

nurses working in an emergency department. A description of the data collected by

the researcher is presented in this chapter. The characteristics of the sample are

described using descriptive statistics, followed by the reliability measure of the

Health Literacy Knowledge and Experience (HLKES) Part I and Part II instrument.

Next, bivariate relationships are explored through the use of correlation and one-way

ANOVA, Finally, the regression model including two predictor variables

significantly correlated with the dependent variables is presented.

Data integrity

The data was screened for missing data and outliers prior to running any

statistical analysis. One survey was deleted because the participant entered

inappropriate open ended responses. This brought the total number of completed

surveys from 133 to 132 (N=132). There were no incomplete surveys. The survey

design made it impossible to complete the survey without answering all of the

questions. Survey data were collected using ASSET$_{TM}$ software. Data were analyzed

using SPSS for Windows (Version 23).

The Kolmogrov-Smirmov test was conducted to evaluate whether the data

was normally distributed. The results indicated that the distribution of the HL

knowledge (p = .000) and experience (p = .002) scores were significantly different

from a normal distribution. As shown in Figure 1 the HL knowledge data had a

negative skew of -1.07. As shown in Figure 2 the boxplot demonstrates nine outliners

that represented participants that scored very low on the survey. As shown in Figure

3 the HL experience data had a positive skew of .777. Figure 4 highlights the six (6)

outliners representing participants that demonstrated more HL experiences than the

average participant. Where appropriate, non-parametric tests were run to detect

relationships among the variables to address skewness of the data rather than

transforming the scores.

Figure 1. Distribution of scores on the HLKES Part 1

Histogram

Mean = 18.11
Std. Dev. = 5.218
N = 132
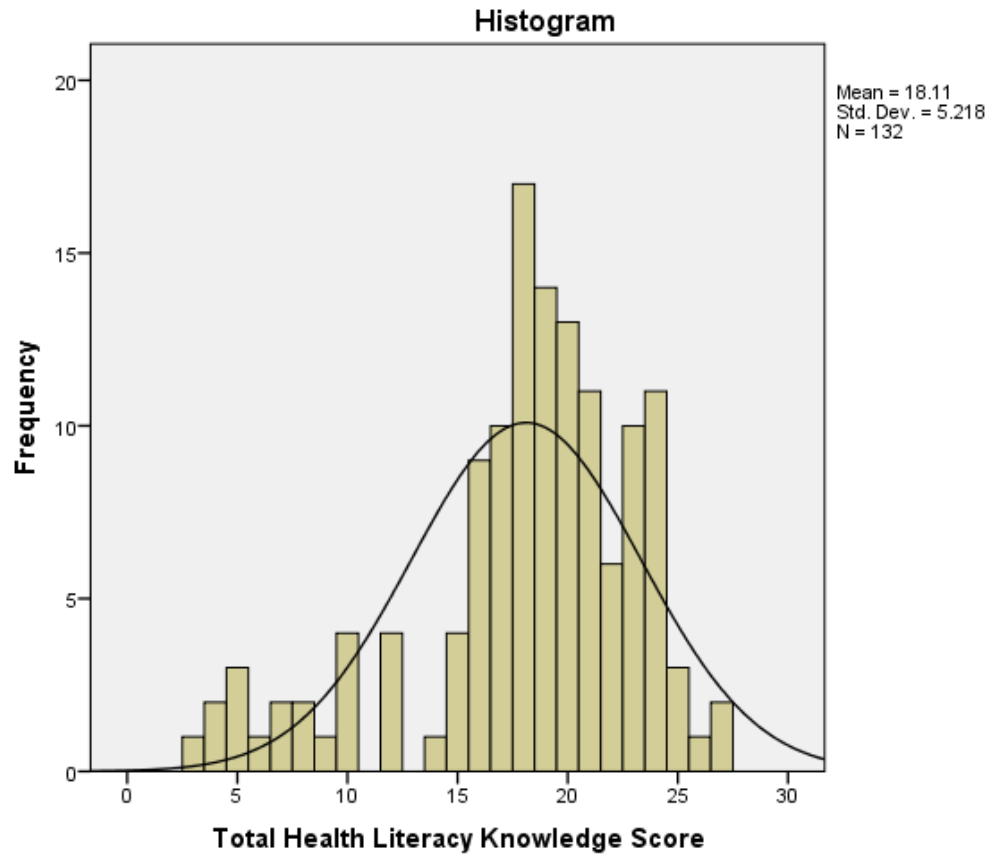
Figure 2. Outliner Scores on the HLKES Part 1

Total Health Literacy Knowledge Score
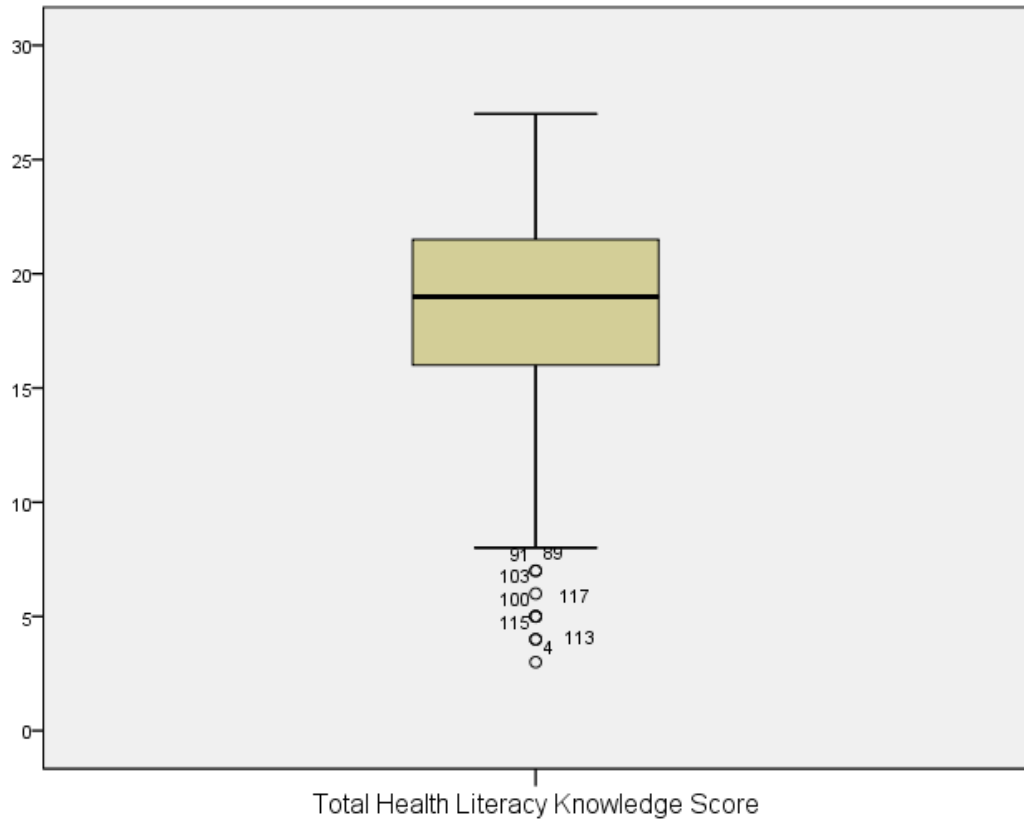
Figure 3. Distribution of Experience Scores on the HLKES Part 2
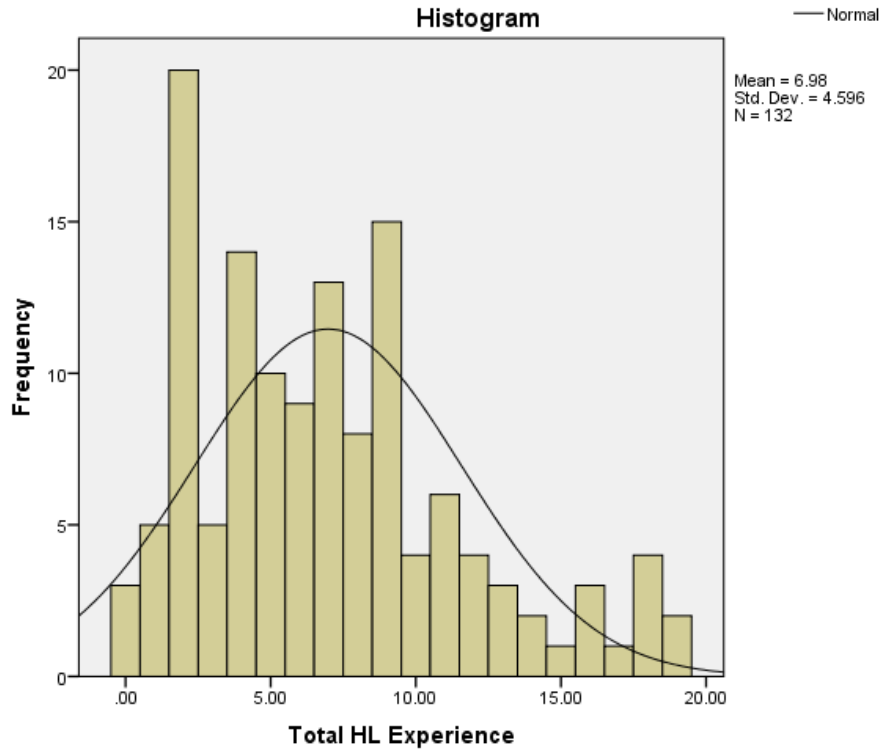
Figure 4. Outliner Scores on the HLKES Part 2
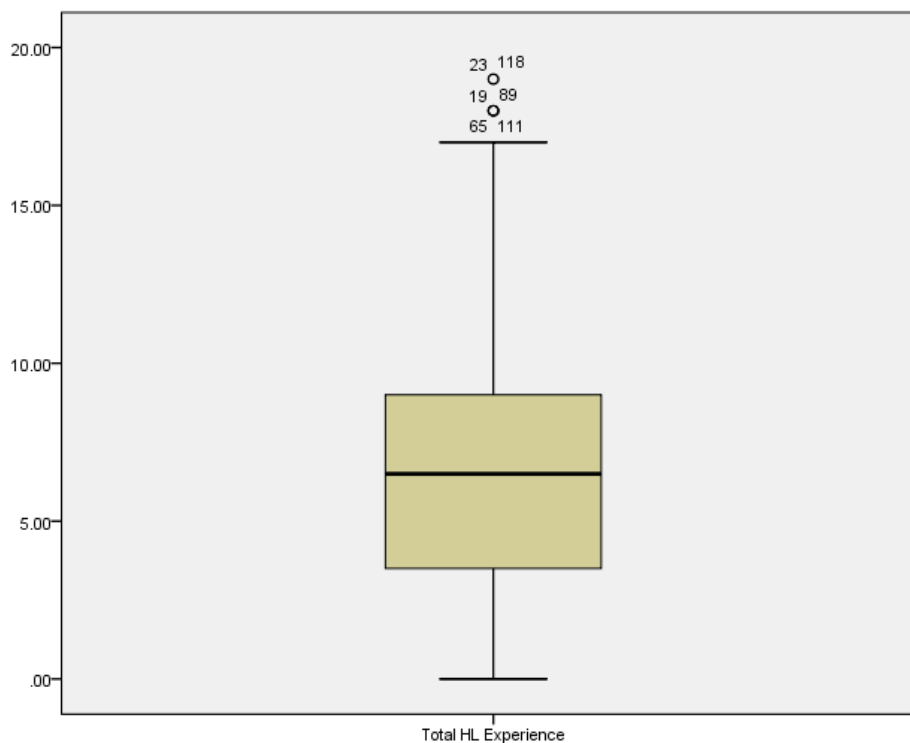
Description of Sample

Data was collected from emergency department (ED) nurses using an online

questionnaire consisting of 67 questions related to HL knowledge, HL experience,

patient teaching methods and demographic characteristics. Data were collected over a

period from August 1 through December 30, 2015. The convenience sample of ED

nurses was recruited through the Emergency Nurse Association (ENA) where a link

to the survey was provided in a solicitation letter posted on the External Research

Opportunity tab of their website. Participation was unrestricted to gender, age or

ethnicity and only required registered nurses to be currently working in an area of

emergency nursing and providing patient education. Of the approximately 40,000

members of the ENA, 213 accessed and attempted the survey. The final sample

consisted of 132 ED nurses because 80 participants accessed but did not complete and

submit the survey for an actual completion rate of 62%. According to Babbie (1990),

a high response rate is desired to lessen the risk of a response bias.

As shown in Table 2, the average age of participant was 39 years (*M*=39.5, *SD*

− 13.9) and was predominantly female (*n*=119, 90.2%). Table 2 also shows the

race/ethnicity of the participants. They identify themselves as predominantly White

(*n*=111, 78.7%), 10 identified as Hispanic (7.1%), nine Asian (6.4%), six Black or

African-American (4.3%), two American Indian and two Native Hawaiian or Pacific

Islander (1.4% each). Participants could elect to choose more than one race/ethnicity

thus the total number of responses (141#) is greater than the total number of

participants (132). Most participants reported their highest level of nursing education

as a Bachelor's degree (*n*=64, 48.5%), 34 had Master's degrees (25.8%), 25 had

Associates degrees (18.9%), seven diploma in nursing (5.3%) and two had doctorates

(1.5%). More than half of the sample (*n*= 65, 49.2%) were currently enrolled in

school working towards another degree. There were inconsistent responses between

the participants' education level and enrollment in a BSN program. Further analysis

of the 64 participants who reported having a BSN found that eight had also reported

being currently enrolled in a BSN program. The number of years the participants

reported having held an R.N. license ranged from less than a year to 52 years with a

mean of 14.6 years (*SD*=12.9).

Table 2.

Description of the sample (N=132)

Variables	Mean	SD
Age	39.50	13.94
Years as a licensed RN	14.64	12.89
Years worked in the ED	10.04	10.66
	Percent	**Count**
Gender		
•Male	9.8%	13
•Female	90.2%	119
Race/Ethnicity		
• African American/Black	4.3%	6
• White	78.7%	111
• Hispanic	7.1%	10
• Asian	6.4%	9
• American Indian/Alaska Native	1.4%	2
• Native Hawaiian/Pacific Islander	1.4%	2
• Other	0.7%	1
Total	100.0%	141#
Highest level nursing education		
• Nursing diploma	5.3%	7
• Associates degree	18.9%	25
• Bachelor's degree	48.5%	64
• Master's degree	25.8%	34
• Doctorate degree	1.5%	2
Total		132
Currently enrolled in school		
• BSN	28.0%	37
• MSN	10.6%	14
• DNP	4.5%	6
• PhD	6.0%	8
Total	49.1%	65

Note. # = Total number of responses

Included in the demographic questionnaire were questions regarding the

characteristics of the ED in which the participants worked. The nurses reported the

race/ethnicity of the population served in their ED was white (26.5%), African

American (26.3%) and Hispanic (26.0%). Participants could elect to choose more

than one race/ethnicity if that applied to the participant's ED setting. Thus the total

number of responses (434^) is greater than the total number of participants (132).

English was identified as the most spoken language in the ED (n= 126, 47.0%), with

Spanish as the second most prevalent language (n=108, 40.3%). Participants could

elect to choose more than one language if that applied to the participant's ED setting.

Thus the total number of responses (268+) is greater than the total number of

participants (132). The majority of ED nurses reported the socioeconomic status of

their ED's population was in the middle-class range (n=81, 61.4%) with 47 nurses

reporting low socioeconomic status (35.6%) and four described their ED's population

as high socioeconomic status (3%). The majority of the EDs were reported to treat

both adults and pediatric patients (n=91, 68.9%) in their facility. The nurses reported

their EDs were in community hospitals (n=75, 56.8%) and medical centers/ university

hospitals (n=57, 43.2%). The majority had achieved Magnet status (n=78, 59%).

The dominant region represented by the participants was the Northeast United States

(n=80, 60.6%) with the Southeast region as second most represented region (n=28,

21.2%).

Table 3.

Description of participant ED

Variables	Percent	Count
Race/Ethnicity of ED (all that apply)		
• White	26.5%	115
• African American/Black	26.3%	114
• Hispanic	26.0%	113
• Asian	12.9%	56
• American Indian/Alaska Native	3.9%	17
• Native Hawaiian/Pacific Islander	1.6%	7
• Other	2.8%	12
Total	100%	434^
Primary language spoken (all that apply)		
• English	47.0%	126
• Spanish	40.3%	108
• Asian – Pacific Islander	4.9%	13
• Indo-European	2.2%	6
• Other	5.6%	15
Total	100.0%	268+
Socioeconomic status of ED		
• Low	35.6%	47
• Middle	61.4%	81
• High	3%	4
Type of facility		
• Community hospital	56.8%	75
• Medical center/University hospital	43.2%	57
Magnet status		
• Yes	59.1%	78
• No	40.9%	54
Region of the country		
• Northeast	60.6%	80
• Southeast	21.2%	28
• Midwest	12.9%	17
• Southwest	3.8%	5
• West	1.5%	2

Note. ^ = Total number of responses. + = Total number of responses.

Description of Study Variables

The survey was posted on the ENA website to assess health literacy knowledge and experience. These were the Health Literacy Knowledge and Experience Survey (HLKES) Part I and II. HLKES Part I has five subscales, which underpin the content areas of health literacy knowledge that need to be incorporated into nursing practice. These content areas include: areas of basic facts on HL, HL screening, guidelines for presenting written healthcare information, consequences associated with low HL and evaluating the effectiveness of healthcare information. HLKES Part II consisted of nine items measuring ED nurses' HL experiences. Cronbach's alpha was used to assess the reliability of the HLKES Part I and II in this sample. Reliability of 0.70 is considered acceptable in survey research and above 0.80 is considered good (Polit & Beck, 2012). The HLKES Part I ($\alpha = .81$) and Part II ($\alpha = .81$) demonstrated good internal consistency. Specifically, the alpha of the HLKES Part I was .822 (standardized alpha = .813) and HLKES Part II was .824 (standardized alpha = .824). In addition, nine researcher developed items were included in the demographic section (Appendix D), and were used to gain an understanding of the participants' use of teaching methods.

Analysis of Research Questions

Research question 1. Research question 1 sought to answer the question: "What do emergency department nurses know about health literacy?" To answer this question, responses on the HLKES Part I were examined. The HLKES Part I is a 29 item multiple choice survey with four choices per question with the exception of the

first question which has five choices. The 29 questions of the HLKES Part I address

five content areas. The content areas include: basic facts on health literacy,

consequences associated with low health literacy, health literacy screenings,

guidelines for written healthcare materials and evaluation of health literacy

interventions. Possible scores on HLKES Part I ranged from 0-29. For the current

sample, the range was 3 – 27 with a mean score of 18.11, (SD – 5.22). The mean

score of 18 out of a possible 29 indicates that on average, the participants scored 62%

of the test correctly. See Table 4 below for sample responses to each item.

Table 4.

Health Literacy Knowledge and Experience Survey Part I results

Question	#	%
1) Low health literacy levels are most prevalent among which of the following age groups?		
a. 16 to 24 years of age.	50	37.9%
b. 25 to 34 years of age.	20	15.2%
c. 35 to 44 years of age.	10	7.6%
d. 45 to 54 years of age.	15	11.4%
e. 65 years of age and older.	**37**	**28.0%**
2) Low health literacy levels are common among:		
a. African Americans.	12	9.1%
b. Hispanic Americans.	6	12.1%
c. White Americans.	2	1.5%
d. All ethnic groups.	**102**	**77.3%**
3) The research on health literacy indicates that:		
a. The last grade completed is an accurate reflection of an individual's reading ability.	21	15.9%
b. Most individuals read three to five grade levels lower than the last year of school completed.	**77**	**58.3%**
c. if an individual has completed high school they will be functionally literate.	27	20.5%
d. If an individual has completed grammar school they will be functionally literate.	7	5.3%
4) What is the likelihood that a nurse working in a public health clinic, primarily serving low- income minority patients, will encounter a patient with low health literacy skills?		
a. almost never.	0	0%
b. occasionally	2	1.5%
c. often	32	24.2%
d. very often	**98**	**74.2%**
5) The best predictor of healthcare status is:		
a. socioeconomic status.	81	61.4%
b. literacy.	**30**	**22.7%**
c. gender.	1	8%
d. educational level.	20	15.2%
6) Patients with low health literacy skills:		
a. rate their health status higher than those with adequate literacy skills.	11	8.3%
b. experience fewer hospitalizations than those with adequate health literacy skills.	3	2.3%
c. are often prescribed less complicated medication regimes than those with adequate health literacy skills.	7	5.3%
d. are often diagnosed late and have fewer treatment options than those with adequate literacy skills.	**111**	**84.1%**

Question	#	%
7) Health behaviors common among patients with low health literacy skills include:		
a. **lack of participation in preventative healthcare.**	**84**	**63.6%**
b. disinterest in learning about healthcare problems.	9	6.8%
c. an unwillingness to make lifestyle changes necessary to improve health.	24	18.2%
d. the inability to learn how to correctly take prescribed medications.	15	11.4%
8) Patients cope with low health literacy skills by:		
a. asking multiple questions about healthcare instructions they do not understand.	17	12.9%
b. exploring treatment options before signing surgical consent forms.	1	0.8%
c. relying heavily on written healthcare instructions.	12	9.1%
d. **pretending to read information given to them by healthcare providers.**	**102**	**77.3%**
9) The nurse should keep in mind that individuals with low health literacy levels:		
a. can understand written healthcare information if they are able to read it.	15	11.4%
b. will not be able to learn about their healthcare needs.	6	4.5%
c. have lower intelligence scores than average readers.	5	3.8%
d. **have difficulty applying healthcare information to their health situation**	**106**	**80.3%**
10) The Rapid Estimate of Adult Literacy in Medicine is an instrument utilized to:		
a. determine the reading level of written healthcare information.	49	37.1%
b. assess the math skills of an individual required for medication administration.	2	1.5%
c. evaluate the overall quality of written health care information.	24	18.2%
d. **assess the ability of an individual to read common medical terms.**	**57**	**43.2%**
11) When working with individuals who have low health literacy skills the nurse should keep in mind that these individuals:		
a. **may not admit that they have difficulty reading.**	**119**	**90.2%**
b. will readily share that they need assistance with written information.	4	3.0%
c. will frequently ask questions about information they do not understand.	7	6.1%
d. should not be expected to manage their healthcare since they cannot read.	1	0.8%
12) Which of the following questions would provide the nurse with the **best** estimate of reading skills of the patient?		
a. "What is the last grade you completed in school?"	28	21.2
b. "Do you have difficulty reading?"	17	12.9
c. **"Would you read the label on this medication bottle for me?"**	**86**	**65.2%**
d. "Do you need eye glasses to read?"	1	0.8
13) Which statement best describes the Test of Functional Health Literacy? This instrument is:		
a. **used to assess the reading comprehension and numerical skills of an individual.**	**26**	**19.7%**
b. only available in English and therefore has limited use with immigrants.	11	8.35
c. an effective tool for assessing the reading level of individuals.	35	26.5%
d. recommended for determining the reading level of written healthcare materials.	60	45%

Question	#	%
14) What is the strongest advantage to conducting health literacy screenings? Health literacy screenings		
a. provide nurses with a good estimate of the educational level of individuals.	13	9.8%
b. will help nurses to be more effective when providing healthcare teaching.	**89**	**67.4%**
c. can be used to diagnose learning difficulties that serve as barriers to patient teaching.	16	12.1%
d. assist healthcare agencies to comply with educational standards established by the Joint Commission on Accreditation of Health Organizations.	14	10.6%
15) Which of the following statements, made by the nurse, would be the best approach to initiating a health literacy screening with a patient?		
a. "It is necessary for me to assess your reading level; this will take a few minutes and it is very important."	16	12.1%
b. "I need to conduct a test to see if you can read, please read these words for me."	1	0.8%
c. "I want to make sure that I explain things in a way that is easy for you to understand; will you help me by reading some words for me."	**114**	**86.4%**
d. "I need to administer a reading test to you, if you cooperate this will not take long."	1	0.8%
16) After providing written healthcare information to a patient he states, " Let me take this information home to read." This may be a clue to the nurse that the patient:		
a. is in a hurry and does not have time for instruction.	5	3.8%
b. is not interested in learning the information.	14	10.6%
c. is noncompliant with healthcare treatments.	3	2.3%
d. may not be able to read the materials.	**110**	**83.3%**
17. An individual with functional health literacy will be able to:		
a. follow verbal instructions but not written healthcare instructions.	28	21.2%
b. read healthcare information but have difficulty managing basic healthcare needs.	8	6.1%
c. read and comprehend healthcare information.	21	15.9%
d. read, comprehend, and actively participate in decisions concerning healthcare.	**75**	**56.8%**
18. Which of the following is true with regards to written healthcare information?		
a. Most healthcare information is written at an appropriate reading level for patients.	28	21.2%
b. Illustrations can improve a patient's understanding of written information.	**79**	**59.8%**
c. Patients are usually provided with information that they think is important to know about their healthcare status.	16	12.1%
d. Overall patients comprehend written information better than verbal instructions.	9	6.8%
19. The recommended reading level for written healthcare information is:		
a. 5th grade.	**66**	**50.0%**
b. 8th grade.	41	31.1%
c. 10th grade.	17	12.9%
d. 12th grade.	8	6.1%

Question	#	%
20. The first step in developing written healthcare information is to:		
a. outline the content.	5	3.8%
b. list the learning objectives.	14	10.6%
c. find out what the audience needs to know.	**90**	**68.2%**
d. research the content area.	23	17.4%
21. Which of the following statements best describes the Fry Method?		
a. This formula is used to calculate word difficulty in a written document.	30	22.7%
b. This method calculates the readability level of a written document by counting selected syllables and sentences within the document	**47**	**35.6%**
c. It is an effective tool used for measuring how well a patient understands healthcare information	36	27.3%
d. This instrument is used to evaluate the cultural appropriateness of written healthcare instructions.	19	14.4%
22. Recommendations for developing written healthcare materials include:		
a. use dark colored papers for printing.	14	10.6%
b. presenting information in the form of a conversation.	**116**	**87.9%**
c. including abbreviations when possible to save space.	2	1.5%
d. printing words in fancy script.	0	0%
23. When listing side effects for a handout on chemotherapy the oncology nurse should limit the list to:		
a. 2-3 items.	47	35.6%
b. 5-6 items.	**75**	**56.8%**
c. 10- 12 items.	10	7.6%
d. 15-20 items.	0	0%
24. Written healthcare information provided to a patient related to a specific disease should include:		
a. only three or four main ideas about the disease.	**80**	**60.6%**
b. all treatment options available to manage the disease.	46	34.8%
c. a detailed explanation of the pathophysiology of the disease.	5	3.8%
d. statistics on the incidence of the disease.	1	0.8%
25. Which of the following would be the most effective wording for a heading in a brochure on hypertension?		
a. HYPERTENSION: THE SILENT KILLER	48	36.4%
b. *Symptoms of high blood pressure*	6	4.5%
c. How do I know that I have high blood pressure?	**76**	**57.6%**
d. What factors contribute to hypertension?	2	1.5%
26. The **best** way to ensure that a breast cancer prevention brochure is culturally appropriate is to:		
a. review research on the community's culture.	32	24.2%
b. obtain input from nurses who have worked in the community.	12	9.1%
c. explore the types of materials currently available.	16	12.1%
d. include community members in the design of the brochure.	**72**	**54.5%**
27. Which of the following instructions on the management of diabetes would be best understood by an individual with low health literacy skills?		
a. Check your blood sugar every morning.	**96**	**72.7%**
b. Insulin should be taken as directed by your physician.	25	18.9%
c. Diabetes is a disease of energy metabolism.	8	6.1%
d. Complications associated with insulin include hypoglycemic reactions.	3	2.3%

Question	#	%
28. Which of the following approaches to patient education provides minimal opportunity for the patient to actively engage in learning?		
a. Incorporating short answer questions periodically throughout written healthcare materials and providing space for the patient to write responses.	31	23.5%
b. **Instructing the patient to watch a video after providing written healthcare instructions.**	**75**	**56.8%**
c. Planning a question answer session in small groups after completing a learning activity.	18	13.6%
d. Providing pictures for the patient to circle in response to questions asked in a healthcare brochure.	8	6.1%
29. The most effective way for a nurse to determine how well a patient with low health literacy skills understands healthcare information is to**:**		
a. Utilize a pre-test before instruction and a post-test following instruction.	27	20.5%
b. Ask the question, "Do you understand the information I just gave you?"	5	3.8%
c. **Have the patient teach back the information to the nurse.**	**96**	**72.7%**
d. Verbally asking the patient a series of questions following instructions.	4	3.0%

= Number chosen

The percentile rank indicates the point that the percentage of scores in the entire distribution are equal to, or below that point (Witte & Witte, 2010). The data revealed that participants with a score of 16 -18 correct answers were in the 25th percentile, participants with a score of 19 – 21 were in the 50th percentile, and a score of greater than 21 put them in the 75th percentile. Eighty percent of the participants scored a 22 or less, indicating large gaps of HL knowledge. Table 5 presents the percentile rank of the HLKES Part I scores:

Table 5.

HLKES Part I Percentile Scores

Total Health Literacy	
Percentile	Score
25	16.00
50	19.00
75	21.75

Cormier (2006), identified five content areas pertinent to measuring health literacy knowledge. See Table 6 for the participants mean subscale scores on the HL knowledge survey.

Table 6.

HLKES Part I Subscale Mean Scores

Subscale	HLKES, Part 1 Question Numbers	Subscale Mean Score
Basic Facts (52%*)	1, 2, 3, 4, 5, and 17	3.17 (*SD*=1.28)
Screening (62%*)	10, 11, 12, 13, 14, and 15	3.72 (*SD*=1.29)
Consequences (76%*)	6, 7, 8, and 9	3.05 (*SD*=1.08)
Evaluation (78%*)	16 and 29	1.56 (*SD*=.70)
Written Materials (60%*)	18, 19, 20, 21, 22, 23, 24, 25, 26, 27, and 28	6.61 (*SD*=2.49)

Note. % = percentage of correct responses

The two content areas in which the majority of participants answered correctly were: *consequences* of low HL skills (76%) and *evaluation* of HL (78%). However, the question with the most correct responses demonstrating knowledge was "Patients with low HL skills may not admit they have difficult reading" (*n* =119, 90.2%), which was in the *screening* content area. Participants demonstrated the least knowledge in the *basic facts* about HL area. Incorrect responses in this content area suggest knowledge gaps in the participants ability to identify individuals 65 years of age and older as being at risk for low HL (*n*= 37, 28%), that most individuals read three-five grades lower than their last completed grade (*n*=77, 58.3 %), and that the best predictor of healthcare status is literacy (*n*=30, 22.7%).

In addition to examining the main study variables, bivariate relationships were explored among the variables and key demographic factors. In this case demographic factors included personal factors as well as descriptors of the ED where the participant was employed. Personal demographics compared with health literacy knowledge included age, gender, race/ethnicity, highest level of education, current school enrollment, years as a licensed R.N., years worked in an ED and where the participant first learned about HL. ED demographic factors examined with HL knowledge included the socioeconomic status, major race/ethnicity, primary language, descriptors involving primary population and type of facility, magnet status and region of the country. The Spearman's rank correlation assesses the degree to which variables, not normally distributed, measured at an interval or ratio level, are linearly related within a sample (Grove, Burns, & Gray, 2013). Grove et al. (2013) note that an *r* value of $<.3$ is a weak linear relationship, an *r* value of .3 to .5 is a moderate linear relationship, and an *r* value of $> .5$ is a strong linear relationship. Spearman analysis was chosen since the variables did not have a normal distribution. Spearman correlation analysis was conducted to determine correlation coefficients between HL knowledge and demographic descriptors among emergency department (ED) nurses. A *p* value of less than .05 was required for significant findings. There were no significant relationships found between ED nurses HL knowledge and gender, race/ethnicity, or their current enrollment in school. There were no relationships found with any of the characteristics of the EDs where the participants worked and their HL knowledge. Spearman correlation statistics revealed significant

positive relationships among total HL knowledge scores and the following: age of the participant ($r =.35$, $p =.000$); highest level of nursing education ($r = .27$, $p = .002$); years as a licensed RN ($r = .32$, $p = .000$; and years worked in the ED ($r=.31$, $p = .000$).

To gain a better understanding of the relationship among the variables *age of participant*, *level of education*, and *years as a licensed RN* with total HL knowledge scores, a linear regression analysis was conducted. The combination of the three variables had a significant $F(3,128) = 7.21$, $p = .000$ association with the total HL knowledge scores. The analysis indicated that the *nurses level of education* was the strongest predictor of HL knowledge ($\beta = .21$, $p = .012$).

In summary, the HLKES Part I scores indicated that on average the ED nurse participants answered correctly on just over half of the questions. The participants were most knowledgeable in the areas of evaluating HL and consequences of HL. There were positive correlations between knowledge of HL and age, years of licensure, and years in the ED with level of education as the strongest predictor of HL knowledge.

Research question 2. Research question 2 sought to answer the question "What are emergency department nurses' experiences with HL?". To answer this question, responses on the HLKES Part II were examined. The HLKES Part II is a nine-item Likert scale instrument used to assess the frequency of ED nurse's participation in HL related activities. Possible responses to the HLKES Part II included "0 = Never", "1 = Sometimes", "2 = Frequently", or "3 = Always" to

describe the frequency in which they participated in HL related activities. Table 7

displays the HL experience frequencies.

Table 7.

Health Literacy Knowledge and Experience Survey, Part II responses

	Never		Sometimes		Frequently		Always	
	n	**%**	#	**%**	#	%	#	%
30. How frequently was HL emphasized in your nursing curriculum?	44	**33.3**	55	**41.7**	24	**18.2**	9	**6.8**
31. How often did you use a HL screening tool to assess the HL skills of an individual?	92	**69.7**	31	**23.5**	8	**6.1**	1	**0.8**
32. How often do you evaluate the reading level of written healthcare materials before using them for patient teaching?	70	**53.0**	40	**30.3**	20	**15.2**	2	**1.5**
33. How often did you evaluate the cultural appropriateness of healthcare materials, including written handouts, videos, audiotapes, before using them for patient teaching?	60	**45.5**	42	**31.8**	24	**18.2**	6	**4.5**
34. How often did you evaluate the use of illustrations in written healthcare materials before using them for patient teaching?	48	**36.4**	50	**37.9**	26	**19.7**	8	**6.1**
35. How often did you use written materials to provide healthcare information to an individual or community group?	14	**10.6**	34	**25.8**	63	**47.7**	21	**15.9**
36. How often did you use audiotapes to provide healthcare information to an individual or community group?	100	**75.8**	21	**15.9**	9	**6.8**	2	**1.5**
37. How often did you use videotapes to provide healthcare information to an individual or community group?	83	**62.9**	36	**27.3**	11	**8.3**	2	**1.5**
38. How often did you use computer software to provide healthcare information to an individual or community group?	71	**53.8**	37	**28.0**	20	**15.2**	4	**3.0**

There were few *Always* responses to any HL experiences while there were many *Never* responses to the same experiences. Only one participant responded *Always* to using a HL screening tool to assess patients' HL while 92 responded *Never* and 31 only *Sometimes*. Two participants responded *Always* to assessing the reading level of written materials before using them for patient teaching while 70 responded they *Never* do. Fourteen participants responded they *Never* use written materials to provide healthcare information to an individual or community group, 34 responded only *Sometime*s, 63 responded *Frequently* and 21 responded they *Always* do. Providing written healthcare materials was the only area where a majority of the ED nurses responded they *Always* or *Frequently* participated in HL activities (*n* = 84, 63.6%). In all other items, a majority of the ED nurses responded they *Never* or only *Sometimes* participated in the HL experience.

Out of 1188 possible responses to the HLKES Part II, there were 582 *Never* responses (48.9%) and 55 *Always* responses (4.6%). In other words, an overall large portion of participants indicated they never participate in specific HL experiences and a very small portion of participants indicated they always participate in HL experiences. Table 7outlines the responses to the HLKES, Part II indicating the number and percentage of frequency used for each experience.

Pearson correlation analysis was conducted to determine correlation coefficients between the emergency department nurses' HL experiences with demographic descriptors. As shown in Table 8, the analysis revealed significant relationships between specific HL experiences and demographic variables. For

example, there was a positive relationship between the *frequency the participant evaluates reading level of written material* and the *highest level of nursing education* ($r =.18$, $p =.042$). There was also a positive relationship between the *frequency the participant evaluated illustrations in written material* and *years of nursing licensure* ($r =.22$, $p =.011$), and years worked in the ED ($r =.26$, $p =.003$). Inverse relationships were found between the *frequency HL was emphasized in the participant's nursing curriculum* and *age* ($r = -.22$, $p =.012$).

Table 8.

Significant bivariate correlations between HLKES Part II and demographics

		1	2	3	4	5	6	7	8	9	10	11	12
1.	Age	1											
1.	Edu	.10	1										
2.	Yrs RN	.90**	.02	1									
3.	Yrs ED	.75**	.04	.86**	1								
4.	HL Frequency	-.22*	.14	-.15	-.15	1							
5.	HL Screening	-.07	.02	.00	.04	.41*	1						
6.	Eval Materials	-.00	.18*	.09	.06	.30*	.60*	1					
7.	Eval Culture	-.10	.15	.00	-.01	.26*	.43*	.64*	1				
8.	Eval Illustration	.09	.06	.22*	.26**	.37*	.36*	.61*	.54*	1			
9.	Use Written	.10	-.00	.08	.07	-.03	.02	.05	.10	.15	1		
10.	Use Audio	.10	.10	.07	.05	.21*	.52*	.47*	.38*	.41*	.17	1	
11.	Use Video	.00	.08	.12	.13	.36*	.40*	.40*	.26*	.51*	.17*	.73*	1
12.	Use Computer	-.16	-.03	-.04	-.00	.27*	.33*	.29*	.26*	.37*	.004	.41*	.57*	1

**Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

In summary, the participants indicated that they seldom participated in HL activities. In fact, the *never* (582) responses to participation in HL experiences were

almost as many as the combined *sometimes, frequently* and *always* responses (606). A few correlations were found between specific HL experiences and select demographic questions with the most significant being between the frequency the participant *evaluated illustrations* and *years worked in the ED* ($r = .26$, $p = .003$).

      Research question 3. Research question 3 sought to answer the question, "What teaching methods do emergency department nurses use to meet patients' HL needs?". Participants were asked to indicate their three most used teaching methods given nine choices. The three most utilized teaching methods were *Provide printed materials or give written instructions*" ($n = 80$, 60.6%), *Avoid medical jargon (use simple language)* ($n = 79$, 59.8%) and *Encourage questions* ($n = 52$, 39.4%). Additional choices were *Include a family member or friend in on the teaching and discussion, Assess what the patient understands or has learned at the conclusion of the teaching session,* and *Use teach-back technique.* The three least utilized teaching methods were *Use pictures or drawings* ($n = 9$, 6.8%), *Limit teaching to two or three main points* ($n = 18$, 13.6%), and *Speak slowly* ($n = 26$, 19.7%). The teaching methods options are listed in Table 9 in the order in which they are most often used.

Table 9.

Teaching methods most often utilized by participants

Teaching Methods	N	%
Provide printed materials or give written instructions.	80	60.6%
Avoid medical jargon (use simple language).	79	59.8%
Encourage questions.	52	39.4%
Include a family member or friend in on the teaching and discussion	44	33.3%
Assess what the patient understands or has learned at the conclusion of the teaching session.	39	29.5%
Use teach-back technique	39	29.5%
Speak slowly	26	19.7%
Limit teaching to two or three main points.	18	13.6%
Use pictures or drawings.	9	6.8%

Note. % = percentage of total multi-choice responses

Spearman rank order test was utilized to determine correlations between select demographic questions and the most frequently used teaching methods because of the ordinal level data. Only a*ssessing the patients' understanding* with *years worked in the ED* ($r = -.18$, $p = .04$) was statistically significant.

To gain a better understanding of the relationship between *where the participant first learned about HL* and the teaching methods; *avoiding jargon* and *intentionally speaking slowly*, two 2 x 4 crosstabulation tests were run. In the first, a significant linear by linear association between *avoiding medical jargon* (checked and not checked) and *where the participant first learned HL* (nursing school, 58%; continuing education, 25%; emergency department, 9%; other, 8%) χ^2 $(1, N = 132) = 4.06$, $p = .04$ was found. In other words, the proportion of participants who *avoided medical jargon* as a teaching method varied significantly by where they *first learned HL*. The symmetric measure test revealed that nursing school had a .17 effect size (*p*

= .04) on *avoiding medical jargon*. As such, the data revealed that *first learning HL in nursing school* had a weak effect on the teaching method *avoiding jargon*.

The second 2 x 4 crosstabulations test was run to examine the relationship between *where the participant first learned about HL* and i*ntentionally speaking slowly*. The chi-square test of independence was not statistically significant when examining the relationship between *intentionally speaking slowly* and where the participant *first learned about HL* $\chi^2(1, N = 132) = 3.11, p = .07$.

As shown in Table 10, statistics revealed significant inverse relationships among the following teaching methods: (a) *Assessing the patients' understanding* with *intentionally speaking slowly* ($r = -24, p = .01$), *encouraging questions* ($r = -.18, p = .04$), and *providing written instructions* ($r = -.36, p = .00$); (b) *Avoiding jargon* with *including a family member* ($r = -.21, p =.02$), *encouraging questions* ($r = -.26, p = .00$), *providing written instruction* ($r = -.25, p = .00$), *using pictures* ($r = -.21, p = .02$) and *teach back* ($r = -.22, p = .01$); (c) *Including a family member* with *intentionally speaking slowly* ($r = -.19, p = .03$), *limiting to 2-3 teaching points* ($r = -.19, p = .03$), and *encouraging questions* ($r = -.18, p = .04$); (d) *Intentionally speaking slowly* with *limiting to 2-3 teaching points* ($r = -.20, p = .02$), and *teach back* ($r = -.28, p = .00$); and *Limiting to 2-3 teaching point* with *providing written instructions* ($r = -.22, p = .01$).

Table 10.

Correlations between teaching methods and select demographics

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.Age	1													
2.Gender	.07	1												
3.Edu	.17	.16	1											
4.Yrs RN	.91**	.04	.16	1										
5.Yrs ED	.81**	.16	.21*	.90**	1									
6.Assess Under	.13	.07	.13	.14	-.18*	1								
7.Avoid Jargon	-.01	.12	-.17*	-.09	-.05	.01	1							
8.Include Family	.05	-.02	.14	.05	.02	-.14	-.21*	1						
9.Speak Slowly	-.00	-.16	-.16	-.04	-.17	-.24**	.10	-.19*	1					
10.2-3 Points	.07	.39**	.14	.07	.11	.03	.01	-.19*	-.20*	1				
11.Enc. Questions	-.05	-.06	-.07	-.09	-.06	-.18*	-.26**	-.18*	-.13	-.09	1			
12.Provide Written	.09	-.20*	-.05	.02	-.05	-.36**	-.25**	.01	.13	-.22*	-.05	1		
13.Use Pictures	-.13	.01	.04	-.01	.01	-.04	-.21*	.00	-.06	-.11	-.03	-.09	1	
14.Teach back	-.08	-.05	.08	-.03	.03	-.02	-.22*	-.07	-.28**	-.06	-.08	-.16	-.11	1

**Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

In summary, the participants indicated the most used teaching methods in the ED were providing written material, avoiding medical jargon and encouraging questions. There was one inverse correlation between the years worked in the ED and select teaching methods. Statistical analysis also revealed that there were a number of inverse correlations among specific teaching methods.

Research question 4. Research question 4 sought to answer the question: "What are the relationships between and among emergency department nurses' knowledge of and experience with HL, and their use of individualized teaching methods when providing patient teaching?" Spearman Rho analysis was used to determine correlation coefficients between and among the three study variables. This test was performed using total HL knowledge scores and total HL experience scores along with individual teaching method items. A p value of equal or less than 0.05 was required for significance. Green and Salkind (2014) suggest using MANOVA's Wilks Lambda to detect significance on multivariate variables. Based on the correlations, a one-way multivariate analysis of variance (MANOVA) was conducted to explain differences in teaching methods based on the eta square of HL knowledge and again on HL experience. Checks for multicollinearity revealed no significant issues since there were no Pearson correlations greater than .64 (Bannon, 2013) among the variables.

As shown in Table 11 below, Spearman correlation coefficients were computed between HL knowledge and patient teaching methods. The analysis of HL knowledge revealed one significant inverse relationship with the teaching method *intentionally speaking slowly* ($r = -.173$, $p = .047$). In other words, individuals with increased knowledge of HL did not report intentionally speaking slowly as one of their most frequently used teaching methods.

Further bivariate correlation analysis revealed three significant relationships between total health literature experience and the specific teaching methods: *assess*

the patient's understanding (*r* = .227, *p* = .009), *intentionally speaking slowly* (*r* = -

.425, *p* = .000), and use *teach-back techniques* (*r* = .227, *p* = .009). The teaching

method *intentionally speaking slowly* had the highest correlation with HL experience.

However, correlation coefficients revealed no relationship between HL knowledge

and HL experience scores. In fact, when the nine HL experiences were analyzed

separately, only the specific HL experience *using audio tapes to provide health care*

information was found to be weakly (*r* = -.17, *p* =.046) related to HL knowledge.

Table 11.

Bivariate correlations between total health literacy knowledge scores, health literacy
experiences, and teaching methods

	1	2	3	4	5	6	7	8	9	10	11
1.Assess Undrstdng	1.000										
2.Avoid Jargon	-.012	1.000									
3.Include Family	-.141	-.208*	1.000								
4.Speak Slowly	-.237**	.095	-.189*	1.000							
5.2-3 Points	.033	.010	-.187*	-.197*	1.000						
6.Encourage Questions	-.182*	-.257**	-.175*	-.126	-.094	1.000					
7.Written Instruction	-.361**	-.249**	.011	.126	-.222*	-.048	1.000				
8.Use Pictures	-.043	-.208*	0.000	-.058	-.107	-.034	-.089	1.000			
9.Teach back	-.019	-.215*	-.070	-.279**	-.064	-.080	-.158	-.109	1.000		
10.HL Knowledge	-.026	.112	.027	**-.173***	.151	.131	-.066	-.072	.052	1.000	
11.HL Experiences	**.227****	-.138	.010	**-.425****	.044	-.058	-.120	.147	**.227****	.048	1.000

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

To determine the effect of HL knowledge on patient teaching methods the one way MANOVA was conducted. The test revealed significant differences among the levels. The Wilks's Lambda of 1.45 was significant, $F(198, 864) = 1.45$, $p = .000$, eta square was 23%, indicating HL knowledge had an effect on teaching methods (Green, and Salkind, 2014). Analyses of variances (ANOVA) on the dependent variables were conducted as follow-up test to the MANOVA. Using the Bonferroni method, the ANOVA on the teaching method *intentionally speak slowly* was significant $F(22, 109) = 1.80$, $p = .02$, with an eta square of 27% and the teaching method *encourage questions* was significant $F(22, 109) = 1.92$, $p = .01$, with an eta square of 28%. The findings suggest that HL knowledge had an impact on certain teaching methods.

To examine the effect that HL experiences had on teaching methods, MANOVA revealed significant differences among the levels $F(171, 868) = 1.75$, $p = .000$, eta square was 24%. In other words, 24% of teaching methods as a group was explained by HL experiences (Green, and Salkind, 2014). Individual analyses of variances (ANOVA) on the dependent variables were conducted as follow-up test to the MANOVA. Using the Bonferroni method, the ANOVA on the teaching methods *assess what the patient understands* was significant $F(19, 112) = 2.12$, $p = .008$, with an eta square of 27%; and *intentionally speak slowly* was significant $F(19, 112) = 6.17$, $p = .000$, with an eta square of 53%. This suggests that HL experience accounts for 27% of the variance in *assess what the patient understands* and 53% of the variance in *intentionally speak slowly*. The overall findings suggest that HL experience had a large impact on certain teaching methods.

Finally, the findings regarding research question #4, indicate that only four correlations were statistically significant. The more ED nurses know about HL the less they reported using *speak slowly* as a teaching strategy. However, the more experience ED nurses had with HL, the more they reported use of *teach-back technique,* use of *assess what the patient knows* and the less they reported *speak slowly* as part of their teaching strategies. Only one of the nine HL experiences was found to be weakly related to HL knowledge. Most importantly was the regression analysis that revealed 53% of the teaching method: *intentionally speak slowly* was explained by HL experience.

Summary

The scores indicated that the ED nurses had some HL knowledge, however 80% of the participants had scores of less than 22 out of a possible 29. A large portion of participants indicated they *never* or *sometimes* participate in specific HL experiences and a very small portion of participants indicating they *frequently* or *always* participate in HL experiences. The three most utilized teaching methods were: *provide written instruction, avoid medical jargon* and *encourage questions*. The teaching methods *speaking slowly* and *assessing patient understand* had the highest number of correlations with HL experiences. *Speaking slowly* was related to six HL experiences, and *assessing patient understanding* was related to four HL experiences. Despite overall low HL knowledge scores and few HL experiences, statistical analysis revealed there were several relationships found among the three major concepts of concern.

Chapter V

DISCUSSION OF FINDINGS

Introduction

The purpose of this descriptive correlational study was to examine the relationships between and among health literacy knowledge, the use of health literacy (HL) strategies, and patient teaching techniques among registered nurses working in an emergency department. This chapter discusses the findings of this study in relation to the published literature.

Background

Researchers have struggled to find a systematic approach to lessen the effects of problems facing healthcare as a result of low HL, including increased mortality and increased cost of health care. The problems associated with health literacy are now viewed as a shared responsibility between the healthcare provider and the patient (IOM, 2004). Patient education is one area that is largely impacted by shared patient – provider communication for which nursing is seen as largely responsible. Research has demonstrated that those with limited HL have poorer chronic disease management and utilize emergency departments (ED) more frequently so it is particularly important to examine HL and patient education in the ED (Baker et al., 1998; Schumacher et al., (2013). Although nursing has been previously examined in terms of HL knowledge and experience, it has not been looked at in the ED, nor has it been examined in terms of impact on patient teaching.

The research questions in this study were directed towards nurses who work in the ED and who participate in patient teaching. The survey was posted on the Emergency Nurse Association (ENA) website under the External Research link. The registered nurse (RN) participants did not have to be current members of the ENA to access the survey, however, they were asked to only participate if they worked in the ED and participated in patient teaching. The research questions were answered from examination of the data collected using the Health Literacy Knowledge and Experience Survey (HLKES) Parts I and II along with additional select questions describing teaching methods.

Sample characteristics

Evidence demonstrates that EDs are now faced with poor patient outcomes, increased recidivism and spiraling health care costs due to the large percentage of limited health literate patients that come to the ED for treatment (Baker et al., 1997; Herndon, Chaney & Carden, 2011; Mitchell et al., 2012; Schumacher et al., 2013; Williams et al., 1995). The challenge for ED nurses is to recognize the patient with low HL and to treat the patient accordingly to help promote understanding and prevent return to the ED.

The sample in this study consisted of 132 ED nurses from a pool of approximately 40,000 nationwide (ENA, 2016). The sample was predominately Caucasian female (83.6%, 90.2% respectively) with an average age of 40 years ($SD =$ 13.9). The National Council of State Boards of Nursing (NCSBN, 2015) reports the average nurse age of working nurses as 50 years and that younger nurses (ages 30 –

44) more commonly choose the critical care specialties such as the emergency department. This ten year difference may be from the ED high intensity atmosphere requiring high energy levels that may be more suited to younger nurses (Morgan & Chow, 2007; Norman et al., 2005). Approximately half (48.5%) of the participants reported holding a Bachelor's of Science in nursing (BSN) degree and half are currently enrolled in school working towards a higher degree (49.2%). This is similar to the NCSBN (2015) report that 51.2% of RNs enter the work force with a BSN or higher. Only 9.8% of the participants were male which compares to the 14.1% of male RNs reported by the NCSBN (2015).

Research question 1

The first research question asks *What do emergency department nurses know about health literacy?* The HLKES, Part I instrument consisted of multiple choice questions of which only one chosen answer was correct. The instrument was used to measure HL knowledge in populations such as baccalaureate nursing students (BSN) (Cormier, 2006), RNs in Georgia (Knight, 2011), nurse practitioners (Cafiero, 2012), and associate degree nursing students (Torres & Nichols 2014). The reliability of the instrument among previous authors, as demonstrated by Cronbach's alpha, was extremely similar to this study ($\alpha = .81$) with one exception. Knight reported alpha at .81, Torres and Nichols reported alpha of .82, and Cormier did not report reliability of the Part I questionnaire. Cafiero (2012) acknowledged that her low alpha ($\alpha = .57$), was most likely due to the difference in the population studied.

The findings from the current study indicate that on average the ED nurse chose the correct response on over half of the questions (62%). However, the participants chose incorrect responses 38% of the time suggesting that many ED nurses do not know that functional HL skills involve the ability to read, comprehend and make decisions about healthcare. If compared to a nursing academic test, this would indicate a failing grade.

There were both similar and dissimilar comparisons to previous studies using the HLKES, Part I survey. The mean score for the current study was 18.11, $SD =$ 5.22, with a range of 3 – 27 out of 29 items. This widely used instrument developed by Cormier to measure nursing health literacy knowledge reported a similar mean of a 17.76, $SD = 3.93$ with a range of 2 – 26 in generic BSN students. The mean score in a study of associate degree nursing students was also found to be slightly lower (M = 15.52, $SD = 3.71$, range 5 – 24) (Torres & Nichols, 2014). Cafiero (2012) reported nurse practitioners to have a mean score of 19.94, $SD = 3.5$ and range of 6 – 28. The population most similar to the ED nurse population was the registered nurses in Georgia which would have included all education and experience levels. The mean scores of the registered nurses in Georgia were not reported (Knight, 2011).

Although participants demonstrated some knowledge of HL, the knowledge was not consistent among the five identified content areas of basic knowledge (6 questions), associated consequences (4 questions), screening (6 questions), written healthcare material guidelines (11 questions) and evaluation of interventions (2

questions). These overall inconsistencies were similar among all five studies and are discussed below.

      Basic facts on health literacy. Participants in this study demonstrated inconsistent knowledge about the *basic facts of health literacy*. Scores were among the lowest on two items in this content area: ED nurses were not aware that older adults are more at risk for low health literacy (28%) and that the best predictor of health status is literacy (22.7%). This is consistent with the other studies using the HLKES, Part I instrument where the percentage correct about *basic facts* on these two items ranged on the low end from 12.1% to 48.6% and 14.0% to 33.1%. Two additional *basic facts* items in this study were answered correctly by a slim majority. The participants (58.3%) knew that those with functional HL will not only be able to read, but comprehend and actively participate in healthcare decisions and 56.8% of them knew that most individuals read three to five grade levels lower than the last grade they completed. There is a wide discrepancy in scores among other studies regarding the later question about reading below the last completed grade level (27.0% - 76.8%) possibly attributable to the vast difference in educational level in nurses with an associate's degree education versus a master's level. In this study, two items demonstrating HL basic knowledge being common among all ethnic groups and the frequency which a nurse working in a healthcare clinic would encounter a patient with low HL were answered correctly by a majority (77.3%, 74.2%) respectively. This is consistent with other studies where correct responses to these items ranged from 61.4% to 84% and 59% to 80% respectively. Although the

majority of participants (77.3%) in this study associated low HL with all ethnic groups, only 28% of respondents were aware that low HL levels were most prevalent in the 65 years and older population. This is an important finding due to the increased proportion of older adults in this country (Colby & Ortman, 2015) and the increased use of ED by the older population (DeGrauw, Annest, Stevens, Xu, & Coronado, 2016). When questioned about the best predictor of healthcare status, most participants (61%) chose socioeconomic status. In fact, only 22.7% chose the correct answer, literacy.

Consequences associated with low health literacy. Participants demonstrated fairly strong knowledge in the content area of *consequences associated with low health literacy*. Eighty-four percent of the participants in this study exhibited knowledge that low health literate patients are frequently diagnosed late and have fewer treatment options. This was consistent among the other studies (Cafiero, 2012; Cormier, 2006; Knight, 2011; Torres & Nichols 2014) with scores on this question ranging from 84% to 93% correct. Knowledge that patients with low health literacy have difficulty applying healthcare information to their own health situation was demonstrated in 80% of participants which is also consistent with the other studies (Cafiero, 2012; Cormier, 2006; Knight, 2011; Torres & Nichols 2014) where ranges of correct responses were from 75.2% to 83.8%. Due to the prevalence of low health literacy, it is reasonable that RNs, especially those working in the ED, would have seen examples of low health literate patients admitted to the hospital as a result of not applying or utilizing healthcare information previously made available to them. The

literature demonstrating evidence of recidivism in the ED (Baker et al., 1998, Baker et al., 2004) supports the idea that patients with low health literacy have difficulty managing their health. The scores in this health literacy knowledge content area may be the result of the participants experiencing the patient recidivism firsthand.

  Health literacy screening. Participants demonstrated the most inconsistent knowledge about *health literacy screening* receiving the highest scores (90.2%) and the lowest scores (19.7%) in this content area. Three of the six items in this content area were answered correctly by a majority of the participants in all of the studies previously using this instrument (Cafiero, 2012; Cormier, 2006; Knight, 2011; Torres & Nichols 2014). Ninety percent of the participants in this study knew that individuals with low HL may not admit they have difficulty reading. This was consistent with the other studies where correct responses ranged from 78.3% to 94.3%. Responses to items about the HL screening tools, Rapid Estimate of Adult Literacy (REALM) and the Test of Functional Health Literacy (TOFHLA) suggest that participants had limited knowledge regarding these instruments. Less than half of the participants (43.2%) knew that REALM was used to assess the ability of an individual to read common medical terms and only 19.7% knew that the TOFHLA was used to assess both reading and numerical skills. This was also consistent with findings among other studies where knowledge of the REALM screening tool scores ranged from 39.5 to 48.2 and knowledge of TOFHLA screening tool scores ranged from only 15.6% to 19.7%.

Guidelines for written healthcare materials. Providing written healthcare material with increased readability can result in greater comprehension for patients. Nurses need to be aware of the guidelines for readability of written healthcare materials to provide the most appropriate material. In the content area of *guidelines for written healthcare materials*, the participants demonstrated inconsistent knowledge. Seven of the eleven items in this content area were answered correctly by a low majority of the participants (50.0 – 60.6%) demonstrating that approximately half of the ED nurses were unfamiliar with guidelines for readability of patient material. The Cormier (2006), Knight (2011), and Cafiero (2012) studies revealed a wide range of correct responses (13.7 – 93.9%) in this content area. The ED nurses' responses fell within 4% of the mean score in eight out of the eleven individual items. This suggests that ED nurses have an average knowledge of guidelines for written materials when compared to the other study populations.

Specific examples illustrate how the ED nurses scored in *knowledge of written healthcare materials* in comparison with nurses in the other studies using this instrument. Although it is well documented that pictures provide visual cues that enhance attention, comprehension and recall of written health information (Houts, Doak, Doak & Loscalzo, 2006; Peregrin, 2010), less than 60% of nurses in this study knew this to be true. Furthermore, the ED nurses knew the least about including illustrations to improve patient's understanding of written information in comparison to the populations studied in the Cormier (2006), Knight (2011), Cafiero, (2012), and Torres and Nichols (2014) studies (69.1% – 89.0%). Few participants (35.6%) in this

study were aware of the Fry Method which is used to calculate word difficulty in a document, and even fewer in the Cormier (13.7%) and Knight studies (19.9%) knew about this method to calculate readability level. One of the largest discrepancies in knowledge of written material guidelines among the studies (Parker, 2000) centered around the recommendation that a 5th grade reading level should be used for written healthcare information (28.6% - 75.9%), and only half (50.0%) of the ED nurses were aware of this recommendation.

Participants in all studies (Cafiero, 2012; Cormier, 2006; Knight, 2011; Torres & Nichols 2014) also demonstrated a wide range of knowledge about appropriate word choice in written material with scores ranging from 48.2% to 93.2%. The higher scores were once again found in the nurse practitioner population (93.2%). The nurse practitioners scored the highest in eight out of eleven questions in this content area. Cafiero (2012) postulated that the higher scores found from nurse practitioner participants may be a result of more years of education and opportunity to learn about HL. This is supported by the inclusion of health literacy in The National Organization of Nurse Practitioner Faculties (NONPF) nurse practitioner competencies (United States Department of Health and Human Services, [US DHHS], 2002). On a single item within this content area the lowest percentage correct (13.7%) was seen in the Cormier (2006) study of BSN nursing students and the highest (93.9%) was in the Cafiero (2012) study of nurse practitioners. This also supports the idea that nursing students, having the least nursing education and experience, have the least knowledge of guidelines for written healthcare material.

Evaluation of health literacy interventions. There were two questions testing *evaluation of HL interventions.* Creating a shame free environment is crucial to overcoming patient embarrassment that they may not be able to read instructions, describe medications, complete registration forms, or may miss appointments (Lambert & Keogh, 2014; Parikh et al., 1996). An extremely high majority of participants in all studies, including this one, demonstrated knowing that a patient who stated he wished to take home the literature to read, in fact, may not be able to read. Eighty-three percent of the current study population was aware of this and between 83% and 95% of the other study participants were also aware.

The teach back method has been shown to be one of the most effective ways to assure that the healthcare teaching was understood (Fidyk, Ventura, & Green, 2014). Seventy-three percent of participants in the current study, and between 63% and 78% of participants in all other studies reviewed, identified teach back as an effective teaching tool. The scores for this content area were relatively high and consistent among populations indicating nurses were fairly knowledgeable about identifying patients who may not be able to read and that the teach back method is a good way to assess patient understanding.

Summary. The participants in this study were most knowledgeable in *evaluating HL interventions* and the *consequences* associated with HL which is consistent among all of the other studies (Cafiero, 2012; Cormier, 2006; Knight, 2011; Torres & Nichols 2014) using the HLKES Part I. Nurses knowledge was most inconsistent across studies regarding HL s*creening* showing highest (95.0%) (Cafiero,

2012; Knight, 2011) as well as lowest scores (15.6%) (Cafiero, 2012). Very few

nurses across all populations (15.6% - 19.7%), including ED nurses, knew that the

TOFHLA was a screening tool used to assess patient's HL (Cafiero, 2012; Cormier,

2006; Knight, 2011; Torres & Nichols 2014). Yet, nurses across all populations

including ED nurses, knew the best way to approach a patient to initiate a HL

screening (Cafiero, 2012; Cormier, 2006; Knight, 2011; Torres & Nichols 2014).

There were also wide ranges in demonstrated knowledge regarding *guidelines for*

written material among the nursing populations (13.7% − 93.9%) and the ED nurses

maintained midrange scores with questions in this content area. While the range of

ED nurses' scores (28.0% - 77.3%) remained within the extreme ranges of the other

nursing populations in their knowledge of *basic facts* about HL, the overall scores

were the lowest of all HL content areas (12.1% − 84.0%).

      Correlations among demographics with health literacy knowledge. There

were positive correlations between knowledge of HL and age, years of licensure, and

years in the ED with level of education as the strongest predictor of HL knowledge.

This is not consistent with Cormier's (2006) study that found age to be correlated

with HL knowledge albeit weakly ($r = .09$, $p = .044$). This may be due to a difference

in the mean age of the samples. The mean age of student nurses in the Cormier

population age ($M = 25.78$, $SD = 5.41$) was approximately 14 years younger than the

ED nurse population ($M = 39.5$, $SD = 13.94$). This translates into more years of

licensure and more years of experience in practice.

Research question 2

The second research question asks *What are emergency department nurses'*
experiences with health literacy? The HLKES, Part II instrument measured how
often the ED nurses participated in activities related to HL by their response of Never,
Sometimes, Frequently, or Always. The instrument was previously used to measure
HL experiences in populations of BSN students (Cormier, 2006), RNs in Georgia
(Knight, 2011), nurse practitioners (Cafiero, 2012), and associate degree nursing
students (Torres & Nichols, 2014). The reliability of the instrument among previous
authors proved good according to guidelines by Polit and Beck (2012). The
demonstrated Cronbach's alpha's were similar to this study ($\alpha = .81$) with one
exception. The nurse practitioner study population had less than acceptable reliability
(Cafiero, 2012, p. 60). Knight reported alpha at .81, Cormier reported an alpha of .82
and Torres and Nichols did not report reliability of the Part II questionnaire. Cafiero
(2012) acknowledged that her low alpha ($\alpha = .69$), was most likely due to the
difference in the population studied.

An overall large portion of the ED nurses indicated they *Never* participated in
specific health literacy experiences (49%) and a very small portion of participants
indicated they *Always* participated (5%). In fact, more participants indicated *Never* to
participating in HL activities than any other response. Although the percentages vary
among the different populations studied and among the specific activities, some
responses were especially noteworthy. Cormier (2006), Knight (2011) and Cafiero
(2012) reported 31 − 33% of their study populations indicated *never* evaluating the

reading level of written material. While in the same studies, 53-59% report

frequently providing patients with written material. This means a significant amount

of written material is being given to patients without having been evaluated for its

readability, potentially giving patients important health information that they cannot

read. This may be a result of nurses not being familiar with tools such as the FY

method of evaluation of reading level. The poor correct responses (35.6%) to the

HLKES, Part I item regarding calculation of reading level of written material

supports this idea. Approximately half (53%) of the ED nurses reported *never*

evaluating written material and approximately half (48%) reported *frequently*

providing written materials to their patients. This is a marginal improvement over the

other studies.

Similar to the Cormier (2006), Knight (2011) and Cafiero (2012) studies, the

majority of ED nurse participants indicated they never used audio tapes to provide

health information. This is also true with the use of videotapes with one exception.

Knight indicated 27% of the registered nurses studied in Georgia never used video

tapes. An explanation of the audio tape results may be that, in general, audiotapes are

rarely used anymore with the advent of newer digital technology (Newman, 2008).

Digital health technologies have emerged in the contemporary era replacing older

methods of patient education using products such as video and audio tapes. Lupton

(2014) discusses the move towards Web 3.0 with its capabilities of exchanging data

directly. Disseminating health information through digital media is proving to be a

more efficient method than the mechanical methods of audio and video tapes. There

is also a massive amount of sources available using cloud computing technologies and the internet to provide the most up-to-date information.

Once again, the ED nurses had similar responses with BSN students (Cormier, 2006), registered nurses in Georgia (Knight, 2011) and nurse practitioners (Cafiero, 2012) in their use of screening tools to assess patient health literacy skills. A large majority of all populations examined indicated they never use a screening tool. This may be explained by the scores on the HLKES, Part I regarding knowledge of two of the most widely used screening tools, Rapid Estimate of Adult Literacy in Medicine (REALM) (39.5 – 48.2%) and Test of Functional Health Literacy (TOFHLA) (15.6 – 19.7%). The scores on these two items were among the lowest and indicated a lack of knowledge of screening tools among all study populations.

Correlations among demographics with health literacy experience.
Unlike the previous studies using the HLKES, Part II, this study found a few correlations between demographics and the nursing health literacy experiences. The correlations between the health literacy experience of *frequency that HL was emphasized in their nursing curriculum* included an inverse relationship with the participants age ($r = -.22$, $p = .012$). The older the ED nurse the less the health literacy was emphasized in their nursing curriculum. This can be explained by the more recent awareness of the extent to which health literacy affects patient outcomes and the more recent emphasis on health literacy (Scott, 2016). Along with this acknowledgement by the healthcare community came the attention that it needed to be addressed with healthcare professionals beginning in their educational programs.

It was not until recent years that health literacy education was included in some nursing curriculums. The 2004 IOM report encouraged health professional schools including nursing to begin incorporating health literacy information into their programs. Interestingly, a slim majority of ED nurses indicated that their nursing curriculum was actually the place they first learned about health literacy. Efforts have been made to keep nurses abreast of health literacy topics by providing continuing education opportunities.

Participants with increased education more frequently reported evaluating the reading level of the written material they use in patient teaching ($r =.18$, $p =.042$). It is reasonable to conclude that nurses with more formal education have learned that not all written material is written at a suitable level for many patients to be able to read and comprehend. Luker and Caress (1989) discuss the lack of preparation most entry level nurses have to be able to provide adequate patient education and the need for nurses to be able to go beyond standardized patient teaching. Further nursing education offers opportunities for nurses to learn more about assessing the suitability of standardized material for the learner (Luker & Caress, 1989). This study also demonstrates that the more years working as a registered nurse in the ED, the more frequently the participant evaluated the illustrations in written materials they used to provide patient education. This follows the same stated reasoning that the longer the nurse has worked as a nurse and in the ED, the more likely the nurse will find the need and opportunity to evaluate illustrations in patient education.

Research question 3

The third research question asks *What teaching methods do emergency department nurses use to meet patients' health literacy needs?* The patient teaching methods were measured by participant responses to the question posed within the demographic questionnaire, "Which three of the following teaching methods do you use most frequently?" The nine options included: Assess what the patient understands; Using simple language (avoiding medical jargon); Including a friend or family member in the discussion; Speaking slowly; Inclusion of only two or three main points; Encourage questions; Providing written material; Using pictures; and Using the teach-back technique.

The ED nurses in this study indicated that the most commonly used teaching method was providing printed or written material (n= 80, 60.6%), followed by using simple language (n = 79, 59.8%) and encouraging patients to ask questions (n = 52, 39.4%). Giving written discharge instruction is now mandatory for Joint Commission (TJC) accredited hospitals (TJC, 2010) so this majority response is not surprising. Using plain language and encouraging patients to ask questions is also recommended by The Joint Commission in provider – patient communications (TJC, 2007). Using plain language has been an initiative to help patients understand information in a simpler form since at least 1985. Doak, Doak and Root (1985) encouraged the change in how we convey health education messages to make the message clear. It is reasonable for nurses to note that their healthcare knowledge would be different than that of the patient and thus need to adjust their messages to a level that a lay person

would understand by avoiding medical jargon. It is also a natural response to end teaching sessions with patients asking them if they have any questions. Encouraging questions is a recommended method to clarify, elicit and give feedback and encourage discussion and interest (Bastable, 2003).

The three least utilized teaching methods were "Use pictures or drawings" (*n*=9, 6.8%), "Limit teaching to two or three main points" (*n*=18, 13.6%), and "Speak slowly" (*n*=, 26, 19.7%). To facilitate standardization and time constraints in the ED, preprinted discharge instructions are largely used with specific areas for individualization. This does not lend itself to using pictures and drawings. Avoiding overload in patient teaching sessions can be accomplished by limiting the discussion to the two or three most important points (IOM, 2004; TJC, 2007; Schwartzberg et al., 2007). Speaking slowly is a more intuitive method that nurses may not be aware they are using unless speaking to a patient whose has difficulty hearing or whose first language is not English.

There were similar and dissimilar findings in the Payne (2009) study of patient teaching methods of full time registered nurses in Texas. This study asked participants to indicate whether specific teaching methods were used never, rarely, occasionally, most of the time or always. The list of teaching methods was similar but not the same as the list in this study which asked for the three most frequently used methods. Payne (2009) reported the three most frequently used teaching methods were simple language (97.3%), assessing what the patient already knows (88.4%), and presenting one or two concepts at a time (77.5%). The only common techniques

to this study were using similar or plain language and limiting concepts taught at one time, although it was not worded the same way.

In the Payne study (2009), the least utilized teaching methods were giving patients written materials (63.6%), asking if the patient would like to include a family member on the teaching (60.3%) and using the teach back method (57.7%). Although Payne's results were similar with the results from the seminal study by the AMA (Schwartzberg et al., 2007), they are not consistent with the findings in the current study. There were no least used teaching methods common to the current study and that of Schwartzberg et al. (2007) or Payne (2009). These studies were done at least seven years ago and since that time there has been an increased focus on health literacy. It is possible that some of the differences may be explained by the time elapsed between the studies. The difference in results may also be explained by the differences in populations. Additionally, general health care providers and registered nurses in one state may have very different exposures to patient teaching than a national population of specialized (ED) nurses.

Correlations among demographics and teaching methods. Inverse correlations were found between the years nurses worked in the ED and assessing patients' understanding. One would typically think that the more years worked as a nurse would mean more understanding of the importance of assessment of patient understanding especially after experiencing recidivism in the ED (Griffey, Kennedy, McGowan, Goodman & Kaphingst, 2014; Herndon et al., 2011). However, the inverse relationship suggests the opposite.

Research question 4

The fourth research question asks, *What are the relationships between and among emergency department nurses' knowledge of and experience with health literacy, and their use of individualized teaching methods when providing patient teaching?* Spearman Rho correlations were used to detect relationships between and among the variables ED nurses knowledge of HL, ED nurses experience with using HL strategies and ED nurses preferred teaching methods. There were no significant relationships found in this study between HL knowledge and HL experience. Similarly, Cafiero (2012) found no significant relationships between HL knowledge and HL experiences of nurse practitioners. In comparison, Cormier's (2006) study found a low negative relationship between the variables HL knowledge and HL experience of BSN students ($r = -.198$, $p < .001$) suggesting that the more the students knew about HL the fewer HL experiences they participated in. Student nurses may not have had the opportunities to participate and gain experience in HL even though they had learned content about HL. Knight (2011) also found an inverse correlation between HL knowledge and HL experience in registered nurses with significance reached at .01 although the exact correlation was not stated. This may be attributable to novice nurses having knowledge of HL from recent enrollment in nursing school but without much experience, or more expert nurses with applicable HL experiences but no exposure to HL knowledge content since it may have not been included at that time in their curriculum.

The results for this study demonstrated a significant negative relationship between HL knowledge and the teaching method 'intentionally speaking slowly' ($r = -.173$, $p = .047$). To analyze the affect that HL knowledge had on patient teaching methods a one way MANOVA was conducted. This was further analyzed through the Bonferroni method to reveal that HL experiences explained 53% of the teaching method *speaking slowly*.

Nurses with more knowledge of HL did not report intentionally speaking slowly as a frequently used strategy in providing patient teaching. Although speaking slowly is a suggested teaching method for those with inadequate health literacy (Speros, 2009; Osborn, 2005), the ED nurse participants may speak slowly intuitively not recognizing that they do so. This would align with Benner's idea of expert nurses practicing at a level where they are not "consciously aware of their practice because it has become part of their being" (Lyneham, Parkinson & Denholm, 2008). The ED nurse participants had a mean of almost 15 years as RNs which would likely place them in the expert practice level. The expert nurse responds in an automatic manner that is intuitive and not always with a conscious effort and thus would not have chosen that answer as one they most frequently use.

There were a few significant relationships found between HL experiences and specific teaching methods. A significant inverse relationship was found between ED nurse HL experiences and the teaching method of *speaking slowly*. The more the nurse participated in HL experiences the less they chose the more intuitive teaching method of *speaking slowly*. By the same explanation that HL knowledge had an

inverse relationship with the teaching method *speaking slowly* in this study, Benner's model of novice to expert nurse suggests that expert nurses practice in an intuitive manner and are possibly unaware that they intentionally speak slowly in their patient teaching.

There were also significant relationships found between the ED nurses with more HL experience and using the *teach-back method* and *assessing patient's understanding of health teaching*. The ED nurses chose the higher level more deliberate practices of using the *teach-back method* and *assessing patient's understanding*. The *teach-back method* requires training and concentrated effort to put in practice. DeWalt, (2011) a leader in teach-back promotion and education, acknowledged that teach-back is the best way to confirm that the patient understands the message but many clinicians have difficulty changing their routine to implement the teaching strategy. The clinician experienced with health literacy strategies introduces this practice and seeing positive results is more likely to use teach back habitually (DeWalt, 2011). The similarity in the relationships between *assessing patients' understanding* and using the *teach-back method* with nurse HL experience is not surprising since the teach-back method is one specific method to determine a patient's understanding.

Limitations

There are approximately 90,000 ED nurses presently in the United States but a complete list is unavailable. When non-probability sampling is necessary, as in this

study, the higher level randomized sampling is sacrificed. This is common in many of the social sciences, especially nursing. To reach as many as possible, a link to access the survey was established on the website of the national organization of ED nurses (Emergency Nurse Association, [ENA]). It was determined to be the best way to reach nurses practicing in the ED nationwide although it is a limitation since the sample comes from one organization.

The link to the Letter of Solicitation and the study questionnaire was posted on the External Research Opportunities tab on the ENA website. Notice of the research study was not posted on the website homepage so it was by chance that ED nurses would proceed to the link. It was not otherwise advertised. Although participation was not limited to those ED nurses that were active members of the ENA, it is unlikely that non-members would find the external research link on the organization website.

The overall response rate was low considering the number of ED nurses there are in the United States and the number that are members of the ENA (approximately 40,000). The majority of participants indicated they were located in the northeast (60.2%) and southeast (20.1%) portion of the United States. The middle and west coast of the country is underrepresented. The low and skewed response rate and lack of randomization affects the overall generalizability of the study (Wood & Ross-Kerr, 2011).

Bias is inherent with any survey that is self-reported since it is unknown what influences the participant to take the survey. The findings in this study were based on

behaviors which were not objectively obtained. Caution must be used when analyzing self-reported survey data since people tend to answer in ways that present themselves in a positive light (Fisher, 1993; Polit & Beck, 2012).

Strengths

A strength of this study was that it examined a population that had not previously been examined. The ED is an area of healthcare that is fraught with high numbers of patients with low health literacy and this is the first time ED nurses that work with these patients have been studied. This will add to the growing body of knowledge about the health literacy knowledge and experience of nurses. It also adds to the general body of knowledge about health literacy.

The instruments utilized in this study, HLKES part I and part II, have been used previously examining several different nursing populations (Cafiero, 2012; Cormier, 2006; Knight, 2011; Torres & Nichols, 2014). The instrument reliability is a product of the instrument on the particular sample according to Burns & Grove (2012). The vetting of these instruments has provided valuable new information on their reliability and validity. Although the reliability of this instrument is specific to the ED nurse population, it also adds substantive information about the instrument in general. In this case the reliability proved to be similar to the reliability in other populations. The opportunity to use the same instruments again with a different population advances the science of nursing.

Another strength of this study was the online survey format for gathering data, ASSET_{TM}. The questionnaire design made it impossible for the respondent to skip questions. There was no possibility of moving forward in the questionnaire if the current question was not answered and submitted. It also did not register any part of the respondent response if the questionnaire was not entirely completed and then submitted. No data was saved in that event. Subsequently there was no missing data.

In summary, the findings of the study add to the limited understanding of knowledge and experience of health literacy in nursing. The ED nurses in this study have shown they have some health literacy knowledge and participate in some health literacy experiences. It also demonstrates that there are many gaps in their knowledge and experiences. This study revealed that ED nurses have comparable health literacy knowledge with the other populations previously studied and only slightly better than the nursing students and slightly less than the nurse practitioners. The ED nurses demonstrated similar agreement with participation of health literacy experiences as the other populations previously studied. It was also found in this study that ED nurses encouraged patients to ask questions, used printed or written material, and simple language as their most commonly used teaching methods.

Chapter VI

SUMMARY, IMPLICATIONS, AND CONCLUSIONS

Summary

This chapter provides an overview of this study as well as the implications it has for nursing. This correlational study sought to explain what Emergency Department (ED) nurses knew about health literacy (HL), explored their HL experiences and their most commonly used teaching methods. It also explored the relationships between HL knowledge, HL experience and teaching methods of nurses working in the ED, an area of healthcare where patients with limited HL are prevalent.

The sample was recruited through a posting on the national Emergency Nursing Association (ENA) website under the external research tab. The 132 ED nurses that completed the questionnaire were predominantly Caucasian females on the east coast of the United States. The average age of the ED nurses was 40 years old with an average of 15 years working as a registered nurse and an average of 10 years working in the ED. Almost half of the participants held a BSN degree.

The ED nurses displayed some health literacy knowledge scoring highest in the content areas *consequences associated with low HL* and *evaluating HL interventions*. However, there were many gaps in their knowledge especially with regard to basic facts about HL. The overall HL knowledge gaps are evident by the mean score of 18 out of a possible 29 indicating that, on average, the participants

scored 62% of the test correctly. The analysis indicated that the *nurses level of education* was the strongest predictor of HL knowledge ($\beta = .21$, $p = .012$).

Participation in HL experiences of ED nurses was explored in this study. A majority of the nurses indicated they *Never* used HL screening tools or evaluated the reading level of written healthcare materials. The majority also *Never* used audio, video or computer software materials in providing health care information to patients. The ED nurses responded that they *Sometime*s or *Frequently* participated in many individual HL experiences, but almost never responded that they *Always* participate in any specific HL experience. Only approximately 16% stated they *Always* give written healthcare information to patients which is surprising since most patients receive written discharge instructions when leaving the ED. In other words, an overall large portion of participants indicated they *Never* participate in specific HL experiences and a very small portion of participants indicated they *Always* participate in HL experiences.

Participants who reported increased age reported decreased frequency of HL being emphasized in their nursing curriculum. Since HL education has only recently been introduced into nursing curriculum, it would follow that those who attended nursing school in recent years would have received more education about the issues surrounding health literacy.

The three teaching methods most used by the ED nurses were *Provide printed materials or give written instructions* (*n*= 80, 60.6%), *Avoid medical jargon (use simple language)* (*n*=79, 59.8%) and *Encourage questions* (*n*=52, 39.4%). It is

surprising that the nurses indicated in this questionnaire that their most often used

teaching method was to provide written instruction or printed material since they

indicated that this was one of the health literacy experiences least frequently utilized.

The use of written instructions or printed materials was asked in different ways with

different response choices in both the HLKES, Part II and the question regarding

most and least used teaching methods. Perhaps it only appears to be a discrepancy

since there are different options to choose from in response to different research

questions. This is an area that needs further exploration beyond the scope of this

study. The three least used teaching methods chosen by the ED nurses were *Using

pictures or drawings* ($n=9$, 6.8%), *Limiting teaching to two or three main points*

($n=18$, 13.6%), and *Speaking slowly* ($n=$, 26, 19.7%). These findings did not support

previous studies of teaching methods in general healthcare providers and nurses

(Payne, 2009; Schwartzburg et al., 2007), however, the questionnaires and

populations were different. Inverse correlations suggest that the longer nurses worked

in the ED the less they assessed patients' understanding. This finding may possibly be

explained by Benner's novice to expert idea applied to nurses with greater experience

working in the ED. Perhaps experienced or expert nurses feel they intuitively know

what the patient understands without formally assessing this knowledge (Lyneham et

al., 2008).

There were no significant relationships found in this study between HL

knowledge and HL experience consistent with the findings in the study of nurse

practitioners (Cafiero, 2012). This was not true for the nursing student studies where

the authors found correlations between the two (Cormier, 2006; Torres & Nichols, 2014). The results for this study demonstrated a weak statistically significant inverse relationship between HL knowledge and the teaching method *intentionally speaking slowly* ($r = -.173$, $p = .047$). A significant inverse relationship was also found between ED nurse HL experiences and the teaching method of *speaking slowly* ($r = -.425$, $p = .000$), however, this relationship was much stronger.

Implications

There have been several studies that have examined HL knowledge and experience in nurses and nursing students (Cafiero, 2012; Cormier, 2006; Knight, 2011; Torres & Nichols, 2014). Schwartzberg et al. (2007) initially looked at healthcare providers teaching methods and it was further narrowed to nurses by Payne (2009). The new knowledge generated in this study expands on the research of HL knowledge, experience and patient teaching methods to nurses in the ED where low patient health literacy is prevalent.

Nursing practice implications and recommendations. As the HL literature indicates, the improvement of patient outcomes is a shared responsibility between patients, and the Healthcare System (IOM, 2004). Nurses share in this responsibility as part of the extended Healthcare System. As the primary providers of patient education, it is incumbent upon them to provide best practice patient education as a major part of their patient care (Pawlak, 2005). The economic and social benefits that comes from providing quality care that includes special attention to the HL needs of patients are incalculable. These benefits include better outcomes and lower costs

(IOM, 2004). This is especially true in the ED. The study findings have implications for nurses, ED nurses, nursing educators, ED patients, and the community. Many gaps in HL knowledge and experience were found. These gaps should be addressed through activities directed at providing ED nurses education on HL basic facts, HL screening, guidelines for written material, evaluation of effective interventions, and consequences associated with HL. Secondly, activities that promote HL interventions need to be encouraged to build ED nurses HL experiences. As with previous studies examining general nursing and nursing students (Cafiero, 2012; Cormier, 2006; Knight, 2011; Torres & Nichols, 2014), many gaps in both HL knowledge and experience were found. The HL educational activities should be directed at all areas of nursing providing patient education. The AHRQ Universal Precautions Toolkit section on Education and Training for Professionals is a suggested evidence-based program to provide the tools necessary to implement such activities (DeWalt et al., 2011).

Along with the required tools and knowledge to provide suitable patient education, nurses also need an adequate environment in which to provide this vital element of care. Unexpected surges in the volume and acuity of patients make staffing the ED with appropriate nurse-patient ratios difficult. Many emergency nurses have reported staffing to be frequently inadequate and therefore unsafe. Lack of time and available tools were cited as factors in prohibiting optimal care (Wolf, Perhats, Clark, & Moon, 2016). Devinney (2014) reported a lack of time as the primary barrier to providing more than basic discharge instructions in the ED.

The model of novice to expert skill acquisition can provide the basis for HL skill development (Benner, 2004). This model of nursing explains the development of a new nurse to an expert one through stages or levels of education and experience. ED nurses need to be provided with HL education. Once nurses begin to implement this new knowledge into their practice, it will become more habitual and with time, more intuitive (Lyneham et al., 2008). This habitual practice, where HL awareness is ever present, can then become second nature in patient care and especially in patient education.

Findings from this study indicate HL knowledge and experience deficits in ED nurses. This has an effect on the quality and safety of patient care. Patients can benefit from the care given by nurses who are aware of their HL needs and possess the ability to adapt patient teaching to their level. Patients who do not comprehend discharge instructions or are unable to navigate their healthcare after leaving the ED run the risk of returning to the ED with complications and/or exacerbation of the original problem. Benefits to the greater community come through reduced readmissions and reduced healthcare costs.

Nursing education implications. Educating patients has always been one of the primary roles of a nurse yet the focus and attention to educating nurses on best teaching methods may be lacking. This study's findings demonstrate a gap in ED nurses knowledge of HL and more specifically about HL basic facts. The lack of knowledge in some of the foundational areas of HL are concerning. Examination of nursing school curriculum may be needed to reinforce the recommendations from the

2004 IOM report, *Prescription to End Confusion*, and the *National Action Plan to Improve Health Literacy* (Baur, 2011). There may be a need for more emphasis on patient education, communication and patient teaching in nursing schools as well as opportunities for continuing education on HL (Kennard, 2016; Scott, 2016).

Interestingly, this study found that while ED nurses indicated they knew that the teach-back method is one of the most effective ways to determine how well the patient with low health literacy skills understands healthcare information, less than 30% of nurses utilize teach-back as a teaching method. Teach-back is a proven method of assessing patient understanding (Griffey et al., 2015; Samuels-Kalow et al., 2012). DeWalt, a noted health literacy researcher and lead author of the AHRQ Health Literacy Toolkit notes that although many healthcare workers know about teach-back many do not incorporate it into their practice. Many find it challenging and difficult to incorporate new methods into their familiar routine (DeWalt et al., 2011). The under-utilization of this method suggests nurses may not have been taught its importance or how to make it part of their routine practice.

There was a significant relationship found between the frequency that ED nurses evaluated the reading level of written material and their level of education (r =.18, p =.042). The higher the level of nursing education, the more opportunity there is to have learned about specific patient teaching techniques such as evaluation of reading level of healthcare material. Nurses should be encouraged to further their knowledge and skills by advancing their education to maximize their own potential for safe, effective caregiving. Perhaps a stipulation of re-licensure should be

continuing education about HL. Furthermore, there should also be an increased effort to include this health literacy concept earlier in pre-licensure nursing education.

Nursing research implications. The relatively new field of health literacy research has emerged in the last several years to include a number of large government funded studies as well as individual studies from many healthcare disciplines. Surprisingly, nursing has been slow to begin examining the relationship it has with health literacy. Relatively few nursing studies have focused on health literacy until very recently. Cormier (2006) acknowledged this when she developed the Health Literacy Knowledge and Experience Survey (HLKES). To date it has been used four times to examine health literacy knowledge and experience in nursing (Cafiero, 2012; Cormier, 2006; Knight, 2011; Torres & Nichols, 2014). This still emerging field of research surrounding health literacy is growing yet there have been no standardized protocols or guidelines in which to base practice or compare outcomes. While it is recommended to include health literacy topics in nursing school (IOM, 2004; Department of Health and Human Services, 2010a), it has not been required or standardized. In fact, Scott (2016) stated that only 62% of self-reporting nursing schools replied that health literacy was included in their curriculum. Recommendations for future research include determining best methods to include health literacy pedagogy and patient teaching methods into nursing curriculum.

Health literacy knowledge and experience has been studied previously in populations of student nurses, nurses, and nurse practitioners (Cafiero, 2012; Cormier, 2006; Knight, 2011; Torres & Nichols, 2014) and patient teaching methods

have been studied previously in nurses and general healthcare providers (Payne, 2009; Schwartzburg et al., 2007). It may be possible to benefit individual vulnerable populations at increased risk for low HL such as pediatrics, geriatric and the mentally ill by looking at the HLKE and the teaching methods of nurses caring specifically for them. An examination may expose gaps in knowledge and experience of the nurses caring for these individual groups. Gaps can be addressed as they become evident through in-service or other training. This may also bring about better teaching methods tailored to meet the health literacy needs of vulnerable populations. Nurses caring for low health literacy populations may also find that there are commonalities in communication techniques or patient education strategies.

The speed of advances in technology is unprecedented. It may be recommended that the HLKES be revised to reflect these changes by including newer HL experiences such as the use of social media and the internet. A nationwide survey of nurses using this instrument would give a broader understanding of what a diversified pool of nurses know about health literacy and the strategies they enlist. This type of study should identify specific nursing specialties and because of its magnitude, would be more generalizable than the current studies.

Best methods of patient teaching is an important area to examine since this is often where we, as healthcare providers, fail. We frequently do not recognize patients with low health literacy nor tailor communication and instruction to the individual needs of the patient. This study included questions related to most frequently used patient teaching methods by ED nurses, but did not examine the methods that were

most effective. There is a need for development of a valid and reliable instrument to assess the efficiency and effectiveness of diverse patient teaching methods. Future research is recommended that would find the teaching methods that prove to have the most beneficial effect on patient outcomes including readmissions.

Finally, the growing problem of readmission to the hospital and more specifically recidivism in the ED leads to questions regarding how to obtain better patient outcomes. Evidence points to the connection between low health literacy and readmissions (Griffey et al., 2014). Limited research has been done in this area but several studies point to patient understanding of discharge instruction as an area to examine (Gignon et al., 2014; Herndon et al., 2011; Regalbuto et al., 2014). Future research including an observational study examining patient education and discharge instruction processes in the ED may uncover clearer evidence than is revealed in a convenience sample with self-reported data.

Conclusion

Health literacy has been recognized as a profound problem that initially looked at individual competence. The obligation has been expanded to a shared responsibility between the individual and the healthcare provider with a more recent shift towards healthcare provider adaptation to ensure patient understanding (Adams, 2010). HL is a very large multi-faceted problem that has implications in most areas of healthcare, but is especially relevant in the ED. It is important to continue the dialogue and research in this area of healthcare with a focus on nursing.

The results of this study add to the growing body of evidence regarding health literacy and nursing. More specifically, it points to evidence about what ED nurses know about HL and the HL strategies (experiences) in which they engage. This study further adds the element of most frequently used patient teaching to the findings. There proved to be no relationship between HL knowledge and HL experience among ED nurses. There was just one relationship found between HL knowledge and the patient teaching method '*intentionally speaking slowly*' ($r = -.173$, $p = .047$). However, there were a few relationships found between HL experiences and patient teaching methods. These included *assessing patient understanding* ($r = .227$, $p = .009$), *using teach-back techniques* ($r = .227$, $p = .009$) and *intentionally speaking slowly* ($r = -.425$, $p = .000$). More telling were the gaps in HL knowledge and HL experiences of ED nurses that were found in the study. While ED nurses were found to have some HL knowledge, it is disconcerting that there were many gaps in areas of basic facts such as knowing that the elderly are the group most at risk for low HL, that most individuals read three-five grades lower than their last completed grade, and the best predictor of healthcare status is literacy. It is also important to note that while ED nurses reported participating in some HL strategies, there were also many gaps. An overall large portion of ED nurses indicated they never participate in specific HL experiences and a very small portion of ED nurses indicated they always participate in HL experiences.

This study sought to learn more about the relationships between ED nurses HL knowledge, their HL experiences and their patient teaching methods using the

health context portion of the IOM HL framework as the basis for the study. ED

nurses, as part of the health context, have an integral place in an evolving system of

healthcare whereby patient safety and positive outcomes are a priority. This study

also demonstrates that while there are many gaps in health literacy knowledge and

experience in nurses, there have been and continue to be efforts to improve.

Recommendations include further research into communication and teaching

methods that produce the best understanding and retention by the patient.

Recommendations also include re-evaluation of the inclusion of HL concepts in

nursing education to provide nurses with the skills needed to adapt patient teaching to

the HL level of the patient. These skills include quick reliable methods to assess

patients HL and then assess their understanding after patient teaching is completed in

a methodical fashion. Nursing faculty do this in the classroom. How much more

important it is to incorporate this in patient teaching where life and health are at stake.

REFERENCES

Adams, R. (2010). Improving health outcomes with better patient understanding and education. *Risk Management and Healthcare Policy, 3*, 61-72. doi: 10.2147/RMHP.S7500

American Association of Colleges of Nursing (2008). *The Essentials of Baccalaureate Education for Professional Nursing Practice.* Washington DC: American Association of Colleges of Nursing.

Anderson, A., & Klemm, P. (2007). The internet: Friend or foe when providing patient education? *Clinical Journal of Oncology Nursing*, *12*(1), 55-63. doi: 10.1188/08.CJON.55-63

Andrulis, D., & Brach, C. (2007). Integrating literacy, culture, and language to improve health care quality for diverse populations. *American Journal of Health Behaviors, 31*(Suppl 1), S122-S133.

Babbie, E. (1990). *Survey research methods*. Belmont, CA: Wadsworth Publishing Co.

Badarudeen, S. & Sabharwal, S. (2010). Assessing readability of patient education materials. *Clinical Orthopaedics and Related Research*, *468*(10), 2572-2580. doi:10.1007s11999-010-1380-y

Baker, D., Gazmararian, J., Williams, M., Scott, T., Parker, R., Green, D., . . . Peel, J. (2002). Functional health literacy and the risk of hospital admission among medicare managed care enrollees. *American Journal of Public Health*, *92*(8), 1278-1283.

Baker, D., Gazmararian, J., Williams, M., Scott, T., Parker, R., Green, D., . . . Peel, J. (2004). Health literacy and use of outpatient physician services by medicare managed care enrollees. *Journal of General Internal Medicine, 19*, 215-220. doi: 10.1111/j.1525-1497.2004.21130x

Baker, D., Parker, R., Williams, M., & Clark, W. (1998). Health literacy and the risk of hospitalization. *Journal of General Internal Medicine, 13*, 791-798.

Baker, D., Parker, R., Williams, W., Clark, W., & Nurss, J. (1997). The relationship of patient reading ability to self-reported health and use of health services. *American Journal of Public Health, 87*(6), 1027-1030

Bannon, W. (2013*). The 7 steps of data analysis: A manual for conducting a quantitative research study.* New York: StatsWhisperer Press.

Bastable, S. B. (2003). Overview of education in health care. In S. B. Bastable (Ed), *Nurse as educator: Principles of teaching and learning for nursing practice,* (pp. 4-19). Sudbury, MA: Jones and Bartlett.

Baur, C. (2011). Calling the nation to act: Implementing the national action plan to improve health literacy. *Nursing Outlook*, *59*(2), 63-69. doi: 10.1016/j.outlook.2010.12.003

Berkman, L. (2009). Social epidemiology: Social determinants of health in the United States: Are we losing ground? *Annual Review of Public Health, 30*, 27-41. doi: 10.1146/annurev.publhealth.031308.100310

Berkman, N., Davis, T., & McCormack, L. (2010). Health literacy: What is it? *Journal of Health Communication, 15,* 9-19. doi: 10.1080/10810730.2010.499985

Berkman, N., Dewalt, D., Pignone, M., Sheridan, S., Lohr, K., Lux, L.,…Bonita, A. (2004). *Literacy and health outcomes.* Rockville, MD: Agency for Healthcare Research and Quality.

Benner, P. (2004). Using the Dreyfus Model of skill acquisition to describe and interpret skill acquisition and clinical judgment in nursing practice and education. *Journal of Science, Technology and Society, 24*(3), 188-199. doi: 10.1177/0270467604265061

Billings, D., & Halstead, J. (2009). *Teaching in nursing: A guide for faculty*. St. Louis, MO: Saunders Elsevier

Brach, C., Keller, D., Hernandez, L., Baur, C., Parker, R., Dreyer, B. . . . Schillinger, D. (2012) Ten attributes of health literate health care organizations. *IOM, National Academies of Science.* Retrieved from www.iom.edu/~/media/files/Perspectives-Files/2012/Discussion-Papers/BPH_Ten_HLit_Attributes.pdf

Brown, D., Ludwig, R., Buck, G., Durham, D., Shumard, T., & Graham, S. (2004). Health literacy: Universal precautions needed. *Journal of Allied Health, 33*(2), 150-155.

Brooks, D. (1998). Techniques for teaching ED patients with low literacy skills. *Journal of Emergency Nursing, 24,* 601-603.

Burns, N., & Grove, S. (2012). *The practice of nursing research: Appraisal, synthesis, and generation of evidence.* St. Louis, MO: Saunders Elsevier

Cafiero, M. (2012). *Nurse practitioners' knowledge, experience, and intention to use health literacy strategies in clinical practice.* (Order No.3508251, Teachers College, Columbia University). *ProQuest Dissertations and Theses,* 152. Retrieved from http://search.proquest.com/docview/1018403687?accountid=13793. (1018403687).

Cafiero, M. (2013). Nurse practitioners' knowledge, experience, and intention to use health literacy strategies in clinical practice. *Journal of Health Communication*, *18 supp,* 70-81. doi:10.1080/10810730.2013.825665

California Partnership for Access to Treatment. (n.d). *The Growing Crisis of Chronic Disease in the United States*. Retrieved from www.caaccess.org/pdf/chronic_disease.pdf

Cantrell, M. & Lupinacci, P. (2007). Methodological issues in online data collection. *Journal of Advanced Nursing, 60*(5), 544-549. doi: 10.1111/j.1365-2648.2007.0448.x

Carret, M., Fassa, A., & Kawachi, I. (2007). Demand for emergency health service: Factors associated with inappropriate use. *BioMed Central Health Services Research*. doi:10.1186/1472-6963-7-131

Center for Disease Control and Prevention. (2014). Chronic diseases and health promotion. Retrieved from http://www.cdc.gov/chronicdisease/overview/index.htm

Center for Medicare and Medicaid Services. (2012). Readmissions reduction program. Retrieved from www.cms.gov/Medicare/Medicare-Fee-for-Service-payment/acutenpatientPPS/Readmission-Reduction-Program.html

Colby, S. & Ortman, J. (2015). Projections of the size and composition of the U.S. population: 2014 to 2060. Current population Report, P25-1143, *United States Census Bureau*. Retrieved from census.gov

Cormier, C. (2006). *Health literacy: The knowledge and experiences of senior level baccalaureate nursing students.* (Order No. 3244945, Louisiana State University and Agricultural & Mechanical College). *ProQuest Dissertations and Theses,* 137-137. Retrieved from http://search.proquest.com/docview/305322825?accountid=13793. (305322825).

Cormier, C. & Kotrlik, J. (2009). Health literacy: The knowledge and experiences of senior level baccalaureate nursing students. *Journal of Nursing Education, 48*(5), 237-248.

Davis, L. (1992). Instrument review: Getting the most from your panel of experts. *Applied Nursing Research, 5*(4), 194-197

Davis, T., Long, S., Jackson, R., Mayeaux, E., George, R., Murphy, P., & Crouch, M. (1993). Rapid estimate of literacy in medicine: A shortened screening instrument. *Family Medicine, 25,* 391-395.

Department of Health and Human Services, Office of Disease Prevention and Health Promotion. (2010a). *National Action Plan to Improve Health Literacy,* Washington, DC: Author.

Department of Health and Human Services. (2010b). *Health People 2020: Understanding and Improving Health*. Washington DC: Author.

DeGrauw, X., Annest, J., Stevens, J., Xu, L., Coronado, V. (2016). Special Report from the CDC: Unintentional injuries treated in hospital emergency departments among persons aged 65 and older, United States, 2006-2011. *Journal of Safety Research,* 56105-109. doi: 10.1016/j.jsr.2015.11.002

Devinney, B. (2014). Patient education in the emergency department. *Nursing Theses and Capstone Projects,* Paper 12

DeWalt, D. (2011). Teaching clinicians the teach-back for patient education [Web Log post]. Retrieved from http://www.kevinmd.com/blog/2011/11/teaching-clinicians-teachback-patient-education.html

DeWalt, D., Berkman, N., Sheridan, S., Lohr, K., & Pignone, M. (2004). Literacy and health outcomes: A systematic review of the literature. *Journal of General Internal Medicine, 19*(12), 1228-1239. doi: 10.1111/j.1525-1497.2004.40153.x

DeWalt, D., Broucksou, K., Hawk, V., Brach, C., Hink, A., Rudd, R. & Callahan, L. (2011). Developing and testing the health literacy universal precautions toolkit. Nursing Outlook, 59(2), 85-94. doi: 10.1016/j.outlook.2010.12.002

Dickerson, S., Boehmke, M., Ogle, C., & Brown, J. (2005). Out of necessity: Oncology nurses' experiences integrating the Internet into practice. *Oncology Nursing Forum 32*(2), 355-362. doi: 10.1188/05.ONF.355-362

Doak, C. Doak, L., & Root, J. (1985). *Teaching Patients with Low Literacy skills*. Philadelphia, PA: J.B. Lippincott.

Durant, J., Evans, G., & Thomas G. (1992). Public understanding of science in Britain: The role of medicine in the popular representation of science. *Public Understanding of Science*, *1*(2), 161-182. doi: 10.1088/0963-6625/1/2/002

Ecob, R., & Smith, G. (1999). Income and health: What is the nature of the relationship? *Social Science and Medicine, 48,* 693-705.

Egbert, N., & Nanna, K. (2009). Health literacy: Challenges and strategies. *Online Journal of Issues in Nursing, 14*(3). doi: 10.3912/OJIN.Vol14No03Man01

Emergency Nurse Association (2016). *About ENA*. Retrieved from http://www.ena.org/about/Pages/Default.aspx

Eysenbach, G., & Kohler, C. (2002). How do consumers search for and appraise health information on the world wide web? Qualitative study using focus groups, usability tests, and in-depth interviews. *British Medical Journal*, *324*(7337), 573-577.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.G. (2009) Statistical power analyses using G*Power3.1: Tests for correlation and regression analysis. *Behavior Research Methods*, *41*, 1149-1160.

Fetter, M. (1999). Recognizing and improving health literacy. *MEDSURG Nursing*, *8*(4), 226-227.

Fidyk, L., Ventura, K., Green, K. (2014). Teaching nurses how to teach: strategies to enhance the quality of patient education. *Journal for Nurses in Professional Development*, 30(5), 248-253. doi: 10.1097/NND.0000000000000074

Fisher, R. (1993). Social desirability bias and the validity of indirect questioning. *Journal of Consumer Research,* 20, 303-315.

Flores, G., Laws, M., Mayo, S., Zuckerman, B., Abreu, M., Medina, L. & Hardt, E. (2003). Errors in medical interpretation and their potential clinical consequences in pediatric encounters. *Pediatrics, 111*(1), 6-14.

Ghisi, G., Abdallah, F., Grace, S., Thomas, S., Oh, P. (2014). A systematic review of patient education in cardiac patients: Do they increase knowledge and promote health behavior change? *Patient Education and Counseling, 95,* 160-174. doi: 10.1016/j.pec.2014.01.012

Gignon, M., Ammirati, C., Mercier, R., Detave, M. (2014). Compliance with emergency department discharge. *Journal of Emergency Nursing, 40*(1), 51-55. doi: 10.1016/j.en.2012.10.004

Ginde, A., Weiner, S., Pallin, D., & Camargo, C. (2008). Multicenter study of limited health literacy in emergency department patients. *Academic Emergency Medicine, 15*(6), 557-580. doi: 10.1111/j.1553-271.2008.00116.x

Greene, C. & Murdock, K. (2013). Multidimensional control beliefs, socioeconomic status, and health. *American Journal of Health Behavior, 37*(2), 227-237. doi: 10.5993/AJHB.37.2.10

Green, S. and Salkind, N. (2014). Using SPSS for Windows and Macintosh: Analyzing and Understanding Data (7th ed). Pearson; Boston.

Griffey, R., Kennedy, S., McGowan, L., Goodman, M., & Kaphingst, K. (2014). Is low health literacy associated with increased emergency department utilization and recidivism? *Academic Emergency Medicine, 21*(10) 1109-1115.

Griffey, R., Shin, N., Jones, S., Aginam, N., Gross, M., Kinsella, Y., . . . Kaphingst, K. (2015). The impact of teach-back on comprehension of discharge instructions and satisfaction among emergency patients with limited health literacy: A randomized, controlled study. *Journal of Communication in Healthcare, 8*(1). doi: 10.1179/1753807615Y.0000000001

Grove, S., Burns, N., & Gray, J. (2013). *The practice of nursing research: Appraisal, synthesis and generation of evidence* (7th ed.). St. Louis: Elsevier.

Grundner, T. (1978). Two formulas for determining the readability of subject consent forms. American Psychologist, *33*(8), 773-775. doi:10.1037/0003066x.33.8.773

Hepburn, M. (2012). Health literacy, conceptual analysis for disease prevention. *International Journal of Collaborative Research on Internal Medicine and Public Health*, *4*(3), 228-238.

Herndon, J., Chaney, M., & Carden, D. (2011). Health literacy and emergency department outcomes: A systematic review. *Annals of Emergency Medicine, 57*(4), 334-345. doi: 0.1016/j.annemergmed.2012.08.035

Houts, P., Doak, C., Doak, L., & Loscalzo, M. (2006). The role of pictures in improving health communication: A review of research on attention, comprehension, recall, and adherence. *Patient Education and Counseling, 61(*2), 173-190. doi: 10.1016/j.pec.2005.05.004

Howard, D., Gazmararian, J., Parker, R. (2005). The impact of low health literacy on the medical costs of Medicare managed care enrollees. *American Journal of Medicine, 19*, 215-220.

Ingram, R. (2011). Using Campinha-Bacote's process of cultural competence model to examine the relationship between health literacy and cultural competence. *Journal of Advanced Nursing, 68*(3), 695-704. doi: 10.1111/j.1365-2648.2011.05822.x

Institute of Medicine (2004). *Health literacy: A prescription to end confusion*. Retrieved from http://www.iom.edu/Reports/2004/Health-Literacy-A-Prescription-to-End-Confusion.aspx

Jastek, S. & Wilkinson, G.S. (1987). Wide range achievement test-revised. Jastak Associates: Wilmington, DE.

Jordan, J., Buchbinder, R., & Osborne, R. (2010). Conceptualizing health literacy from the patient experience. *Patient Education and Counseling, 79*(1), 36-42. doi: 10.1016/j.pec.2009.10.001

Jordan, J., Osborne, R., & Buchbinder, R., (2011). Critical appraisal of health literacy indices revealed variable underlying constructs, narrow content and psychometric weaknesses. *Journal of Clinical Epidemiology*, 64, 366-379. doi: 10.1016/j.jclinepi.2010.04.005

Jukkala, A., Deupree, J., & Graham, S. (2009). Knowledge of limited health literacy at an academic health center. *The Journal of Continuing Education in Nursing, 40*(7), 298-302.

Kaestle, C., Damon-Moore, H., Stedman, L., Tinsley, K., & Trollinger, W. (1991). *Literacy in the United States: Readers and reading since 1880.* New Haven, CT: Yale University Press.

Kalichman, S., & Rompa, D., (2000). Functional health literacy is associated with health status and health-related knowledge in people living with HIV-AIDS. *Journal of Acquired Immune Deficiency Syndromes, 25*(4), 337-344. doi: 10.1097/00042560-200012010-00007

Katz, J. (1994). Informed consent – must it remain a fairy tale? *Journal of Contemporary Health Law & Policy,* Retrieved from www.lexisnexis.com/hottopics/Inacademic

Keller, D., Wright, J., Pace, H. (2008). Impact of health literacy on health outcomes in ambulatory care patients: A systematic review. *Annals of Pharmacotherapy, 42*, 1272-2078. doi: 10.1345/aph.1L093

Kennard, D. (2016). Health literacy concepts in nursing education. *Nursing Education Perspectives, 37*(2), 118-119. doi: 10.5480/4-1350

Kindig, D. (2004). Preface. *Health literacy: A prescription to end confusion*. p. xiii. Washington, DC: Institute of Medicine. Retrieved from http://www.iom.edu/Reports/2004/Health-Literacy-A-Prescription-to-End-Confusion.aspx

Kirsch, I., Jungeblut, A., Jenkins, I., & Kolstad, A. (1993). *Adult literacy in America: A first look at the results of the national adult literacy survey.* Washington, DC: National Center for Education Statistics, US Department of Education.

Knight, G. (2011). *An evaluation of the health literacy knowledge and experience of registered nurses in Georgia.* (Order No. 3464456, Auburn University). *ProQuest Dissertations and Theses,* 118. Retrieved from http://search.proquest.com/docview/880559736?accountid=13793. (880559736).

Kruger, S. (1991). The patient educator role in nursing. *Applied Nursing Research. 4,* 19-24.

Kutner, M., Greenberg, E., Jin, Y., Paulsen, C. & White, S. (2006). *The health literacy of America's adults: Results from the 2003 national assessment of adult literacy.* Retrieved from http://nces.ed.gov/pubs2006/2006483.pdf.

Lambert, V., & Keogh, D. (2014). Health literacy and its importance for effective communication. *Nursing Children and Young People, 26*(4), 32-36.

Lindell, R., & Ding, L. (2013). Establishing reliability and validity: An ongoing process. *AIP conference proceedings 1513*(1), 27-29. doi: 10.1063/1.4789643

Lindquist, L., Go, L., Fleisher, J., Jain, N., Friesema, E., & Baker, D. (2011) Relationship of health literacy to intentional and unintentional non-adherence of hospital discharge medications. *Journal of General Internal Medicine*, *27*(2), 173-178. doi:10.1007/s11606-011-1886-3

Luker, K., & Caress, A. (1989). Rethinking patient education. *Journal of Advanced Nursing*, *14*, 711-718.

Lupton, D. (2014). Critical perspectives on digital health technologies. *Sociology Compass, 8*(12), 1344-1359. doi:10.1111/soc4.12226

Lyneham, J., Parkinson, C., & Denholm, C. (2008). Explicating Benner's concept of expert practice: Intuition in emergency nursing. *Journal of Advanced Nursing, 64*(4), 380-387. doi: 10.1111/j.1365-2648.2008.04799.x

Macabasco-O'Connell, A., & Fry-Bowers, E. (2011). Knowledge and perceptions of health literacy among nursing professionals. *Journal of Health Communication, 16*, 295-307. doi:10.1080/10810730.2011.604389

Mackert, M., Ball, J., Lopez, N. (2011). Health literacy awareness training for health care workers: Improving knowledge and intentions to use clear communication techniques. *Patient Education and Counseling, 85*, e225-e228. doi: 10.1016/j.pec.2011.02.022

Mancuso, J. M. (2009). Assessment and measurement of health literacy: An integrative review of the literature. *Nursing & Health Sciences, 11*(1), 77-89. doi:10.1111/j.1442-2018.2008.00408.x

Markwardt, F. C., Jr. (1989). Peabody Individual Achievement Test--Revised (PIAT-R). Circle Pines, MN: American Guidance Service. HaPI-160709

Mayeaux, E. Murphy, P. Arnold, C. Davis, T. Jackson, R. & Sentell, T. (1996). Improving patient education for patients with low literacy skills. *American Family Physician*, *53*, 205-211

Mayer, G. & Villaire, M. (2007). *Health literacy in primary care: A clinician's guide*. New York, NY: Springer.

McCleary-Jones, V. (2012). Assessing nursing students' knowledge of health literacy. *Nurse Educator, 37*(5), 214-217.

Mitchell, S., Sadikova, E., Jack, B., & Paasche-Orlow, M. (2012). Health literacy and 30-day Postdischarge hospital utilization. *Journal of Health Communication, 17,* 325-338. doi:10.1080/10810730.2012.715233

Morgan, A., & Chow, S. (2007). The economic impact of implementing an ergonomic plan. Nursing Economics, 25(3), 150-156.

Morrison, A., Schapira, M., Gorelick, M., Hoffmann, R., Brousseau, D. (2014). Low caregiver health literacy is associated with higher pediatric emergency department use and nonurgent visits. *Academic Pediatrics, 14*(3), 309-314.

Myers, R., (2010). Promoting health behaviors: How do we get the message across? *International Journal of Nursing Studies, 47*(4), 500–512.

National Council of State Boards of Nursing (NCSBN). (2015). The National Council of State Boards of Nursing and The Forum of State Nursing Workforce Centers 2015 National Workforce Survey of RNs, Journal of Nursing Regulation, 4(Supplement,), Sl-72

Newman, A. (2008). Say so long to an old companion: Cassette tapes. *New York Times*, 157(54385).

Norman, L., Donelan, K., Buerhaus, P., Willis, G., Williams, M., Ulrich, B., & Dittus, R. (2005). The older nurse in the workplace: Does age matter? Nursing Economics 23(6), 282-289

Nurses for a Healthier Tomorrow. (n.d.). *Emergency Nurse*. Retrieved on January 30, 2015, from www.nursesource.org/emergency.html

Olives, T., Patel, R., Patel, S., Hottinger, J., & Miner, J. (2011). Health literacy of adults presenting to an urban ED. *American Journal of Emergency Medicine, 29*, 875-882. doi: 10.1016/j.ajem.2011.03.031

Osborne, H. (2005). Health literacy from A to Z: Practical ways to communicate your health message. Sudbury, MA: Jones & Bartlett Publishers.

Paasche-Orlow, M., & Wolf, M. (2007). The causal pathways linking health literacy to health outcomes. *American Journal of Health Behavior, 31,* 19-26.

Parikh, N., Parker, R., Nurss, J., Baker, D., & Williams, M. (1996). Shame and health literacy: The unspoken connection. *Patient Education and Counseling, 27*(1), 33-39. doi:10.1016/0738-3991(95)00787-3

Parker, R. (2000). Health literacy: A challenge for American patients and their health care providers. *Health Promotion International 15*(4), 277-283. doi: 10.1093/heapro/15.4.277

Parker, R., Baker, D., Williams, M., & Nurss, J. (1995). The test of functional health literacy in   adults: A new instrument for measuring patients' literacy skills. *Journal of General Internal Medicine, 10*, 537-541.

Pawlak, R. (2005). Economic consideration of health literacy. *Nursing Economics*, *23*(4), 173-180.

Payne, L. (2009). *Registered nurses' use of teaching techniques to mitigate low health literacy: Frequency, perceived effectiveness and correlations.* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses. (UMI Order No. 304895609).

Peregrin, T. (2010). Picture this: Visual cues enhance health education messages for people with low literacy skills. Journal of the American Dietetic Association, 110(4), 500-505. doi: 10.1016/jada.2010.02.019

Pitts, S., Carrier, E., Rich, E., & Kellermann, A. (2010). Where Americans get acute care: Increasingly, It's not at their doctor's office. *Health Affairs*, *29*(9), 1620-1629. doi:10.1377/hlthaff.2009.1026

Polit, D. & Beck, C. (2012). *Nursing research: generating and assessing evidence for nursing practice*, 9th ed. Philadelphia, PA: Lippincott, Williams, & Wilkins.

Quality Safety Education for Nurses (2005). *Quality/Safety Competencies: Patient-Centered Care.* http://www.qsen.org [Accessed September 12, 2012]

Ratzan, S. C. (2001). Health literacy: Communication for the public good. *Health Promotion International*, *16*, 207-214.

Redman, B. (1997). *The practice of patient education*. St. Louis, MO: Mosby-Year Book.

Regalbuto, R., Maurer, M., Chapel, D., Mendez, J., & Shaffer, J. (2014). Joint Commission requirements for discharge instructions in patients with heart failure: Is understanding important for preventing readmissions? *Journal of Cardiac Failure, 20*(9), 641-649. doi:10.1016/j.cardfail.2014.06.358

Resnick, D., & Resnick, L. (1977). The nature of literacy: A historical exploration. *Harvard Educational Review, 47,* 370-385.

Rudd, R. (2007), Health literacy skills of U.S. adults. *American Journal of Health Behavior, 31,* S8-S18.

Samuels-Kalow, M., Stack, A., & Porter, S. (2012), Effective discharge communication in the emergency department. *Annals of Emergency Medicine, 60*(2), 152-159. doi; 10.1016/j.annemergmed.2011.10.023

Sand-Jecklin, K., Murray, B., Summers, B., & Watson, J. (2010). Educating nursing students about health literacy: From the classroom to the patient bedside. *Online Journal of Issues in Nursing, 15*(3), 1.

Sarkar, U., Fisher, L., Schillinger, D. (2006). Is self-efficacy associated with diabetes self-management across race/ethnicity and health literacy? *Diabetes Care, 29*(4), 823-829.

Scheckel, M., Emery, N., & Nosek, C. (2010). Addressing health literacy: The experiences of undergraduate nursing students. *Journal of Clinical Nursing*, *19,* 794-802. doi: 10.1111/j.1365-2702.2009.02991.x

Schillinger, D. (2001). Improving the quality of chronic disease management for populations with low functional health literacy: A call to action. *Disease Management*, *4*, 103-109.

Schillinger, D., Grumbach, K., Piette, J., Wang, F., Osmond, D., Daher, C....Bindman, A. (2002). Association of health literacy with diabetes outcomes. *Journal of American Medical Association, 288*(4), 475-482.

Schlichting, J., Quinn, M., Heuer, L., Schaefer,T., Drum, M., Chin, M. (2007). Provider perceptions of limited health literacy in community health centers. *Patient Education and Counseling*, *69*(1-3), 114-120.

Schloman, B. (2004). Information resources: Health literacy: A key ingredient for managing personal health. *The Online Journal of Issues in Nursing, 9*(2), 1-7.

Schumacher, J., Hall, A., Davis, T., Arnold, C., Bennett, R., Wolf, M., & Carden, D. (2013). Potentially preventable use of emergency services. *Medical Care, 51*(8), 654-658.

Schwartzberg, J., Cowett, A., VanGeest, J., & Wolf, M. (2007). Communication techniques for patients with low health literacy: A survey of physicians, nurses, and pharmacists. *American Journal of Health Behaviors, 31*, S96-S104.

Schwartzberg, J., VanGeest, J., Wang, C. (2005). *Understanding health literacy: Implications for medicine and public health*. United States: AMA Press. ISBN-10: 1579476309

Scott, S. (2016). Health literacy education in baccalaureate nursing programs in the United States. *Nursing Education Perspectives, 37*(3). 153-158. doi: 10.1097/01.NEP.0000000000000005

Selden, C., Zorn, M., Ratzan, S.C., & Parker, R. (2000). *National Library of Medicine's Current Bibliographies in Medicine: Health Literacy*. Bethesda, MD: National Institute of Health. Available from http://www.nlm.nih.gov/archive//20061214/pubs/cbm/hliteracy.html

Serper, M., Patzer, R., Curtis, L., Smith, S., O'Conor, R., Baker, D. & Wolf, M. (2014). Health literacy cognitive ability, and functional health status among older adults. *Health Services Research, 49*(4), 1249-1267. doi: 10.1111/1475-6773.12154

Simonds, S. (1974). Health education as social policy. *Health Education Monographs, 2*, 1-25.

Simonds, S. (1978). Health education: Facing issues of policy, ethics and social justice. *Health Education Monographs, 6*(Suppl 1):18. 18-27.

Slosson, R.L. (1990). Slosson oral reading test revised. East Aurora, NY: Slosson Educational Publications.

Sorensen, K., Van den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z., Brand, H. (2012). *BioMed Central Public Health 12*(80). doi: 10.1186/1471-2458-12-80

Speros, C. (2005). Health literacy: Concept analysis. *Journal of Advanced Nursing, 50*(6), 633-640.

Speros, C. (2009). More than words: Promoting health literacy in older adults. *Online Journal of Issues in Nursing, 14*(3), 6.

Taggart, J., Williams, A., Dennis, S., Newall, A., Shortus, T., Zwar, N. . . . Harris, M. (2012). A systematic review of interventions in primary care to improve health literacy for chronic disease behavioral risk factors. *BioMed Central Family Practice, 13*(49), 1-12.

Tamura-Lis. (2013). Teach-back for quality education and patient safety. *Urologic Nursing, 33*(6), 267.298. doi: 10.7257/1053-816X.2013.33.6.267

The Joint Commission. (2010). *Accreditation Manuals for Hospitals – Specifications Manual for Joint Commission National Quality Core Measures*. Retrieved from https://manual.jointcommission.org/releases/archive/TJC2010B/DataElem0048.html

The Joint Commission. (2012). Patient-centered communication standards for hospitals. *Comprehensive Accreditation Manual for Hospitals*. Retrieved from www.jointcommission.org

The Joint Commission. (2007). "What did the doctor say?: Improving health literacy to protect patient safety". Retrieved 10/25/14 from www.jointcommission.org

Torres, R., & Nichols, J. (2014). Health literacy knowledge and experiences of associate degree nursing students: A pedagogical study. *Journal of Teaching and Learning in Nursing*, 9, 84-92. doi: 10.1016/j.teln.2013.11.003

United States Department of Health and Human Services (2002). Nurse practitioner primary care competencies in specialty areas: Adult, family, gerontological, pediatrics and women's health. Retrieved from http://www.aacn.nche.edu/education-resources/npcompetencies.pdf

Vernon, J., Trujillo, A., Rosenbaum, S., & DeBuono, B., (2007). *Low health literacy: Implications for national policy*. Retrieved from George Washington University website: http://publichealth.gwu.edu/departments/healthpolicy/DHP_Publications/pub_uploads/dhp Publication_3AC9A1C2-5056-9D20-3D4BC6786DD46B1B.pdf

von Wagner, C., Knight, K., Steptoe, A., & Wardle, J. (2007). Functional health literacy and health-promoting behavior in a national sample of British adults. *Journal of Epidemiology Community Health, 61*, 1086-1090.

Weiss, B., Blanchard, J., McGee, D., Hart, G., Warren, B., Burgoon, M., & Smith, K. (1994). Illiteracy among Medicaid recipients and its relationship to health care costs. *Journal of Health Care for the Poor and Underserved, 5,* 99-111.

Weiss, B., Hart, G., & Pust, R. (1991). The relationship between literacy and health, *Journal of Health Care for the Poor and Underserved, 1,* 351-363.

Weiss, B., Reed, R., Kligman, E. (1995). Literacy skills and communication methods of low-income persons. *Patient Education and Counseling, 25*, 109-119.

Weiss, B., Mays, M., Martz, W., Castro, K., DeWalt, D., Pignone, M.,…Hale, F. (2005). Quick assessment of literacy in primary care: The Newest Vital Sign. *Annals of Family Medicine, 3*(6), 514-522. doi: 10.1370/afm.405

Williams, M., Baker, D. Honig, E., Lee, T., Nowlan, A. (1998). Inadequate literacy is a barrier to asthma knowledge and self-care. *CHEST, 114*(4), 1008.

Williams, M., Parker, R., Baker, D., Parikh, N., Pitkin, K., Coates, W., Nurss, J. (1995). Inadequate functional health literacy among patients at two public hospitals. *Journal of American Medical Association, 274*(21), 1677-1682.

Witte, P. (2010). Health Literacy: Can we live without it? *Adult Basic Education And Literacy Journal*, *4*(1), 3-12.

Witte, R. & Witte, J. (2010). *Statistics*. Hoboken, NJ: Wiley

Wolf, L., Perhats, C., Delao, A., Clark, P., & Moon, M. (2016). On the threshold of safety: A qualitative exploration of nurses' perceptions of factors involved in safe staffing levels in emergency departments. *Journal of Emergency Nursing*. doi: 10.1016/j.jen.2016.09.003

Wood, M., & Ross-Kerr, J. (2011). *Basic steps in planning nursing research: From question to proposal.* Sudbury, MA: Jones and Bartlett Publishers

World Health Organization (2005). Preparing a health care workforce for the 21st century: The challenge of chronic conditions. Geneva, Switzerland: World Health Organization. Retrieved from http://www.who.int/chp/knowledge/publications/workforce_report.pdf

Zarcadoolas, C., Pleasant, A., & Greer, D. (2006). *Advancing health literacy*. San Francisco, CA: Jossey-Bass.

Zavala, S. & Shaffer, C. (2011). Do patients understand discharge instructions? *Journal of Emergency Nursing, 37*(2), 138-140. doi: 10.1016/j.jen.2009.11.008

Appendix A

Solicitation Letter

Dear Fellow Emergency Department Nurse:

My name is Deborah Kennard, MSN, RN, and I am a doctoral candidate in the College of Nursing at Seton Hall University in South Orange, New Jersey. I would like to invite you to participate in a research survey entitled " Emergency Room Nurses Knowledge of and Experience with Health Literacy and their Patient Teaching Methods".

The purpose of this study is to explore relationships among the health literacy knowledge and experience of Registered Nurses working in an emergency department. This study also looks at nurses' patient-teaching methods in relation to the health literacy of the patient. Your responses will provide important information and improve understanding of health literacy and patient teaching by nurses in the emergency department.

You should be able to complete the surveys in less than 20 minutes.

The link at the end of this letter will take you directly to the surveys. The surveys consist of the Health Literacy Knowledge and Experience Survey (HLKES), Parts I and Part II, and a demographic questionnaire. Part I of the HLKES is a 29-item multiple choice questionnaire asking about your knowledge of health literacy. Part II is a 9-item Likert style survey asking for your experiences with health literacy

strategies. The demographic questionnaire includes questions that describe you, and your patient teaching methods.

Completing the online survey materials will imply your voluntary consent to participate in the study. While there are no anticipated risks involved in completing the surveys, you are free to stop the survey at any point without any consequences. If you exit the survey prior to completion, no data will be submitted or saved.

The web based survey program ASSET$_{TM}$ is designed to ensure that your information is submitted anonymously. Your information cannot be traced back to you. Your responses are not accompanied by any identifying information, assuring that your participation is completely anonymous.

All data will be aggregated so that no individual answers are identifiable. To further ensure confidentiality, the data will be kept on a separate memory key and stored in a locked file cabinet in the researcher's home office.

If you have any questions or concerns, please call the Seton Hall University IRB office at 973-313-6314 or contact me at deborah.kennard@student.shu.edu.

Please click on the following link to access the survey

_____.

Thank you for your time and consideration for being part of this important work.

Deborah Kennard, MSN, RN

Appendix B

Health Literacy Knowledge and Experience Survey

Part 1: Health Literacy Knowledge

Directions: Questions 1-29 are multiple-choice questions. Choose the best answer and record only one response for each question.

1.   Low health literacy levels are most prevalent among which of the following age groups?

    a. 16 to 24 years of age.

    b. 25 to 34 years of age.

    c. 35 to 44 years of age.

    d. 45 to 54 years of age.

    e. 65 years of age and older.

2.   Low health literacy levels are common among:

    a. African Americans.

    b. Hispanic Americans.

    c. White Americans.

    d. All ethnic groups.

3.   The research on health literacy indicates that:

    a. the last grade completed is an accurate reflection of an individual's reading ability.

    b. most individual's read three to five grade levels lower than the last year of school completed.

    c. if an individual has completed high school they will be functionally literate.

    d. if an individual has completed grammar school they will be functionally literate.

4. What is the likelihood that a nurse working in a public health clinic, primarily serving low-   income minority patients, will encounter a patient with low health literacy skills?

   a.   almost never.

   b.   occasionally

   c.   often

   d.   very often

5.   The best predictor of healthcare status is:

   a.   socioeconomic status.

   b.   literacy.

   c.   gender.

   d.   educational level.

6.   Patients with low health literacy skills:

   a.   rate their health status higher than those with adequate literacy skills.

   b.   experience fewer hospitalizations than those with adequate health literacy skills.

   c.   are often prescribed less complicated medication regimes than those with adequate health literacy skills.

   d.   are often diagnosed late and have fewer treatment options than those with adequate health literacy skills.

7. Health behaviors common among patients with low health literacy skills include:

> a. lack of participation in preventative healthcare.
>
> b. disinterest in learning about healthcare problems.
>
> c. an unwillingness to make lifestyle changes necessary to improve health.
>
> d. the inability to learn how to correctly take prescribed medications.

8. Patients cope with low health literacy skills by:

> a. asking multiple questions about healthcare instructions they do not understand.
>
> b. exploring treatment options before signing surgical consent forms.
>
> c. relying heavily on written healthcare instructions.
>
> d. pretending to read information given to them by healthcare providers.

9. The nurse should keep in mind that individuals with low health literacy levels:

> a. can understand written healthcare information if they are able to read it.
>
> b. will not be able to learn about their healthcare needs.
>
> c. have lower intelligence scores than average readers.
>
> d. have difficulty applying healthcare information to their health situation

10. The Rapid Estimate of Adult Literacy in Medicine is an instrument utilized to:

> a. determine the reading level of written healthcare information.
>
> b. assess the math skills of an individual required for medication administration.
>
> c. evaluate the overall quality of written health care information.
>
> d. assess the ability of an individual to read common medical terms.

11.   When working with individuals who have low health literacy skills the nurse should keep in mind that these individuals:

    a. may not admit that they have difficulty reading.

    b. will readily share that they need assistance with written information.

    c. will frequently ask questions about information they do not understand.

    d. should not be expected to manage their healthcare since they cannot read.

12.   Which of the following questions would provide the nurse with the **best** estimate of reading skills of the patient?

    a. "What is the last grade you completed in school?"

    b. "Do you have difficulty reading?"

    c. "Would you read the label on this medication bottle for me?"

    d. "Do you need eye glasses to read?"

13.   Which statement best describes the Test of Functional Health Literacy? This instrument is:

    a. used to assess the reading comprehension and numerical skills of an individual.

    b. only available in English and therefore has limited use with immigrants.

    c. an effective tool for assessing the reading level of individuals.

    d. recommended for determining the reading level of written healthcare materials.

14. What is the strongest advantage to conducting health literacy screenings? Health literacy screenings:

    a. provide nurses with a good estimate of the educational level of individuals.

    b. will help nurses to be more effective when providing healthcare teaching.

    c. can be used to diagnose learning difficulties that serve as barriers to patient teaching.

    d. assist healthcare agencies to comply with educational standards established by the Joint Commission on Accreditation of Health Organizations.

15. Which of the following statements, made by the nurse, would be the best approach to initiating a health literacy screening with a patient?

    a. "It is necessary for me to assess your reading level; this will take a few minutes and it is very important."

    b. "I need to conduct a test to see if you can read, please read these words for me."

    c. "I want to make sure that I explain things in a way that is easy for you to understand; will you help me by reading some words for me."

    d. "I need to administer a reading test to you, if you cooperate this will not take long."

16. After providing written healthcare information to a patient he states, "Let me take this information home to read." This may be a clue to the nurse that the patient:

    a. is in a hurry and does not have time for instruction.

    b. is not interested in learning the information.

    c. is noncompliant with healthcare treatments.

    d. may not be able to read the materials.

17.   An individual with functional health literacy will be able to:

a. follow verbal instructions but not written healthcare instructions.

b. read healthcare information but have difficulty managing basic healthcare needs.

c. read and comprehend healthcare information.

d. read, comprehend, and actively participate in decisions concerning healthcare.

18.   Which of the following is true with regards to written healthcare information?

a. Most healthcare information is written at an appropriate reading level for patients.

b. Illustrations can improve a patient's understanding of written information.

c. Patients are usually provided with information that they think is important to know about their healthcare status.

d. Overall patients comprehend written information better than verbal instructions.

19.   The recommended reading level for written healthcare information is:

a. 5th grade.

b. 8th grade.

c. 10th grade.

d. 12th grade.

20.   The first step in developing written healthcare information is to:

a. outline the content.

b. list the learning objectives.

c. find out what the audience needs to know.

d. research the content area.

21.   Which of the following statements best describes the Fry Method?

   a. This formula is used to calculate word difficulty in a written document.

   b. This method calculates the readability level of a written document by counting selected syllables and sentences within the document.

   c. It is an effective tool used for measuring how well a patient understands healthcare information.

   d. This instrument is used to evaluate the cultural appropriateness of written healthcare instructions.

22.   Recommendations for developing written healthcare materials include:

   a. use dark colored papers for printing.

   b. presenting information in the form of a conversation.

   c. including abbreviations when possible to save space.

   d. printing words in fancy script.

23.   When listing side effects for a handout on chemotherapy the oncology nurse should limit the list to:

   a.   2-3 items.

   b.   5-6 items.

   c. 10- 12 items.

   d.   15-20 items.

24.   Written healthcare information provided to a patient related to a specific disease should include:

   a. only three or four main ideas about the disease.

   b. all treatment options available to manage the disease.

   c. a detailed explanation of the pathophysiology of the disease.

   d. statistics on the incidence of the disease.

25. Which of the following would be the most effective wording for a heading in a brochure on hypertension?

   a. HYPERTENSION: THE SILENT KILLER

   b. *Symptoms of high blood pressure*

   c. How do I know that I have high blood pressure?

   d. What factors contribute to hypertension?

26. The **best** way to ensure that a breast cancer prevention brochure is culturally appropriate is to:

   a. review research on the community's culture.

   b. obtain input from nurses who have worked in the community.

   c. explore the types of materials currently available.

   d. include community members in the design of the brochure.

27. Which of the following instructions on the management of diabetes would be best understood by an individual with low health literacy skills?

   a. Check your blood sugar every morning.

   b. Insulin should be taken as directed by your physician.

   c. Diabetes is a disease of energy metabolism.

   d. Complications associated with insulin include hypoglycemic reactions.

28.   Which of the following approaches to patient education provides minimal opportunity for the patient to actively engage in learning?

a.   Incorporating short answer questions periodically throughout written healthcare materials and providing space for the patient to write responses.

b.   Instructing the patient to watch a video after providing written healthcare instructions.

c.   Planning a question answer session in small groups after completing a learning activity.

d.   Providing pictures for the patient to circle in response to questions asked in a healthcare brochure.

29.   The most effective way for a nurse to determine how well a patient with low h health literacy skills understands healthcare information is to:

a.   Utilize a pre-test before instruction and a post-test following instruction.

b.   Ask the question, "Do you understand the information I just gave you?"

c.   Have the patient teach back the information to the nurse.

d.   Verbally asking the patient a series of questions following instructions.

Appendix C

Part 2: Health Literacy Experiences

Directions: Questions 1-9 ask you to describe how often you participated in learning activities related to health literacy. Choose the response that best describes your health literacy experiences.

1. How frequently was health literacy emphasized in your nursing curriculum?

    a = Never   b = Sometimes   c = Frequently   d = Always

2. How often did you use a health literacy screening tool to assess the health literacy skills of an individual?

    a = Never   b = Sometimes   c = Frequently   d = Always

3. How often did you evaluate the reading level of written healthcare materials before using them for patient teaching?

    a = Never   b = Sometimes   c = Frequently   d = Always

4. How often did you evaluate the cultural appropriateness of healthcare materials, including written handouts, videos, audiotapes, before using them for patient teaching?

    a = Never   b = Sometimes   c = Frequently   d = Always

5.   How often did you evaluate the use of illustrations in written healthcare

        materials before using them for patient teaching?

           a = Never   b = Sometimes   c = Frequently   d = Always

6.   How often did you use written materials to provide healthcare information to

        an individual or community group?

               a = Never   b = Sometimes   c = Frequently   d = Always

7.   How often did you use audiotapes to provide healthcare information to an

        individual or community group?

               a = Never   b = Sometimes   c = Frequently   d = Always

8.   How often did you use videotapes to provide healthcare information to an

        individual or community group?

               a = Never   b = Sometimes   c = Frequently   d = Always

9.   How often did you use computer software to provide healthcare information

        to an individual or community group?

               a = Never   b = Sometimes   c = Frequently   d = Always

Appendix D

Demographic Questions

1. What is your age? _____

2. What is your gender?
    a. Female
    b. Male

3. What is your race/ethnicity?
    a. American Indian or Alaska Native
    b. Asian
    c. Black or African American
    d. Hispanic
    e. Native Hawaiian or Pacific Islander
    f. White
    g. Other _____

4. What is your highest level of nursing education?
    a. Nursing diploma
    b. Associates degree
    c. Bachelor's degree
    d. Master's degree
    e. Doctorate degree

5. Do have a degree in another discipline?
    a. Yes
    b. No
    c. If yes, what is the degree you hold? _____
    d. If yes, in what discipline is the degree? _____

6. Are you currently enrolled in school?
    a. Yes
    b. No

7. If you are currently enrolled in school, what degree are you pursuing?
     a. BSN
     b. MSN
     c. DNP
     d. PhD
     e. Other

8. How many years have you been a licensed R.N.? _____

9. How many years have your worked in the emergency department?
     _____

10. Where did you first learn about health literacy? (Health literacy is the ability to read, understand and make informed decisions about health care.)
     a. Nursing school
     b. Continuing education
     c. In the emergency department?
     d. Other (Please specify) _____

11. What is the major socioeconomic status of your ED's population?
     a. Low socioeconomic status
     b. Middle socioeconomic status
     c. High socioeconomic status

12. What is (are) the race(s)/ethnicity(ies) of your ED's population(s)? Check all that apply:
     a. American Indian or Alaska Native
     b. Asian
     c. Black or African American
     d. Hispanic
     e. Native Hawaiian or Pacific Islander
     f. White
     g. Other _____

13. What is (are) the primary language(s) of your ED's population(s)? Check all that apply:
     a. English
     b. Spanish

    c. Indo-European

    d. Asian – Pacific Islander

    e. Other _____

14. If you do not speak a common language with your patients, what means of translation do you use? Check all that apply:

    a. Hospital translator

    b. Language Line/Phone Relay

    c. Family member/friend

    d. None of the above

    e. Other _____

15. Do you work in an emergency department primarily treating

    a. Pediatric patients.

    b. Adult patients.

    c. Both pediatric and adult patients.

16. Which best describes your facility?

    a. Community hospital

    b. Medical center/University hospital

    c. Other

17. In what region of the country is your ED located?

    a. Northeast

    b. Midwest

    c. Southeast

    d. Southwest

    e. West

18. Has your facility achieved Magnet status?

    a. Yes

    b. No

19. If not, is your facility working towards Magnet status?

    a. Yes

    b. No

    c. I don't know

20. Which three of the following teaching methods do you use most frequently?
    a. Assess what the patient understands or has learned at the conclusion of the teaching session
    b. Avoid medical jargon (use simple language)
    c. Include a family member or friend in on the teaching and discussion
    d. Intentionally speak slowly
    e. Limit teaching to 2-3 important points
    f. Encourage questions
    g. Provide printed materials or give written instructions
    h. Use pictures or drawings
    i. Use teach-back technique
    j. Other _____

21. If you had sufficient time, which three patient teaching methods would be most effective?
    a. Assess what the patient understands or has learned at the conclusion of the teaching session
    b. Avoid medical jargon (use simple language)
    c. Include a family member or friend in on the teaching and discussion
    d. Intentionally speak slowly
    e. Limit teaching to 2-3 important points
    f. Encourage questions
    g. Provide printed materials or give written instructions
    h. Use pictures or drawings
    i. Use teach-back method
    j. Other _____

22. Do you assess what the patient already knows about his/her illness or injury prior to teaching?
    a. Never
    b. Rarely
    c. Occasionally
    d. Most of the time
    e. Always

23. Do you use an instrument such as the TOFHLA, REALM or NVS to assess patient's health literacy?
    a. Never
    b. Rarely
    c. Occasionally
    d. Most of the time
    e. Always

24. Do you alter your teaching methods based upon the patient's health literacy status whether formally assessed or not?
    a. Never
    b. Rarely
    c. Occasionally
    d. Most of the time
    e. Always

25. If you use written instructions, do you know if they are written at or below the fifth grade reading level?
    a. Yes
    b. No
    c. Sometimes

26. Are you able to provide a private place for education, free from distraction and being overheard by other patients?
    a. Yes
    b. No
    c. Sometimes

27. Do you have any examples of how low health literacy has impacted your patient outcomes? Please share.

    _____

    _____

28. Have you ever personally been in a situation where you did not understand or remember the healthcare information given to you as a patient? If yes, how many times?
    a. No
    b. Yes;
    c. If yes, how many times? _____

29. If you were ever personally in a situation where you did not understand or remember the healthcare information given to you as a patient, what do you feel interfered with your understanding?

Appendix E

Permission to use Health Literacy Knowledge and Experience Survey

REPLYREPLY ALLFORWARD

Cormier <ccormier@lsua.edu>

Wed 7/16/2014 12:31 PM

Inbox

To:

Deborah Kennard;
Flag for follow up. Start by Tuesday, October 28, 2014. Due by Tuesday, October 28,

2014.

 2 attachments

Health Literacy Knowledge and Experience   Health Literacy Knowledge

Survey.doc51 KB   Survey_key.doc44 KB

Download all

Deborah

You have my permission to use the health literacy survey. Attached is the survey and

the key to the knowledge survey. ED nurses play a key role in patient education and I

think your project will contribute to the quality of care for patients.

Please keep me posted. Would love to hear back from you regarding results.

Cathy

Deborah Kennard

Sent Items

I am a doctoral student at Seton Hall University in South Orange, New Jersey. My

dissertation topic is the relationships among emergency department nurses' health

literacy knowledge and experience and their adaptation of patient teaching

methods. I feel that the instrument you developed, The Health Literacy Knowledge

and Experience Survey, would be very effective in measuring the appropriate

variables in my study. May I have a copy of the original tool and may I have

permission to use your survey (or an adaptation) in my dissertation study?

Health literacy is such an important topic and I would like to explore it in an area that

I believe is profoundly affected by health literacy issues, the emergency

department. Your permission to use this tool would help me in this area. I will be

more than happy to share the data on reliability and validity.

You can reach me at ▮▮▮▮▮▮▮, if you have any questions, and email me at

deborah.kennard@student.shu.edu. Thank you.

Deborah K. Kennard, MSN, RN

Ph.D. Nursing Student

Seton Hall University

APPENDIX F

935 Lee Street
Des Plaines, IL 60016-6569
Telephone • 847/460-4000
Fax • 847/460-4005
Website • www.ena.org

May 29, 2015

Deborah Kinnard

Re: Preliminary Approval to Recruit Research Participants through the Emergency Nurses Association

Dear Ms. Kinnard,

This letter confirms, for the purposes of your IRB application, that ENA grants preliminary approval to your research study to be posted to the *External Research Opportunities* page on the ENA Web site. This is conditional upon receipt of documentation that the study has been granted IRB approval (or deemed exempt by the IRB) along with a final copy of all study related documents (e.g., updated proposal, all survey instruments, URL for the online survey, cover letters, etc.).

Final approval by ENA is conditional upon adherence to the guidelines available at https://www.ena.org/practice-research/research/Pages/ExternalResearch.aspx. Please familiarize yourself with the requirements and feel free to contact me if you have any questions. ENA retains the final decision to approve or deny any request to post a survey link to its Web site.

Sincerely,

Altair Delao, MPH
Senior Research Associate
T: (847) 460-1107
F: (847) 460-4004
adelao@ena.org

APPENDIX G

SETON HALL UNIVERSITY

1 8 5 6

June 24, 2015

Deborah Kennard

Dear Ms. Kennard,

The Seton Hall University Institutional Review Board has reviewed your research proposal entitled "Emergency Room Nurses' Knowledge of and Experience with Health Literacy and their Patient Teaching Methods" and has categorized it as exempt.

Enclosed for your records is the signed Request for Approval form.

Please note that, where applicable, subjects must sign and must be given a copy of the Seton Hall University current stamped Letter of Solicitation or Consent Form before the subjects' participation. All data, as well as the investigator's copies of the signed Consent Forms, must be retained by the principal investigator for a period of at least three years following the termination of the project.

Should you wish to make changes to the IRB approved procedures, the following materials must be submitted for IRB review and be approved by the IRB prior to being instituted:

- Description of proposed revisions;
- *If applicable*, any new or revised materials, such as recruitment fliers, letters to subjects, or consent documents; and
- *If applicable*, updated letters of approval from cooperating institutions and IRBs.

At the present time, there is no need for further action on your part with the IRB.

In harmony with federal regulations, none of the investigators or research staff involved in the study took part in the final decision.

Sincerely,

Mary F. Ruzicka, Ph.D.
Professor
Director, Institutional Review Board

cc: Dr. Eileen Toughill

Office of Institutional Review Board
Presidents Hall · 400 South Orange Avenue · South Orange, New Jersey 07079 · Tel: 973.313.0516 · Fax: 973.275.2361 · www.shu.edu

A   HOME   FOR   THE   MIND,   THE   HEART   AND   THE   SPIRIT