An Evaluation of the Health Literacy Knowledge and Experience of Registered Nurses in Georgia

by

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Abstract

Health literacy is a critical component of healthcare in America (Parker & Gazmararian, 2004). It is a powerful determinant of health status and mortality (DeWalt, Berkman, Sheridan, Lohr, & Pignone, 2004). Still, nearly half of the U.S. adult population has limited health literacy skills. Numerous studies have been conducted and found that limited health literacy is common among patients from every segment of society (Greenberg, 2001). However, there has been very little research that has evaluated the readiness of healthcare professionals to provide adequate health literacy intervention. A key responsibility of nurses is to provide and promote health information (Dunn, 2010a). But, to this researcher's knowledge, there has been very little research that examined the extent to which nurses are adequately prepared to provide effective health literacy intervention.

This study was an examination of the health literacy knowledge and experience of registered nurses. Participants were selected from the population of registered nurses in Georgia. The Health Literacy Knowledge and Experience (HL-KES) survey, which was developed by Dr. Catherine Cormier (Cormier, 2006), was used to examine the health literacy knowledge and experience of registered nurses who had at least three years of nursing experience and were currently practicing in Georgia. The study also examined the relationship between health literacy knowledge and health literacy experience.

The study found that registered nurses in Georgia had some health literacy knowledge and experience. Three of the six basic facts on health literacy items were answered correctly by the majority of participants but three were also answered incorrectly by the majority of participants. Respondents had more health literacy knowledge in the areas of consequences associated with low health literacy and evaluation of health literacy interventions. But, participants had less health literacy knowledge in the areas of health literacy screening and guidelines for written healthcare materials. Participants' strongest health literacy experience was in using written healthcare materials and videotapes to provide health information. These findings suggest that although registered nurses in Georgia have some health literacy knowledge and experience, they may not be adequately prepared to provide effective health literacy intervention.

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I dedicate this dissertation to my mother, Catherine McCollom, and grandmother, Ella Benson. I thank them for instilling in me a can-do spirit! I thank my daughters, Rhonda and Karen for their love and support, and I thank my precious granddaughters, Gabriella (Gabbie) and Isabella (Izzie) for understanding that at some point Meme would spend more time with them. Finally, I am extremely grateful to my husband, Leonard C. Knight. Thank you for the continuous support you unselfishly provide. I love you.

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Chapter 1

Introduction

This study was an examination of the health literacy knowledge and experience of registered nurses in Georgia. This chapter presents an overview of the research issues and defines the research problem. This chapter also discusses the purpose and significance of the study, and presents the research questions.

Background

Health literacy is a critical component of health care in America (Parker & Gazmararian, 2003). The designation 'health literacy' first appeared in the literature in 1974 during a health education conference (Ratzan, 2001; Simonds, 1974). But, it was nearly two and a half decades later that researchers began to rigorously study the idea of health literacy and develop its definition and concept (Mancuso, 2009). A few references to health literacy appeared in the literature prior to 1992, but the seminal work in health literacy was conducted by Williams et al. (1995) as they investigated the ability of patients to perform basic reading and numeracy tasks needed to function effectively in the health care setting (Speros, 2005). During the ensuing years health literacy research gained tremendous momentum (Parker, & Gazmararian, 2003) and in 2004 the Institute of Medicine's (IOM) Report – *Health Literacy: A Prescription to End Confusion* catapulted health literacy to national prominence (Baker, 2006). Additional studies have shown associations between limited health literacy and various problems with both health

and health care among adults in the United States (Murphy-Knoll, 2007; Wolf, 2007). Individuals with limited health literacy have less knowledge about their medical conditions (Williams, Baker, Parker, & Nurss, 1998), get less preventive care (McCray, 2004; Pawlak, 2005), have less ability to navigate the health care system, are more likely to be hospitalized (Baker, Parker, Williams, & Clark, 1998), and have increased mortality risk (Wolf, 2007). Thus, adequate health literacy is a key component of health care in America (Parker & Gazmararian, 2003). Another problem that greatly impacts the prevalence of limited health literacy and complicates the management of health status is that one's ability to understand health related information may be considerably worse that his or her general literacy ability (Spero, 2005). Individuals who can read may still be at a disadvantage in the healthcare environment (Pirisi, 2000). Thus, the number of years of education completed is typically not a valid indicator of health literacy status. The ability to read with comprehension is fundamental in any environment. But, the healthcare environment, due to its highly technical nature, tends to increase the amount of literacy needed (Parker, Wolf, & Kirsch, 2008). The U.S. healthcare system has been described as overwhelming and complex (Paasche-Orlow, Parker, Gazmararian, Nielsen-Bohlman, & Rudd, 2005); intricate, disjointed and specialized (Mika, Kelly, Price, Franquiz, & Villarreal, 2005); and compounding the literacy problem (Stableford & Mettger, 2007). To exacerbate the problem, clinicians often use arcane language and medical jargon (Department of Health and Human Services, 2010). Consequently, patients with limited literacy skills face enormous challenges in their attempt to navigate the healthcare system (Safeer, & Keenan, 2005). They are often unable to read with understanding, follow medication instructions or understand appointment schedules (Schloman, 2004). These obstacles become serious barriers to quality health care (Safeer, & Keenan, 2005). Additionally, the feeling of

shame and sense of decreased self worth in patients may add to their debilitation because they may not ask important questions or ask for health information for fear of disclosing their lack of knowledge (Safeer & Keenan, 2005).

Information is only useful if presented in a format that the audience can understand (Davis, Gazmararian, & Keenen, 2006). Thus, patients should receive information in a way that meets their need (Murphy-Knoll, 2007). Still, more than 800 studies conducted over the last two and a half decades reveal that a plethora of health materials are written at reading levels beyond the reading ability of the average high school graduate (Rudd, 2007). Moreover, 300 published articles report that most health materials are beyond the reading comprehension level of most Americans (Paasche-Orlow, Parker, Gazmararian, Nielsen-Bohlman, & Rudd, (2005).

Health literacy "has come to mean different things to various audiences" (Baker, 2006. p. 878). Consequently, health literacy has been defined differently by various organizations. But, for the purpose of this study, health literacy is defined 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" (DHHS, 2000, p. 32).

Health literacy is distinct from general literacy. General literacy is a set of general skills which includes reading, writing, basic math calculations, and speech (Kirsch, 2001a). On the contrary, health literacy includes specific skills and knowledge needed to interact with the health care system and manage one's own health status. Still, health literacy is not independent of general literacy (Rudd, 2007). Those with adequate general literacy are more likely to be proficient in health literacy. The National Center for Educational Statistics (NCES) of the U.S. Department of Education periodically sponsors the National Assessment of Adult Literacy

(NAAL) Report. For the first time, the 2003 NAAL Report included health literacy data. Results reveal that far too many Americans have limited health literacy (Institute of Medicine, 2004).

Although limited health literacy is associated with education, ethnicity and age (Paasche-Orlow, Parker, Gazmararian, Nielsen-Bohlman & Rudd, 2005), the majority of individuals affected by limited health literacy are white native-born Americans (Parker, Ratzan, & Lurie, 2003). Limited health literacy is prevalent (Paasche-Orlow, 2007; Speros, 2005; Volandes & Paasche-Orlow, 2007), and it affects all segments of society. Research from the U.S. Department of Education found that only 12% of English-speaking adults in America are proficient in health literacy (DHHS, 2010). Health literacy is a complicated concept that is dependent on several factors including an individual's ability to communicate, demands imposed on individuals by society, and the design of the healthcare system (Baker, 2006). The state of health literacy in the United States is in crisis, and is an underlying cause of health disparities in America (Carona, 2006).

One of the objectives of the Healthy People 2010 initiative is to reduce health disparities (DHHS, 2000). But, the health consequences of limited health literacy documented in the literature may serve as tremendous barriers to achieving that objective. In addition to the effects of limited health literacy on individuals, the healthcare system is also impacted by limited health literacy. Williams et al. (1995) found that the hospitalization rate for health literate patients was 15% compared to 30% for patients with limited health literacy. Researchers disagree on the financial impact of health literacy, but they agree that health illiteracy greatly increases the cost of healthcare. Roa (2007) estimated the annual cost increase to be between $50 – 70 billion.

Schloman (2004) estimated the cost increase at $73 billion per year. But DHHS (2010, p. 10) suggested the annual cost is much higher by its statement that "when one accounts for the future costs that results from current actions (or lack of action), the real present day cost of limited health literacy might be closer to $1.6 – 3.6 trillion USD" annually.

Statement of the Problem

Limited health literacy is associated with increased healthcare use, poorer health outcomes, and increased healthcare costs. Still, approximately 90 million Americans are health illiterate and face serious challenges when seeking health care. The U.S. healthcare system is fragmented, complex, and difficult to navigate. The persistent arcane language and medical jargon compounds the problem. The design and complexity of the healthcare system combined with culture and society, the educational system, and the capacity of an individual to communicate, determines the health literacy skills of the individual (IOM, 2004). Therefore, it is incumbent upon healthcare administrators, providers and policy makers to institute policies, strategies, and practices designed to simplify and standardize healthcare delivery in order to enhance communication effectiveness during patient-provider encounters.

Purpose of the Study

The purpose of the study was to examine, through the use of the Health Literacy Knowledge and Experience Survey (HL-KES), the extent to which experienced registered nurses in Georgia have health literacy knowledge and experience. An additional aim of the study was to determine the degree to which experienced registered nurses in Georgia are using effective intervention to mitigate the effects of limited health literacy during patient-provider encounters.

Significance of the Study

Limited health literacy is a major healthcare problem in the United States. The American Medical Association's (AMA) Ad Hoc Committee's Report acknowledges the disparity between skills needed for healthcare encounters and the actual health literacy skills of many Americans (Schloman, 2004). Nearly half of the American adult population lacks adequate health literacy skills (Murphy-Knoll, 2007). Research consistently demonstrates that there is a mismatch between the literacy level of patients and the readability of health related materials (McCray, 2005). Health illiterate individuals are often embarrassed by their low literacy status and devise ways to conceal their lack of knowledge and understanding (Safeer & Keenan, 2005), which only exacerbates the problem. Moreover, many healthcare providers are not aware of the severity of the problem. These barriers to quality healthcare for health illiterate individuals effectively create health disparities. Institute of Medicine (2003) identified health literacy as one of 20 priority areas whereby quality improvement could transform the healthcare system in America. The onus is on the healthcare system and healthcare providers to become more aware of the literacy limits of their clients and take action to enhance the effectiveness of patient-provider encounters (Schloman, 2004).

Institute of Medicine (IOM) (2003) published a document titled *Priority Areas for National Action: Transforming Health Care Quality*. The document identified twenty priority areas for enhancing healthcare quality and possibly beginning the process of restructuring the U.S. healthcare system. Self management/health literacy is one of only two priority areas that were identified as crosscutting. Improvements in crosscutting areas have the potential to benefit patients with a myriad of health problems. A major part of nurses' responsibility is

communicating with patients. Consequently, nurses are in an excellent position to assess the health literacy skills of patients and execute appropriate intervention. Thus, an evaluation of the health literacy knowledge and experience of registered nurses provides the potential to identify gaps in intervention strategies and make recommendations for improvement.

Research Questions

The following research questions were used in this study:

1. What are the characteristics of experienced, registered nurses in Georgia?
2. To what extent do experienced, registered nurses in Georgia have health literacy knowledge?
3. To what extent do experienced, registered nurses in Georgia have health literacy experience?
4. What is the relationship between health literacy knowledge and health literacy experience?

Adequate levels of health literacy are essential for patients to understand and act on health information and instructions provided by healthcare providers. But, it is well documented that low health literacy is a pervasive problem in the United States and has an enormous impact on the U.S. healthcare system. Limited health literacy is related to poor health outcomes and increased healthcare use (Mika, Kelly, Price, Franquiz, & Villarreal, 2005). It is associated with higher costs, more hospitalization, extended hospital stays, more physician visits and the inability to effectively navigate the healthcare system (Schloman, 2004). Therefore, it is imperative that health literacy intervention programs - policies, procedures, and practices, be incorporated to improve communication during patient-provider encounters. "Nurses directly

and profoundly affect the lives of patients and are critical to the quality of care patients receive" (Murphy-Knoll, 2007, p. 207). Thus an assessment of the level of health literacy knowledge and experience possessed by registered nurses in Georgia will illuminate the status of health literacy intervention used by registered nurses in Georgia.

Limitations and Assumptions

Limitations

1. This study was limited to registered nurses who had at least 3 years of nursing experience and were practicing as a nurse in Georgia.
2. This study was limited to registered nurses in Georgia; therefore, generalization to locations outside of Georgia should be exercised with caution.
3. Questionnaires were delivered to participants via USPS mail; consequently, there were no opportunity to answer potential participant questions.
4. This study was limited to information gathered via the Health Literacy Knowledge and Experience Survey which was developed by Catherine M. Cormier.

Assumptions

1. Registered nurses will understand the instrument and provide appropriate responses.
2. Registered nurses will respond to the health literacy knowledge questions without the use of health literacy reference materials.
3. Registered nurses will respond to the survey honestly and reflect their actual health literacy knowledge and experience.

Definition of Terms

Experienced Registered Nurse: an individual who was licensed in Georgia as a registered nurse, had at least three years of professional nursing experience, and was employed as a registered nurse in Georgia.

Health Literacy: "The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (DHHS, 2000, p. 11).

Health Literacy Intervention: Policies, procedures, and processes designed to mitigate the effects of low health literacy on patient-provider communication.

Health Outcomes: "A change in the health status of an individual, group, or population which is attributable to a planned intervention or series of interventions, regardless of whether such an intervention was intended to change health status" (WHO, 1998, p. 10).

Health Status: **"**A description and/or measurement of the health of an individual or population at a particular point in time against identifiable standards, usually by reference to health indicators" (WHO, 1998, p. 12).

Healthcare Provider: Any person or entity that provides healthcare services to individuals, including health clinics, health educators, hospitals, nurses, outpatient centers, pharmacists, physicians, technicians, etc.

Limited Health Literacy: A literacy skill level that is below level three on the National Adult Literacy Survey. This skill level is lower than what is necessary to obtain, process, and

understand basic health information and services to make appropriate health decisions. *Literacy or General Literacy*: "The ability to read, write, and speak in English, and to compute and solve problems at levels of

proficiency necessary to function on the job and in society, achieve one's goals, and develop one's knowledge and potential" (Ellingson, 1998, p. 3).

National Adult Literacy Survey: A comprehensive study of adult literacy first conducted in 1992 by the Educational Testing Services on behalf of the U.S. Department of Education. The study measured the English literacy skills of a random sample of individuals in the United States aged 16 years and older.

Summary

Health literacy is an important component of health care. It is associated with poorer health status and an increased risk of mortality. Still, nearly 90 million American adults have limited health literacy and face difficulties when navigating the healthcare system. The number of years of education completed is usually not a valid indicator of health literacy skills. Thus, individuals who can read and are functional in familiar environments may still be at a disadvantage in the health care setting.

Nurses spend a lot of time with patients and are in an excellent position to promote patient understanding and provide health literacy intervention. This study was designed to examine the health literacy knowledge and experience of registered nurses in Georgia. Chapter 1 provides an introduction to the study. Chapter 2 presents an analysis of relevant literature. Chapter 3describes the methods used in the study. Chapter 4 discusses the findings of the study.

Chapter 5 concludes the study with a discussion about the implications of the findings and recommendations for future research.

Chapter 2

Review of Literature

Introduction

The contemporary U.S. healthcare system is a fast evolving system with innovative advances and quantum leaps in knowledge (Grande & Srinivas, 2001). Medical knowledge doubles every six to eight years with cutting-edge medical procedures introduced daily (Mantovani, Castelnuovo, Gaggioli, & Riva, 2003). These advances have led to phenomenal improvements and today contemporary medicine is commonplace. America has the most technologically rigorous medical system in the world (Chernichovsky & Leibowitz, 2010), and offers some of the best healthcare in the world (McCarthy, 2003). Still, it is generally acknowledged that the U.S. healthcare system experiences poorer health outcomes than healthcare systems in other developed countries (Chernichovsky & Leibowitz, 2010), is the world's costliest healthcare system (Bible & Lee, 2009), and may fail to provide the care many Americans need (McCarthy, 2003). This lack of healthcare access leads to health disparities (Chernichovsky & Leibowitz, 2010). Moreover, the healthcare system has been described as overwhelming and complex (Passche-Orlow, Parker, Gazmararian, Neilsen-Bohlman, & Rudd, 2005), intricate, disjointed and specialized (Mika, Kelly, Price, Franquiz, & Villerreal, 2005), complicated and confusing (Paasche-Orlow & Wolf, 2007), and "so fragmented and inefficient that it needs major reform" (McCarthy, 2001, p. 782).

Although medical innovations have led to groundbreaking treatments and advanced technologies, a basic ingredient for quality healthcare - health literacy - is often overlooked (Murphy-Knoll, 2007). Health literacy is an important component of healthcare (Parker & Gazmararian, 2003). Researchers have found that those with limited health literacy have less access to quality healthcare (Sudore, Yaffe, Satterfield, Harris, Mehta, Simonsick, et al., 2006). Limited health literacy is also an independent determinant of poorer health status, greater risk of hospitalizations, and increased likelihood of mortality (Hanchate, Ash, Gazmararian, Wolf, & Paasche-Orlow, 2008; Jeppesen, Coyle, & Miser, 2009). "The lack of stable coverage and reliable healthcare access, … are significantly associated with low health literacy, as both problems keep people from learning to use healthcare appropriately and in their own interests" (Vernon, Reujillo, Rosenbaum, & DeBuono, 2007, p.1). As early as 1974 a professor of health education, Dr. Scott K. Simonds, suggested that more emphasis be put on health literacy when he recommended that "minimum standards for 'health literacy' should be established for all grade levels K through 12" (Simonds, 1974, p. 9). But it was nearly 2 decades later that widespread attention was given to health literacy as an important healthcare concept (Egbert & Nanna, 2009).

The United States Department of Education's National Center for Education Statistics (NCES) undertook its first National Adult Literacy Survey (NALS) in 1992. Findings from the study revealed that approximately two-thirds of the 13,600 participants scored at the 2 lowest levels of the 5-level literacy scale (Foulk, Carroll, & Wood, 2001). The study also found that nearly 45% of American adults scored at the third level of the scale which demonstrates inadequate functional literacy (Kripalani, Paasche-Orlow, Parker, & Saha, 2006). Overall, the NALS results revealed that approximately 90 million American adults have limited health

literacy and struggle in their attempt to navigate the healthcare system. Moreover, research findings from the U.S. Department of Education reveal that only 12% of English-speaking adults in America are proficient in health literacy (Department of Health and Human Service (DHHS), 2010). The NALS Report is typically of interest to the adult education community. But, it also served as a wake up call to the healthcare community as evident by the recognition by several healthcare organizations, including IOM, Agency for Healthcare Research and Quality, AMA, Joint Commission on the Accreditation of Hospital Organizations and others, that health literacy is an important healthcare issue (Paasche-Orlow & Wolf, 2007a). Still, data from the second NALS report released in 2006 showed no improvement in the health literacy status of American adults (Krispalani et al., 2006).

Health literacy is a critical factor in managing health status (Parker, Ratzan, & Lurie, 2003; Schloman, 2004). Research has shown that limited health literacy is prevalent, and affects all segments of society (Kripalani & Weiss, 2006; Speros, 2005). It is a significant problem in America and it affects individuals, healthcare providers, and the healthcare system. Still, effective communication is essential to public mastery of health information (Stableford & Mettger, 2007). Registered nurses may be the best solution to the health literacy crisis because they are already in an excellent position to promote effective communication between patients and providers (Singleton & Krause, 2009). The nursing discipline is the largest segment of the health oriented workforce and nurses have the responsibility of providing patient education (Jukkala, Deupree, & Graham, 2009). Still, only a paucity of health literacy research can be found in the nursing literature (Mancuso, 2009).

To this investigator's knowledge, no studies have assessed the health literacy knowledge and experience of experienced registered nurses. Sand-Jecklin, Murray, Summers, and Watson (2010) conducted a study to determine the impact of a brief health literacy educational session on student knowledge of health literacy concept and their ability to apply the knowledge in the clinical setting. But the study did not evaluate practicing registered nurses' health literacy knowledge and experience. Cormier, and Kotrlik (2009) conducted a study to investigate the health literacy knowledge and experience of senior level nursing students. While the study was comprehensive and evaluated both knowledge and experiences of participants, it did not assess experienced, practicing registered nurses. Jukkala, Duepree, and Graham (2009) conducted a study to assess healthcare providers' (nurses, dentists, and physicians) and students' knowledge of limited health literacy and its impact on patients and the healthcare system. Schwartzberg, Cowett, Van Geest, & Wolf (2007) conducted a study designed to assess physicians, nurses, and pharmacists on their communication techniques for patients with low health literacy. Specifically, the study determined the frequency with which participants' used specific communication techniques when communicating with patients with limited health literacy. While the study inquired about strategies used by nurses to enhance patient-provider communication, it was a limited assessment and did not specifically assess the nurses' health literacy knowledge or their health literacy experience. Since registered nurses play a major role during patient-provider encounters they may well be the missing link in effective patient-provider communication. Nurses are critical to the success of patient-provider communication. Moreover, nursing administrators are essential in making sure that patient assessment and communication support are standard components of patient care (Patak et al., 2009). Healthcare professionals often depend on untested methods to assess the health literacy status of patients

(Singleton & Krause, 2009). Thus, the indication is that nursing clinical practice should be enhanced to incorporate standard assessments designed to determine the health literacy status of patients (Owen & Walden, 2007).

This study examined the health literacy knowledge and experience of registered nurses in Georgia. The investigator was based in Georgia. Thus, nurses in Georgia were examined for convenience purposes. This chapter presents a review of the relevant literature, along with a discussion of factors associated with health literacy, including the concept of health literacy, the prevalence of limited health literacy, and the effects of limited health literacy on patients and the healthcare system. This chapter also discusses various intervention strategies designed to mitigate the effects of limited health literacy.

Research Questions

This study investigated the following research questions:

1. What are the characteristics of experienced, registered nurses in Georgia?
2. To what extent do experienced, registered nurses in Georgia have health literacy knowledge?
3. To what extent do experienced, registered nurses in Georgia have health literacy experience?
4. What is the relationship between health literacy knowledge and health literacy experience?

Traditionally the United States puts a high premium on literacy because it affects both individual well-being as well as the state of society (Educational Testing Service, 1990). The following quote by Educational Testing Service (1990, p. 5) sets the context for this study:

> Thomas Jefferson defined three objectives for education:
>
> > to prepare some citizens to be public leaders;
> >
> > to enable all citizens to exercise the rights of self-government; and
> >
> > to prepare all citizens for the pursuit of happiness.
>
> Education that fulfills these objectives will vary according to a country's stage of development. The types and levels of literacy skills necessary for economic participation, citizenship, and individual advancement in 1800 were different from those required in 1900 and from those skills that will be important in the year 2000. We live in a technologically advancing society, where both the number and types of written materials are growing and where increasing numbers of citizens are expected to use information from the materials in new and more complex ways. Within this context, historians remind us that during the last 200 years, our nation's literacy skills have increased dramatically in response to these new requirements and expanded opportunities for social and economic growth. There have also been periods when demands seemed to surpass levels of attainment. Whenever these periods occur, we had a tendency to point to the failure of our educational system and to warn of serious social and economic consequences. Today, although we are a better educated and more literate society than at any time in our history, we find ourselves in one of these periods of imbalance. Whereas

> in the past we relied primarily on our formal education system to correct any imbalance that existed, we now recognize that this school-centered strategy can only be part of the solution.

Health Literacy

Health literacy has emerged as a powerful determinant of health status and mortality (DeWalt, Berkman, Sheridan, Lohr, & Pignone, 2004). It is a more powerful predictor of health status than education attainment (Parker, Wolf, & Kirsch, 2008). It was in 1974 that the term 'health literacy' was first used in the literature (Ratzan, 2001; Simonds, 1974). But, it was not until after the first NALS Report that Williams et al. (1995) conducted the seminal work that led to subsequent health literacy studies that contributed to health literacy concept development (Speros, 2005). According to Ishikawa and Yano (2008) between 1985 and 2006, 371 health literacy studies were conducted. Between 1985 and 1999 only 30 health literacy studies were conducted. By 2003 the number of health literacy studies had increased to 127. But over the next three years, from 2003 to 2006, 244 health literacy studies were conducted. Researchers had begun to seriously study the concept of health literacy and investigate its prevalence and effects. Today, the issues associated with limited health literacy are well documented (Mika, Kelly, Price, Franquiz, & Villarreal, 2005). In addition to evaluating the concept of health literacy and assessing its prevalence and effects, this study evaluated various approaches and strategies to mitigate the effects of limited health literacy.

Health literacy means different things to different groups (Baker, 2006) and is therefore defined differently by various organizations (Greenberg, 2001; Speros, 2005). Baker (2006. p. 882) suggested that "health literacy is a complicated construct that depends on individual

capacity to communicate and the demands posed by society and the healthcare system." Nutbeam (2000, p. 259) suggested that health literacy is "a composite term to describe a range of outcomes to health education and communication activities." The American Medical Association (AMA) initially defined health literacy as "a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the healthcare environment" (Ishikana & Yano, 2008, p. 114), but later adopted the definition proposed by the National Library of Medicine (NLM). The NLM defines 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" (IOM, 2004, p. 32). The World Health Organization (WHO) adopted an even broader definition of health literacy. It defines health literacy as "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand, and use information in ways that promote and maintain good health" (WHO, 1998, p. 10).

The various definitions of health literacy suggest that federal agencies, non-governmental organizations, and researchers disagree, to some extent, on the factors that contribute to health literacy and thus disagree on how it should be defined. Speros (2005) suggested that the definition of health literacy be broadened to include both patients and health care providers as contributors to one's health literacy. The Institute of Medicine (IOM) (2004) suggested the definition should be even broader. It pointed out that one's health literacy status is the product of a complicated mix of skills and interactions on the part of the individual, the health care system, the education system, as well as the cultural and societal environment. IOM also pointed out that in addition to including the five primary literacy skills (listening, speaking, writing, reading, and numeracy), health literacy also includes cultural and conceptual knowledge of health (Paasche-

Orlow, Parker, Gazmararian, Nielsen-Bohlman, & Rudd, 2005). Pawlak (2005) articulated that health literacy has several individual and population determinants, including age, genetics, language, race and ethnicity, education, employment, social and physical environments, and socioeconomic status (SES). Greenberg (2001) noted that the definition of health literacy is troublesome because it assumes that the responsibility is on the patient when it is actually a shared responsibility with medical personnel.

Nutbeam (2000) noted that within the United States, health literacy is used to articulate the relationship between and literacy level and the capacity to adhere to medical regimens. Thus Nutbeam (2000) argued that types of literacy can vary and that one way to approach the health literacy problem is to link a specific classification of literacy with accomplishments the literacy empowers a person to achieve, rather than linking the literacy to measures of reading or writing skills. According to Nutbeam (2000), there are 3 classifications of literacy, including basic or functional literacy, communicative or interactive literacy, and critical literacy. Functional literacy implies that a person has adequate basic reading/writing skills and is able to function adequately in routine situations. Communicative literacy implies enhanced ability to include additional cognitive and social skills which enables a person to engage in routine activities as well as locate and retrieve information, understand its meaning, and apply the information to various situations. Critical literacy is even more advanced and includes high level cognitive skills and social skills which combine to enable greater empowerment and control life events (Nutbeam, 2000). These observations and recommendations suggest that health literacy is a very complicated construct which requires an interdisciplinary approach to fully understand its impact and apply effective remedies. For purposes of this study, the definition proposed by the NLM was adopted.

An interesting aspect of health literacy is that from one healthcare encounter or diagnosis to the next, the amount of health literacy needed can vary (Andrulis & Brach, 2007). The healthcare environment, due to its technical nature and frequent use of medical jargon by health professionals, increases the amount of health literacy needed (Parker, Wolf, & Kirsch, 2008). Since the NALS was conducted, the definition of literacy has expanded from general reading and writing skills to a consideration of whether one's educational attainment is suitable to function in present day society (Foulk, Carroll, & Wood, 2001). Thus, health literacy is dynamic, valuable, and sometimes referred to as the currency used by patients to navigate the system (Schloman, 2004). These characteristics are especially evident when a patient faces a devastating diagnosis such as cancer. The primary concerns about literacy as it relates to health is reducing health disparities, simplifying health information, and improving the way information is presented to users (Logan, 2007).

Since general literacy is a prerequisite for health literacy, it is helpful to understand the state of adult literacy in America. Literacy is defined as "using printed and written information to function in society, to achieve one's goals and to develop one's knowledge and potential" (Kutner, Greenberg, & Baer, 2005, p. 2). Others suggest the definition of literacy should be more extensive. Pawlak (2005) proposes a definition that includes the ability to read, write, and speak in English and compute and solve problems at levels necessary to function on the job and in society. The NALS provides for the evaluation of adult literacy skills in America. The survey evaluates skills in three categories, including prose, document, and quantitative (Foulk, Caroll, & Wood, 2001). The scoring scale for each of the three categories is 0 – 500. Prose literacy includes the knowledge and skills required to search, comprehend, and use continuous texts information such as news stories, brochures, and instructional information. Document literacy is

the knowledge and skills needed to search, comprehend, and use non continuous texts such as job applications, informed consent forms, payroll forms, and maps. Quantitative literacy is the knowledge and skills required to perform computations. Tasks include balancing a check book, completing an order form, and computing interest on a loan.

NALS survey results fall into one of five performance levels (Cutilli, 2005; Foulk, Carroll, & Wood, 2001). At level 1 of the literacy scale, individuals are limited to performing only basic tasks and are considered functionally illiterate. Individuals functioning at level 2 are more advanced but have insufficient reading and comprehension skills. They are considered marginally literate. Those performing at levels 3, 4, and 5 have adequate skills to fully participate in society. The most recent assessment of adult literacy in America was conducted in 2002 and revealed that no significant progress was made during the ten year period from 1992 to 2002 (Kutner, Greenberg, & Baer, 2005). The average score in both prose and document remained unchanged while the average scores in quantitative increased slightly from 275 to 283. These scores and other NALS statistics demonstrate a poor state of affairs regarding adult literacy in the United States. Approximately 90 million adults or nearly half of the U.S. adult population have less than adequate literacy skills (Cutilli, 2005).

Although deficiencies in general literacy has been acknowledged for decades, the concept of health literacy has only recently been acknowledged (Spero, 2005). Health literacy involves all the skills needed to successfully navigate the health care system, including reading and understanding health related information, listening, speaking, problem solving, and making health related decisions (Cutilli, 2005). "The U.S. healthcare system largely operates under the assumption that all patients have high English language literacy skills. In fact, many do not"

(Rao, 2007, p. 1). Much of the research investigating health literacy demonstrates a mismatch between skills needed to navigate the healthcare system and the literacy skill level of patients seeking health care services (HSPH, 2007; Paasche-Orlow, Parker, Gazmararian, Nielsen-Bohlman, 2005; Rudd, 2007). Patients with less than adequate health literacy skills simply don't have the capacity to successfully navigate a healthcare system designed for highly literate and informed consumers. The U.S. healthcare system is comprehensive, complicated, and specialized. The ever changing design and operation of the healthcare system make heavy demands on patients to access information, communicate with healthcare providers, provide informed consent, understand various treatment options, and follow through on treatment plans (Mika, Kelly, Price, Franquiz, & Villarreal, 2005).

Institute of Medicine (2004) also pointed out that modern health systems make complex demands on the health consumers. As self management of health care increases, individuals are asked to assume new roles in seeking information, understanding rights and responsibilities, and making health care decisions for themselves and others." Further, physicians and other healthcare providers often have the perception that the literacy level of their patients is higher than it actually is (Safeer & Keenan, 2005). Therefore, most healthcare materials are written at grade levels higher than the average reading level of patients (Institute of Medicine, 2004 & Safeer & Keenan, 2005). This mismatch between the literacy skills needed to navigate the healthcare system and actual literacy skills of patients creates profound consequences for both the individual and the healthcare system (Schloman, 2004). Limited health literacy is associated with failure to use preventive care, delayed diagnosis, non-compliance of medical regimen, not understanding one's medical condition, and increased mortality risk (Wolf, 2007). In addition to the social and health effects of limited literacy, there is an enormous financial impact of limited

health literacy. Although researchers disagree on the extent of the cost increase they generally agree that there is a significant financial impact. The increased cost is due to an increase in medication and treatment errors, more hospitalizations with longer stays, and more trips to the doctor, due in large part to non-compliance to medical regimens. According to Nutbeam (2000), health literacy is now recognized as an outcome associated with compliance to medical regimens. (Roa (2007) estimated the cost increase to be between $50 – 70 billion annually. Schloman (2004) estimated the cost increase at $73 billion a year. But DHHS (2010, p. 10) suggested the cost is much higher by its statement that "when one accounts for the future costs that results from current actions (or lack of action), the real present day cost of limited health literacy might be closer to $1.6 – 3.6 trillion USD" each year.

Some researchers refer to limited health literacy as a silent condition because many physicians and other health care workers are still unaware that their patients may be victims of limited health literacy (Erlen, 2004; Kafalides, 1999; Marcus, 2006). Patients with limited literacy are often ashamed and fearful of discrimination and stigmatization. Consequently, they have developed effective skills in hiding their inability to read, understand, and function within the healthcare system. Some of the tactics commonly used by patients to conceal their functional illiteracy includes making statements such as "I'll read this when I get home"; "I must discuss this with my family"; "I need to take the instructions homes"; and "I forgot my reading glasses" (Medscape, 2002). Health illiterate patients may also fail to keep medical appointments, follow instructions, or adhere to prescribed therapies.

Health literacy has gotten the attention of national policy makers and has been deemed a national priority (Carona, 2006). Reports elucidating the issues have been published by IOM,

the Agency for healthcare Research and Quality, AMA, and Joint Commission on the Accreditation of Hospital Organizations, among others (Paasche-Orlow & Wolf, 2007). Since the early 1990s various governmental agencies and non-governmental organizations have introduced initiatives to raise awareness of the health literacy problem in America (Sandstrom, 2004). A publication entitled *Literacy and Health in the United States* was published in 1991 by DHHS; in 1993, the first NALS Report revealing the health literacy of American adults was released; in 1998, the AMA became the first national medical group to formally recognize literacy as a healthcare issue; and in 2000, DHHS introduced the Health People 2010 initiative. It outlined a set of objectives the nation aimed to achieve over the next 10 years. In 2000, the NLM included health literacy in its *Current Bibliographies in Medicine* series; and in 2003, The Medical Association established the Health Information Literacy Task Force to develop an informed response to the issues of health literacy (Sandstrom, 2004). Pfizer has also taken on the responsibility of raising awareness about health literacy (Clear Health Communication, 2008). Pfizer has developed tools, including the health literacy prevalence calculator and the Newest Vital Sign, designed to help improve communication during patient-provider encounters.

Both the IOM and the Agency for Healthcare Research (AHRQ) released reports identifying health literacy as one of 20 priorities areas for national action (Stableford & Mettger, 2007). Moreover, health literacy, coupled with self-management, is one of only two priority areas classified as crosscutting. This means that enhancement in these areas has the potential to improve the health outcome of patients with a myriad of health conditions (Schloman, 2004).

Assessing Health Literacy

The NALS administered in 1992 evaluated the literacy skills of 26,000 American adults. Results revealed that half of the adult population or 90 million Americans have limited health literacy skills (Paasche-Orlow, Parker, Gazmararian, Nielsen-Bohlman, & Rudd, 2005). Still, estimates of limited health literacy prevalence may be conservative for several reasons. First, there is shame associated with limited health literacy (Parikh, Parker, Nurss, Baker, & Williams, 1996). Many of the studies conducted to assess health literacy skills reported high patient refusal rates which may be suggestive of higher limited health literacy than studies suggested. Also, most health literacy assessments only focused on reading and numeracy skills although writing, speaking, and listening are vital components of health literacy (Paasche-Orlow, Parker, Gazmararian, Nielsen-Bohlman, & Rudd, 2005). On the other hand, health literacy studies do not typically control for vision of cognitive impairments (Paasche-Orlow, Parker, Gazmararian, Nielsen-Bohlman, & Rudd, 2005). Thus, some study participants may actually have more literacy skills than studies have shown.

The most recent National Adult Literacy Survey which was conducted in 2002 incorporated a new scale, the Health Activities Literacy Scale (HALS) (Kutner, Greenberg, & Baer, 2005). A scale of zero to 500 was used for the health literacy assessment. Participants were assigned to one of four performance levels (below basic, basic, intermediate, and proficient), depending on their health literacy score. The average intermediate score in health literacy was 245, compared to 271, 275, and 283 intermediate score in document, prose, and quantitative respectively (Kutner, Greenberg, & Baer, 2005). Results demonstrated that 53% scored at the intermediate level, while 22% performed at the basic level, and 14% performed at

the below basic level. These results indicate that approximately 34% of American adults do not have the level of health literacy to understand and effectively navigate and use the health care system. Patients are consistently expected to perform various health oriented tasks that they do not have the capacity to perform. There are three commonly used instruments to assess the health literacy status of an individual (Ishikawa & Yano, 2008; Mika, Kelly, Price, Franquiz, & Villarreal, 2005). They include the Test of Functional Health Literacy in Adults (TOFHLA), the Rapid Estimate of Adult Literacy in Medicine (REALM), and the Wide Range of Achievement Test (WRAT). Also, the Newest Vital Sign (NVS), a recently developed health literacy assessment tool, is now available.

The TOFHLA was developed by researchers at Georgia State University and Emory University and has been validated in English and Spanish. It measures reading comprehension and numeracy. The full version of the TOFHLA takes approximately 22 minutes to administer while the shortened version (STOFHLA) takes approximately 7 minutes to administer (Mika, Kelly, Price, Franquiz, & Villarreal, 2005). The REALM was developed by Davis et al. (1993). Its aim is to provide a quick assessment of reading ability in the medical environment. It only takes approximately 2 to 3 minutes to administer. The ability to use the REALM instrument is very advantageous. However, it does not assess one's numeracy ability. The reading portion of each of the three instruments correlates well with each other (Mika, Kelly, Price, Franquiz, & Villarreal, 2005). The NVS is a bilingual (English and Spanish) screening tool which can be administered during patient visits in about three minutes (Clear Health Communication, 2008). The NVS was supported by Pfizer, Inc, and developed by health literacy experts at the University of Arizona - College of Medicine, and the University of North Carolina (Clear Health Communication, 2008). It is patterned after a nutrition label from an ice cream container.

Patients are given the label and then asked to provide answers to six questions based on information provided on the label (Clear Health Communication, 2008). Advantages of the NVS are its bilingual capability and its quick administration time. Pfizer, Inc. and its partners also developed the Health Literacy Prevalence Calculator (Clear Health Communication, 2008). The tool uses demographic data to calculate an approximate percentage of a physician's patients who may be at risk for limited health literacy.

Numerous studies have been conducted to assess the prevalence of limited health literacy (Artinian, Lang, Templin, Stallwood, & Hermann, 2002; Paasche-Orlow, Parker, Gazmararian, Nielsen-Bohlman & Rudd, 2005; Rudd, 2007; Williams et al., 1995). The literature demonstrates that inadequate health literacy is prevalent and is associated with education, ethnicity, and age. Adults 65 years old and older are less proficient in health literacy than younger Americans (Institute of Medicine, 2004). African Americans are less proficient in health literacy than White Americans (Shea, Beers, McDonald, Quistberg, Ravenell, & Asch, 2004; Vernon, Trujillo, Rosenbaum, & DeBuono, 2007). Although African Americans are less proficient in health literacy than White Americans, the majority of adults with limited literacy are white native-born Americans (Parker, Ratzan & Lurie, 2003; Vernon, Trujillo, Rosenbaum, & DeBuono, 2007). These statements may initially appear conflicting. But, while African Americans have limited health literacy at a higher rate than do White Americans, as of 2009, African Americans comprised only approximately 13% of the U.S. population compared to a White American population of approximately 65% (U.S. Census Bureau, 2009). Thus, the majority of individuals in the United States who have limited health literacy are white native born citizens.

Americans living in rural areas typically have less access to health care services, have less income, have less education, have less insurance, and are older than Americans living in urban communities (Zahnd, Scuife, & Francis, 2009). Thus one might expect rural residents to have less health literacy than urban residents. Although raw data demonstrates that rural populations are less proficient in health literacy than urban populations, researchers found that when confounding factors (age, gender, race/ethnicity, education, and income) were controlled, there were no statistically significant difference between rural and urban populations regarding health literacy (Zahnd, Scaife, & Francis, 2009).

Williams et al. (1995) conducted a cross-sectional study using the TOFHLA instrument to assess the functional health literacy of 2659 patients at two urban, public hospitals located in Atlanta and Los Angeles. Patient scores were classified into three categories, inadequate, marginal, and adequate functional health literacy. Results revealed that 34.7% of patients in Atlanta, 41.9% of Los Angeles Spanish-speaking patients, and 12.5% of Los Angeles English-speaking patients had inadequate health literacy. After adding participants with marginal health literacy, total percentages of participants who found it difficult to complete routine health oriented requests increased to 47.4%, 61.7%, and 22% respectively. Artinian, Lange, Templin, Stallwood, and Hermann (2002) assessed the functional health literacy skills of 92 randomly selected patients in one of five medical clinics. Patients were asked to complete the TOFHLA as they waited for medical appointment. Study results indicate that 28% of participants had less than adequate health literacy. Moreover, 30% to 40% of patients who were asked to participate in the study declined. Again, refusals may be an indication that the actual rate of limited health literacy was even higher.

Another study was conducted to critically analyze results from three adult literacy proficiency surveys. The study evaluated the literacy skills of American adults in the context of routine health tasks (Rudd, 2007). The study included 191 items extracted from the following surveys: the 1986 study of the country's young population, the 1990 study of job seekers in America, the 1992 NALS, and the International Adult Literacy Survey. The investigator found that 19% of adults performed at level one which demonstrates inadequate health literacy. An additional 27% of adults performed at level two. This means that a total of 46% (levels one and two combined) performed at a limited health literacy level. Rudd (2007) concluded that Americans who performed at the two lowest levels on the adult literacy survey had not completed high school (or achieved a GED), were members of a minority group, had health related disadvantages, or they were immigrants. The investigator also concluded that although some specific knowledge is required to function effectively in the health care setting, those who were proficient in general literacy tended to have more health literacy. Thus, health literacy is not independent of general literacy. The investigator noted that demands on Americans have increased due to enormous advances in information and communication technologies, and that there is a higher expectation for Americans to take the initiative for obtaining and using information needed to manage their lives. Although inadequate health literacy is associated with ethnicity, the majority of adults with limited health literacy are white native-born Americans (Parker, Ratzan & Lurie, 2003).

Another issue that greatly impacts the prevalence of limited health literacy is the fact that one's ability to understand health related information may be considerably worse than his or her general literacy ability (Spero, 2005). An individual's literacy skills may be adequate in a familiar surrounding but less than adequate within a health care setting. Therefore the number of

years of education completed is not necessarily an accurate indicator of one's health literacy (Parker, Wolf, & Kirsch, 2008). Much of the literature documenting health literacy found that the problem of limited health literacy is common. Marcus (2006) noted that there is a high prevalence of limited health literacy and many physicians and other health care providers are not aware of it due to the tendency of patients to conceal their limited health literacy status. The high prevalence of limited health literacy in the United States is well documented. Nearly a decade ago, Greenberg (2001) noted that too much time and resources had been expended on demonstrating the pervasiveness of limited health literacy when the NALS has already documented the extensive and serious problem of limited health literacy.

Knowledge about health literacy and the issues associated with it has increased (Foulk, Carroll, & Wood, 2001). Therefore strategies to support those with limited health literacy are becoming more common. Still, healthcare providers may be overly confident in their ability to accurately measure health literacy skills. Research has shown that healthcare providers fail to identify as many as half of individuals who struggle with limited health literacy (Sand-Jecklin, Murray, Summers, & Watson, 2010) because they do not use a systematic approach when assessing health literacy (Patak et al., 2009). Consequently, providers frequently use unreliable assessment methods. Singleton and Krause (2009) noted that 63% of clinicians in community health settings admitted to relying on 'gut feeling' to conclude that a patient had limited health literacy. This uninformed approach and high failure rate suggest that standards and protocols for measuring health literacy are indicated (Erlen, 2004). Healthcare providers need to take health literacy assessment serious and use methods that have been tested and proven to be accurate and effective. Health literacy assessments must be approached with the same level of professionalism and tenacity as used in assessing other adverse health conditions.

There are several health literacy measurement tools currently in use (Pawlak, 2005, Williams et al., 1995; Weiss et al., 2005; Osborn et al., 2007; Chew et al., 2008). They include the TOFHLA, STOFHLA (short version of TOFHLA), REALM, WRAT-R, and NVS. The STOFHLA and REALM are the most popular methods for measuring health literacy (Chew et al., 2008). The STOFHLA is available in English and Spanish and assesses reading comprehension and numerical skills. However, the length of time it takes to administer the STOFHLA makes its use in the fast paced clinical setting somewhat limiting (Williams et al., 1995). Both the WRAT-R and REALM can be administered in approximately three minutes to assess an individual's ability to identify and pronounce words (Pawlak, 2005) but they generate results that may be unreliable (Williams, et al., 1995). As an alternative, Weiss et al. (2005) developed the NVS which is designed to assess reading ability, comprehension, and the ability to act on the information. The instrument is reliable, objective, easy to use, and often approved of by patients (Shah, West, Bremmeyr, & Savoy-Moore, 2010). It mimics an ice cream nutrition label, includes a 6-item questionnaire, is available in English and Spanish, and takes approximately three minutes to administer (Weiss et al., 2005).

The NVS has shown high sensitivity for identifying patients with limited health literacy but its sensitivity is measured as moderate (Osborn et al., 2007). This means that the instrument may classify some individuals with adequate literacy skills as having limited literacy skills. The NVS produces results that are comparable to results generated by more comprehensive literacy assessments (Shah, West, Bremmeyr, & Savoy-Moore, 2010). Chew, Bradley, and Boyko (2004) conducted a study to develop screening questions to identify individuals with limited literacy. The researchers evaluated 16 screening questions and found that three of the questions: "How often do you have someone help you read hospital materials?" "How confident are you

filling out medical forms by yourself" and "How often do you have problems learning about your medical condition because of difficulty understanding written information?" were successful in identifying limited health literacy. The study was groundbreaking because it demonstrated that a single item health literacy questionnaire might be sufficient to detect limited health literacy (Chew, Bradley, & Boyko, 2004). The Single Item Literacy Screener (SILS) was later developed by Morris, MacLean, and Chew (2006). The researchers used the single item concept and studied the effectiveness of using a single question – "How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?" – to identify adults who need assistance with written health materials. The study found that the SILS is effective in ruling out limited reading ability which gives providers the opportunity to focus more comprehensive assessment efforts on patients who really need it.

Traditionally, providers have targeted members of specific groups when assessing literacy – older persons, individuals with less formal education, and those who speak English as a second language (Murphy-Knoll, 2007). However, limited health literacy is widespread and it affects all segments of society. Parker et al. (1999) warned that providers should not rely on an individual's appearance when assessing health literacy, but should consider that some patients from all groups may need assistance with health materials. Thus it may be feasible to administer a less formal and brief screening tool such as the SILS routinely during patient-provider encounters in an effort to quickly target patients who really need literacy skill assessments. The single item assessment may hold promise since patients with limited health literacy are often embarrassed and reluctant to participate in assessments patterned after tests in academic settings. Current health literacy instruments do not have the capacity to address the full breadth of health

literacy (Pawlak, 2005). Health literacy is broad. It includes literacy skills, health knowledge, culture, linguistics, and the demands imposed by the healthcare system (DHHS, 2010). Therefore, when assessing health literacy, characteristics such as culture, linguistics, and physical condition should also be evaluated (Patak et al., 2009). Moreover, those with limited health literacy are often members of vulnerable groups. Therefore, caution should be taken to protect these patients from harm.

Effects of Limited Health Literacy

The ability to read and comprehend information is fundamental to understanding what to do, when to do it, and how to do it in any environment. But the healthcare environment, due to its technical nature, increases the amount of literacy an individual needs. Consequently, health literacy is a crucial component of health care. Health literacy is sometimes referred to as the currency through which health care consumers negotiate access to a quality healthcare system (Schloman, 2004). Limited health literacy has been independently linked to numerous undesirable health outcomes (Jeppesen, Coyle & Miser, 2009), and poorer health status (Baker, Parker, Williams, Clark, & Nurss (1997). Researchers have consistently found that grave consequences are associated with limited health literacy and they have documented the numerous barriers that prevent complete and timely access to quality healthcare.

The first, and perhaps most devastating, effect of limited health literacy is its contribution to creating a gap in communication between patients and physicians (Kripalani & Weiss, 2006). Patients with limited health literacy have less knowledge about their condition and treatment options (Agre, Stieglitz, & Milstein, 2006). Their comprehension of health information is impaired and they are reluctant to ask questions of their physician for fear of being exposed,

embarrassed, or criticized (Safeer & Keenan, 2005). To exacerbate the problem, physicians often use technical terms and medical jargon without adequate explanation. Another important effect of limited health literacy is the restriction it places on patients as they attempt to navigate the healthcare system. The ability to read appointment slips, determine when and where to go for appointments, understand how to properly prepare for appointments, provide informed consent, select the most desirable treatment option, or select the most desirable healthcare plan is highly dependent on adequate health literacy skills. Health literacy is essential and may ultimately determine whether individuals succeed or fail in their attempt to obtain healthcare services. Pawlak (2005) and McCray (2004) provided lists of the effects of limited health literacy. They included poorer health status, impaired comprehension of medical information, lack of knowledge about health conditions, failure to use preventive services, failure to comply with treatment regimens, increased risk of hospitalization, increased healthcare costs, higher rates of chronic diseases, and health cultural beliefs that interfere with health care. Similar health consequences have been documented in much of the literature (Agre, Stieglitz, & Milstein, 2006; Greenberg, 2001; Kefalides, 1999; Safeer & Keenan, 2005; Williams, et al., 1995). Some studies have demonstrated that patients with limited health literacy could not read medicine labels, appointment slips, patient education materials, or discharge instructions (Greenburg, 2001).

According to Wolf, Davis, and Parker (2007), health literacy is associated with self-management skills, delayed diagnosis, and increased mortality risk. Limited health literacy is also associated with patient embarrassment, low self-esteem, and shame (Fetter, 1999). Research has shown that individuals with limited health literacy have poorer health outcomes in chronic diseases (diabetes, end stage renal disease, various types of cancer, etc.), compared to those with

adequate health literacy (Billek-Sawhney & Reicherter, 2005; Parker, Ratzan, & Lurie, 2003). This may be caused by the long-term self-care and stringent medical regimen associated with chronic diseases. Researchers have also demonstrated that individuals with limited health literacy use more healthcare resources than those with adequate literacy (Kefalides, 1999). It stands to reason that health care costs would be increased. However, it is difficult to accurately determine the extent of health literacy related costs due to confounding socioeconomic variables. According to the literature, increased costs range from approximately $70 billion annually (Roa, 2007; Schloman, 2004) to between $1.3 and $3.6 trillion annually (DHHS, 2010; Vernon, Trujillo, Rosenbaum, & DeBuono, 2007). In a large study of health literacy capacity, 33% of English-speaking and 61% of Spanish-speaking participants had limited health literacy (Williams et al., 1995). Study results revealed that a significant number of participants did not understand prescription drug labels, appointment slips, or informed consent forms. Baker, Parker, Williams, Clark, and Nurss (1997), found that patients with limited health literacy claimed worse health status than sufficiently literate individuals. It is commonly suggested that limited health literacy contributes significantly to health disparities (Bennett, Chen, Soroui, & White, 2009). But, perhaps the most disturbing consequence of limited health literacy is a higher risk of death. Sudore, Yaffe, and Satterfield (2006) found in a sample of community dwellers aged 70 to 79 years, that over the span of approximately five years, residents with limited health literacy experienced twice the rate of death than those who had adequate health literacy.

As the healthcare system moves progressively toward managed care, the role of healthcare consumers is changing. More responsibility is placed on individuals to self-manage their care and navigate the healthcare system (Fetter, 1999). This higher level of responsibility makes it even more important that patients be effective in following healthcare instructions

regarding prescription drugs, medical procedures, self-care, and other health care tasks. One of the objectives of the *Healthy People 2010* initiative is to reduce health disparities (DHHS, 2000), but the consequences of limited health literacy documented in the literature pose a serious threat to achieving that objective.

In addition to patient consequences, the health care system is also negatively impacted by the high rate of inadequate health literacy (Williams et al., 1995). Researchers found that the hospitalization rate for health literate patients was 15% compared to a rate of 32% for patients with limited health literacy. The increased use of healthcare services adds tremendously to the total cost of healthcare in America. Research has demonstrated that health literacy is a vital and independent determinant of health and health status. The level of an individual's health literacy is determined by both the individual's health literacy skills and the design of the healthcare system. In order to address the issues associated with limited health literacy – poor outcomes, health disparities, and increased cost - Healthcare Providers and policy makers must recognize and acknowledge that health illiteracy affects the healthcare system as well as patients. All Americans are affected by limited health literacy. It is imperative that healthcare providers take the necessary steps to implement effective intervention strategies to mitigate the effects of limited health literacy.

Limited health literacy is pervasive and very debilitating but the lack of efficacious patient-provider communication (Patak et al., 2009) makes the plight of limited health literacy even worse. Effective patient-provider communication is a vital part of patient care (Patak et al., 2009). It is "widely recognized as a cornerstone of patient safety" (Murphy-Knoll, 2007, p. 205). Effective patient-provider communication should be readily available and routinely incorporated

into each patient-provider encounter. The communication should be reliable, provided when the patient needs it, and conveyed in a way that the patient understands (Patak et al., 2009). Sand-Jecklin, Murray, Summers, and Watson (2010) noted that many healthcare professionals, including many nurses, are not adequately trained to detect limited health literacy and intervene in effective ways.

Pawlak (2005) indicated that although nurses have been associated with creating patient education material for a long time, most nurses are not prepared to produce effective material. Moreover, most nurses are not skilled in determining whether patient education materials are written at an appropriate level for specific patients (DeSilets & Dickerson 2009). Nevertheless, the crisis caused by the prevalence of limited literacy in the healthcare setting creates a learning opportunity for everyone. It creates an opportunity for the nation as a whole, and healthcare professionals in particular. Every nurse has an obligation to improve health literacy (Wood, Kettinger, & Lessick, 2007). Dunn (2010a, p. 14) stated that "an important responsibility of nurses is to effectively provide and promote understanding of health information to patients and their families." Nurses spend a lot of time with patients (Erlen, 2004). They are typically valuable champions of patient causes (Mancuso, 2009). Therefore, nurses are in an optimal position to eliminate the communication gap between those with limited health literacy and healthcare providers (Dunn, 2010b; Erlen, 2004). Initiatives should be implemented to increase awareness of limited health literacy, routinely assess patients for limited health literacy, provide patient-specific intervention, and evaluate the effectiveness of intervention. Empirical evidence is slowly beginning to reveal the level of preparedness of healthcare providers to effectively manage the limited health literacy crisis in America.

Jukkala, Deupree, and Graham (2009) evaluated the knowledge of limited health literacy in an academic health environment. They investigated 230 participants, including nurses, dentist, and physicians. The study found that 37% of participants had never heard of health literacy. The healthcare professional group that demonstrated the highest rate of no prior knowledge of health literacy was nurses. Data indicated that 17.1% reported that they had no prior knowledge of health literacy. Another important revelation was that the investigators found no significant difference between the health literacy knowledge of healthcare professionals and the health literacy knowledge of students from various disciplines across the campus. Cormier, and Kotrlik (2009) assessed the health literacy knowledge and experience of senior level baccalaureate nursing students. They found that participants demonstrated knowledge about the consequences of limited health literacy as well as knowledge of health literacy interventions. But the investigators found that nursing students were not adequately prepared to identify older adults as an at risk population for limited health literacy, perform health literacy screenings, or develop and implement appropriate interventions.

Schwartzberg, Cowett, VanGeest, and Wolf (2007) investigated the communication techniques used by healthcare professionals (physicians, nurses, and pharmacists). The study revealed that the use of simple wording, providing printed material, and speaking slowly are commonly used strategies to compensate for limited health literacy. The researchers concluded that slowing the pace of providing information, using plain language, using images or pictorial information, repeating information, asking the patient to repeat back information, and developing user friendly, shame free environments are effective strategies for improving health literacy, but the strategies are not routinely used in most clinical settings.

Awareness

Healthcare providers are often unaware of the health literacy status of their patients (Parker et al., 1999; Paasche-Orlow, & Wolf, 2007). Consequently, Dunn (2010b) suggested making health literacy awareness a sixth vital sign by including it as a routine part of the patient assessment. The skills needed for effective health communication are vital for healthcare professionals as well as patients and their families. Everyone involved in the patient-provider encounter should learn and demonstrate the capacity to speak clearly and listen in order to comprehend (Neal, 2007).

According to Fetter (1999), nurses are deemed de facto teachers of health information and must be more aware of the pervasiveness of limited health literacy. Thus the healthcare system must rigorously confront limited health literacy by eliminating the use of medical jargon during patient-provider encounters and creating a patient-centered environment where compassion is exhibited and where health literacy assessments avoid embarrassing inquiries. Since nurses are often engaged in health education activities they should be proficient in both identifying limited health literacy and applying appropriate interventions. Staff development and continuing education are useful vehicles to improve provider awareness of the limited health literacy issue. DeSilets and Dickerson (2009) suggested that nursing education programs include health literacy topics in every aspect of the program. Moreover, all nursing schools should include health literacy content in their curricula (Sand-Jecklin, Murray, Summers, & Watson, 2010).

Sand-Jecklin, Murray, Summers, and Watson (2010) conducted a study to determine the effects of a health literacy education session on nursing students' knowledge of health literacy.

An additional purpose of the study was to determine the extent of limited health literacy among hospitalized patients and to understand strategies used by patients to counteract for their limited health knowledge. The investigators administered a 10 item pre-test to 103 nursing student participants followed by a 20 minute health literacy overview that covered the issues associated with limited health literacy. After the health literacy overview, all participants completed a post-test which was identical to the pre-test. The mean score on the pre-test was 6.5 whereas the mean score on the post-test was 8.4. The study is an excellent demonstration that health literacy content in the nursing education curricula is needed. Sand-Jecklin, Murray, Summers, and Watson (2010, p. 15) concluded that "Just as with other critical nursing education content, health literacy is a topic that should be threaded throughout the entire nursing curriculum and stressed in each clinical rotation."

Limited health literacy is an enormous problem in America and empirical evidence has shown that healthcare providers, including nurses, may not be informed about the various obstacles faced by individuals with limited health literacy as they navigate the healthcare system (DeSilets & Dickerson, 2009). One reason for this gap in provider knowledge is a healthcare system that, for many years, appeared indifferent to the problem of limited health literacy, and only recently - within the last decade - acknowledged health literacy as a serious healthcare concern. Another reason for the lack of knowledge about health literacy is the exclusion of health literacy education from most health profession curricula (Jukkala, Deupree, & Graham, 2009). It is the responsibility of the healthcare system to take the initiative to seriously address and manage the problem of health literacy. The Joint Commission on the Accreditation of Hospital Organizations (JCAHO) mandated that patient instructions be delivered in a way that the patient understands. Additionally healthcare organizations are now required to evaluate

patients to determine their level of comprehension of healthcare instructions (Mayeaux, Murphy, Arnole, Davis, Jackson, & Sentell, 1996).

It is important that patients fully understand provider instructions since they must act on the information in order to manage their health (DeSilets & Dickerson, 2009). It is also important that nurses become more alert to the health literacy issues and be aware that, due to limited health literacy, many patients are unable to comprehend and carryout healthcare instructions (Fetter, 1999). Nurses comprise the largest segment of healthcare professional (Jukkala, Deupree, & Graham, 2009). They are in an optimal position to make a positive impact on patients' health outcomes (Erlen, 2004). By recognizing health literacy as an important determinant of health and incorporating interventions into routine nursing practice, nurses can begin to make progress in addressing the health literacy problem (Murphy-Knoll, 2007). Therefore, nurses should become familiar with available health literacy screening tools and techniques used to evaluate health illiterate patients, and become more effective in evaluating patient education materials (DeSilets, & Dickerson, 2009), incorporate health literacy into patient education programs, and raise awareness about the issues associated with health literacy by participating in discussions with various health professionals (Erlen, 2004).

A major responsibility of nurses is to ensure that patients understand health information related to their conditions (Wood & Kettinger, 2007). Health literacy provides an excellent opportunity for nurses to empower patients by providing patient education that meets the specific needs of the patients in a way that the patients can comprehend. Some studies have shown that patient education materials and other means of communication aimed at patients are beyond the comprehension level of many patients (Institute of Medicine, 2004; Paasche-Orlow, Schillinger,

Greene, & Wagner, 2006; Rudd, 2007; Safeer & Keenan, 2005). To exacerbate the problem, nurses often communicate at the highest grade levels and frequently use medical terms that patients do not understand (DeSilets & Dickerson, 2009). This lack of effective communication between patient and provider has been attributed to adverse health outcomes (Patak et al., 2009). Thus, nurses must develop methods of providing health information that are understood by patients with minimal literacy skills (Wood & Kettinger, 2007) and facilitate patient education in a culturally appropriate way (Mayeaux, Murphy, Arnole, Davis, Jackson, & Sentell, 1996).

Nursing administrators are integral in designing assessments of communication and ensuring that they become a routine part of patient care (Patak et al., 2009). Standardized procedures and protocols for assessing patient comprehension are essential. Nurses should have access to health literacy training and to patient education tools, including video tapes computer programs, and group education materials (Wood & Kettinger, 2007). Considering the impact of limited health literacy, nurses should be proficient in assessing health literacy skills (Mancuso, 2009). Now that the health literacy issue has been illuminated, nurses have a great opportunity to start the process of addressing the problems generated by the lack of patient understanding in the healthcare environment. They have the opportunity to increase health literacy awareness, develop and implement assessment standards, assess health education materials, and facilitate decision making on the part of the patient (Erlen, 2004). Nurses should also be aware of various cultural beliefs and educate themselves about them. Cultural beliefs can affect how patients choose to react to and manage their health condition (Chang & Kelly, 2007). Thus incorporating cultural and linguistic assessments into the standard patient assessment improves a nurse's ability to provide appropriate care.

It is recommended that nurses evaluate patients' knowledge level, learning requirements, and willingness to learn (Chang & Kelly, 2007). Nurses should also become familiar with the principles of adult learning. When facilitating adult learning, facilitators should have some understanding of andragogy, which is the art of helping adults learn (Knowles, 1998). According to Knowles (1998), there are 6 principles of adult learning. They include the learner's need to know, self concept of the learner, prior experience of the learner, readiness to learn, orientation to learning, and motivation to learn. Unlike children, adults have a strong desire to know why they need to engage in a learning activity. Consequently, adult learners are more successful when facilitators help them understand the value of participating in learning. Adult learners value autonomy. Therefore, they may resent being subjected to a teacher's demands. Nurses should inquire of patients about their learning style and preferences and use the information to tailor learning activities to reflect the learning style the patient prefers. Prior experiences are important to adult learners. Due to the length of time adults have lived, they bring a lot of experience that they value to the learning environment. Facilitators are well advised to acknowledge a learner's experience and allow the learner to draw from it to the extent possible. Diminishing or ignoring an adult's experience may lead to a negative experience for the learner. Readiness to learn is the desire to learn how to prepare for a specific timing or season in a person's life. Patients entering their forties may be ready to learn about risk factors associated with a certain type of cancer that is often contracted after the age of 40. The learner is motivated by the need to address various situations in life. Nurses can use patient education to help the patient find solutions to a perceived health related problem.

Adult learners are life- or problem-centered and are typically not interested in learning for the sake of learning. Therefore learning must be oriented toward a problem or a life

situation. Objectives should be designed to provide skills needed to resolve the problem or real-life situations. The final adult learning principle is motivation. It represents a desire for learning generated by internal motives, such as self esteem or quality of life. Given the shame and low self esteem often associated with limited health literacy, a patient's motivation may be activated by the creation of a patient-centered environment and an explanation of the learning objectives.

After patients have been identified as having limited health literacy and appropriate educational interventions applied, nurses need to ensure that the interventions are effective. An assessment of patient comprehension must be performed. The intervention can be accomplished by using the teach-back method whereby patients are asked to demonstrate their knowledge of their care plan by repeating the information provided by the healthcare provider back to the provider (Volandes & Paasche-Orlow, 2007). Gaps in patient knowledge can be immediately detected through the use of the teach-to-goal strategy whereby the provider assesses the patient's response and repeats any information that the patient missed or did not understand. This step is performed iteratively until the patient demonstrates complete understanding of the care plan (Volandes & Paasche-Orlow, 2007).

Healthcare System and Health Literacy

There has been considerable growth in the breadth and capacity of medicine. Over the past couple of decades knowledge in medical science has increased enormously and has led to better diagnoses and treatment of medical disorders (Trachtman, 2007). New medical developments are continuously unveiled accompanied with new health information addressing the recommended use of new found treatments (Kickbush & Scott, 2001). But, this significant growth in medicine, along with a complex and convoluted healthcare system (Paasche-Orlow &

Wolf, 2007), has led to a serious mismatch between the demands of the healthcare system and the literacy abilities of those using the system. Moreover, the intensified emphasis on patient 'choice' in healthcare options (Paasche-Orlow, Schillinger, Greene, & Wagner, 2006); combination of public and private funding sources, variations in different geographical areas and differences in various healthcare systems (Cutilli, 2005) have the potential to heighten the complexity of the healthcare system.

It is not unusual for patients with chronic medical conditions to be seen by several physicians with varying specialties (Schwartsberg, VanGeest, & Wang, 2005). These physicians typically do not communicate with each other and it becomes the patient's responsibility to provide the communication among the various physicians. This only exacerbates the health literacy problem. This is an example of how the healthcare system can become a barrier to improving health literacy. Thus, it is vital that progress is made toward improving the healthcare community's awareness of the health literacy issues and their impact on patient care. "These issues will not be resolved until the challenges of health literacy are viewed as a health system concern as well as a patient burden" (Schwartzberg, VanGeest, & Wang, 2005, p.32).

Although limited health literacy is more pervasive among individuals who are older, have less education, and are non-white, it affects people from every segment of American society. Stableford (2007) pointed out that the intricate nature of health and medicine has a negative affect on health literacy skills. The researcher posits that the array of information formats (nutrition labels to protect consumers of food, prescription drug labels to protect consumers of medicine, safety regulations to protect workers, consent forms to protect patients, etc.), along with distinctive medical terminology, health insurance language, and increased stress associated

with navigating the healthcare system make it plausible that only a few Americans are fully health literate. The rules and policies guiding the use of various health plans can differ significantly, making it difficult to determine efficient use of health programs (Paasche-Orlow, & Wolf, 2007). Trachtman (2007) suggests that most patients are not prepared for the rigorous demands of the U.S. healthcare system. Volandes and Paasche-Orlow (2007) noted that the U.S. healthcare system is designed for highly literate and influential individuals.

A major problem associated with health literacy is that although a large segment of the adult population has limited health literacy (IOM, 2004), healthcare providers often conclude that patients have more literacy skills than they actually have (Volandes & Paasche-Orlow, 2007). Another problem is that most of the focus associated with improving health literacy is targeted at patients although both patients and healthcare providers can benefit from improved literacy skills (Neal, 2007; Toofany, 2007). The healthcare system has a significant responsibility to compensate for health literacy deficits in patients but improving health literacy in general is a shared duty (Parker & Kindig, 2006). Health literacy represents a combination of skills, derived from the individual, healthcare system, educational system, as well as societal and cultural influences (IOM, 2004). Moreover, Davis, Gazmararian and Kennen (2006) found that no explicit plan had been developed for collaboration between federal health authorities and other health entities to address the health literacy problem. As indicated by Gazmararian and Kennen (2006), standardized healthcare policies and staff development are needed to improve health literacy and make the healthcare system more accessible.

Numerous strategies to mitigate the effects of limited health literacy have been recommended. IOM (2004) noted that in order to communicate effectively and create an

accessible healthcare system, healthcare providers must be competent. Nurses are in the forefront of providing health information to patients. Therefore, they must be proficient as health educators. If they lack skills in facilitating patient education, they have a duty to seek training and become skilled in appropriate areas (Cutilli, 2005). Most written healthcare information is too advanced for the average adult to comprehend (Safeer & Keenan, 2005). It is written at a 10^{th} grade level when the average American adult reads at the eighth or ninth grade level. Healthcare providers need to provide written health information that is simple and designed with input from intended users (Neal, 2007). Language and culture are also important factors in effective communication. Patients have strong cultural beliefs that can affect how they manage their health. Consequently, nurses need to be aware of those beliefs and take them into consideration when providing patient education and developing care plans. Moreover, primary languages other than English can cause serious communication challenges. Neal (2007) notes that training in language and culture, and utilizing professional interpreters can promote communication in the healthcare setting. Therefore, nurses have a duty to become properly trained in language and culture and avail themselves to medical interpreters and cultural brokers as the need arise (Singleton & Krause, 2009).

Empirical evidence has shown that clinicians often fail to use communication strategies that have been identified as useful by literacy professionals (Schwartzberg et al., 2007). To make matters worse, physicians do not routinely assess their patients' comprehension of information provided to them (Safeer & Keenan, 2005). Health professionals must make it a practice to use simple language when communicating with patients (Trachtman, 2007). Trachtman (2007) suggests that the practice of using plain language should start during professional training and continue throughout a health professional's career. Parker (2006)

expressed that health information must be presented in useful formats if patients are to understand it. Schilling et al. (2003) suggests that patients only remember about half of what physicians tell them. Research has shown that patients' perception is that physicians do not provide information about their illnesses or treatments in a way that they understand (Parker, 2000). Bryan (2008) found that unnecessary medical jargon was used in 81% of outpatient visits for diabetes treatment. Consequently, it is imperative that healthcare providers use plain language when communicating with low literate patients.

There is also a pressing need for healthcare professionals to enhance their communication skills to ensure proficiency in expressing empathy, promoting trust, initiating dialogue, encouraging patient inquiries, confirming patient comprehension of medical instructions, and tailoring patient education to fit patient need. (Paasche-Orlow, Schillinger, Greene, & Wagner, 2006). Communication should be augmented with visual images such as pictures, video, and multimedia. Pssache-Orlow, Schillinger, Greene, & Wagner (2006) suggested that the healthcare system be redesigned to promote a patient-centered approach. They noted that a patient-centered approach must include the following characteristics: preliminary tasks to equip patients and develop appropriate messages; collaborative care plan development, and relationship-centered care; after visit care to augment and follow-up on comprehension of instructions; observation between visits to detect unexpected changes in health condition; and improvements in self-management support options.

Traditionally, limited health literacy has been perceived as an exception within healthcare because providers tend to believe that most patients are proficient in literacy. However, as more providers become aware of the issues surrounding health literacy, some are suggesting that

assessment of patient comprehension be a standard part of care, and that health literacy be identified as an area requiring universal precaution (Paasche-Orlow, Schillinger, Greene, & Wagner, 2006). This means that healthcare providers must consider that any person could conceivably have limited health literacy. Thus the provider should be prepared to conduct a basic health literacy assessment. Increasing diversity among healthcare workers is also an effective strategy for improving communication within the healthcare setting (Paasche-Orlow, Schillinger, Greene, & Wagner, 2006).

Healthcare was traditionally managed by physicians. But, with added emphasis on cost containment, patients are now asked to bear more of the responsibility of managing their care (Cutilli, 2005). These complex and ever changing characteristics of the healthcare system have created significant barriers to healthcare access. Gordon and Wolf (2007) recommended a two-pronged approach to enhancing the healthcare system. They noted that short-term changes to the system take place in the patient-provider encounter where culturally sensitive care should be delivered. But, long-term changes must concentrate on strategies that improve patient skills through the use of the educational system. Health literacy is influenced by multiple factors, and must therefore be addressed from several angles, including the educational system, the healthcare system, the public health system, and the individual.

Although the problems associated with health literacy has been brought to the forefront, there continues to be a deficit of national and organizational policy (Davis, Gazmararian, & Kennen, 2006). Thus, institutional policy and provider training are needed. The Institute of Medicine made several recommendations for improving healthcare systems. Recommendations include the development and promotion of activities designed to reduce the unfavorable effects

of limited health literacy; provision of research sponsored by human and health services departments to develop new measures of health literacy and establish minimal health literacy skills needed to function in the health care system; inclusion of health literacy assessment data as part of the health information and quality data collection; an assumption of a lead role in improving health literacy via research and training activities by health and human service departments; inclusion of health literacy in curricula at professional schools; and establishment of national standards in health education in each state. Paasche-Orlow, Schillinger, Greene, and Wagner (2006) recommended simplifying healthcare processes, reducing the amount of paper work required to interact with the healthcare system, and adopting plain language as the standard method of communication.

Volandes and Paasche-Orlow (2007) suggest that the current design of the healthcare system perpetuates inequality and recommends three strategies to make the system more equitable. Strategies include adopting universal precautions to ensure all cases of limited health literacy are detected; the proliferation of technology oriented communication; and a pay-for-performance reimbursement structure. Volandes & Paasche-Orlow (2007) advocate approaching healthcare with the presumption that all patients have limited literacy until the patient demonstrates otherwise. They also recommend that investments be made in developing technologies to enhance communication between provider and patient. The systems can be used to enhance self-management of health and encourage communication. The researchers warn that such systems must have user-friendly interfaces to ensure easy access by patients with limited literacy skills. Finally, Volandes and Paasche-Orlow (2007) advocate linking reimbursements to provider performance. The purpose of this strategy is to improve healthcare quality.

Limited health literacy exacerbates the management of chronic diseases (Billek-Sawhney & Reicherter, 2005; Parker, Ratzan, & Lurie, 2003). Therefore, Gordon and Wolf (2007) suggest changing the healthcare system to better support chronic disease management. The researchers recommend the use of the Chronic Care Model. The model was developed through efforts to improve the management of chronic diseases (Bodenheimer, Wagner, & Grumbach, 2002). It incorporates six components, including Community Resources and Policies, Health Care Organization, Self-management Support, Delivery System Design, Decision Support, and Clinical Information Systems. Bodenheimer, Wagner, and Grumbach (2002) noted that patients were not properly taught to manage their chronic diseases. They suggested a division of labor which would expand the responsibility of non-physician staff in helping patients to manage their chronic diseases. Within the Chronic Care Model, practice teams are created so that acute care is separate from chronic disease management. Therefore physicians are afforded more time to focus on more urgent cases of acute care and leave the management of chronic diseases to non-physician health professionals unless otherwise indicated (Bodenheimer, Wagner, & Grumbach, 2002). In this model, community resources such as patient education, case management, or exercise programs, are important because they become vital links in the continuing care process. Patients are taught to manage their own care but self-management is a collaborative effort whereby providers assist patients in acquiring the skills needed to manage the chronic disease. Assistance might include providing medical equipment or making a referral. The clinical information system is used to track patient data, assess patient progress, and alert providers when critical adjustments are indicated.

Public Health System and Health Literacy

Health literacy affects all health oriented disciplines and has been labeled as the first public health crisis of the 21st century (Clear Health Communication, 2003). Marcus (2006) described the nation's poor health literacy status as public health's silent epidemic. Education has been a vital part of health promotion and disease prevention in the United States for more than a century. However, early intervention programs put emphasis on simply providing health information and did not provide for the social and economic factors inherent in human behavior. Therefore, efforts were largely ineffective (Nutbeam, 2000). The researcher noted that the transmission of health information without considering and compensating for the social and economic factors that invariably affect behavior will not accomplish desired health education goals. There are numerous sources of health information. Some of the information is derived from reliable sources such as healthcare providers, health plans, and governmental agencies, while other information comes from unreliable and often competing sources such as the mass media, prescription drug advertising, consumer industry advertising, and the internet (Paasche-Orlow, Schillinger, Greene, & Wagner, 2006). This health information, whether reliable or not, is now playing a major role in shaping the public's awareness about health concerns. There is evidence that the social marketing tactics are effective in generating demand for services and may have a disproportionate negative affect on those with limited health literacy (Paasche-Orlow, Schillinger, Greene, & Wagner, 2006). Consequently, it is incumbent upon the public health system to develop more vigorous, trusted, and client-friendly health communication systems.

While medical remedies focus on individual patients, public health interventions target entire populations (Lurie & Parker, 2007). Lurie and Parker (2007) suggest that the health literacy problem be addressed through a non-clinical approach. The researchers shared that studies have demonstrated that an individual's health is impacted by both the individual's socioeconomic status and the traits of those living in the neighborhood. Thus, the researchers argue that health literacy should be considered a community problem whereby community traits inform interventions. The long-term objective would be to improve the literacy level in the community which would ultimately assist members of the community in effectively accessing, using, and taking appropriate health promoting actions based on the health information received.

Individuals with limited health literacy are considered members of a vulnerable population. Immigrants with less than desirable English proficiency are also considered members of a vulnerable population (Levy & Royne, 2009). Currently Hispanics comprise 12.5% of the U.S. population and it is estimated that Hispanic presence in the United States will grow to 24.5 % of total U.S. population by 2050 (Levy & Royne, 2009). Moreover, the U.S. population has become increasingly diverse. Three hundred plus languages are spoken, affecting nearly 50 million residents who speak a non-English language in their homes (Parker, 2006). The health literacy of people invariably interacts with that of the population to which the people are a part (Ishikawa & Yano, 2008). This means that improving the health literacy of the population would also improve the health literacy of individuals and enhance their ability to participate in the healthcare process. A population based approach may be a viable option to resolving the health literacy problem.

The initial purpose of the public health system was to provide interventions for diseases caused by social and environmental factors using a population approach (Nutbeam, 2000). But, as the end of the 20th century approached, infectious diseases gave way to chronic conditions as the leading causes of death (Levy & Royne, 2009). Thus the public health system adopted the strategy of modifying individual risk behavior through health education in an effort to prevent diseases. Still, Nutbeam (2000) notes that previous public health experience revealed that while health education is helpful it is typically not effective unless used along with other health promoting strategies. Thus health education should be augmented with a healthy environment whereby the environmental, economic, and social conditions can positively impact healthy behavior (Nutbeam, 2000). An example of this type of health promoting practice is to supplement education that targets tobacco use with a decrease in tobacco advertising coupled with an increase in the cost of cigarettes.

Prevention intervention strategies are classified as either a primary, secondary, or tertiary level (Turnock, 2004). Primary prevention is designed to prevent a disease, injury, or condition from ever occurring by disallowing exposure to risk. Adequate health literacy provides the knowledge and skills needed to organize the support required to demand services which lead to healthier lives such as healthy food, safe communities and fitness amenities (Levy & Royne, 2009). The aim of secondary prevention is to detect and manage diseases in the early stage of the disease process (Turnock, 2004) because early detection of diseases provides for more favorable outcomes (Levy & Royne, 2009). Tertiary prevention is designed to limit disability and restore functionality after a disease state has already developed (Turnock, 2004).

Improving literacy is a primary responsibility of the educational system. However, as individuals discontinue their education at various stages of their lives they often increase their likelihood of having limited health literacy which negatively impacts the healthcare system (Mika, Kelly, Price, Franquiz, & Villarreal, 2005). The development of a health literate society requires that improvements be made in teaching health literacy to the public and in providing appropriate health communication messages (Parker, 2006). Therefore, health literacy must be thought of as a health issue as well as a social issue (Mika, Kelly, Price, Franquiz, & Villarreal, 2005). Ultimately, health literacy is the responsibility of the educational system, the healthcare system, and the public health system.

Parker (2006) pointed out IOM's findings that initiatives to enhance quality, decrease costs, and reduce disparities will not be successful unless there are also improvements in the public's health literacy skills. An evaluation of the issues surrounding health literacy makes it obvious that health literacy is an urgent problem for both consumers and public health alike (Levy & Royne, 2009). The American public must hold the educational system and the healthcare system accountable for the status of health literacy in America. Federal funding agencies should assume a lead role in guiding research in order to determine what the important objectives should be in defining national health priorities (Parker, 2006).

Educational Systems and Health Literacy

Currently, there is a scarcity of empirical evidence to guide health professionals in selecting the most effective strategies to communicate health information (Schwartzberg, Cowett, Van Geest, & Wolf, 2007). Therefore, there is lively debate among health literacy stakeholders regarding the most effective approaches to health literacy. A study designed to

evaluate participants' beliefs about the most appropriate venue to address and improve health literacy was conducted (Logan, 2007). Study participants included the members of two professional groups with a vested interest in health literacy. They included members of the Consumer and Patient Health Information Section of the Medical Library Association and members of the Environmental Health Information Outreach Program at the National Library of Medicine. The researchers found that participants disagreed on the best venue to address the health literacy issue but they found that three venues had good potential. They include the clinical setting, K-12 classrooms, and private settings where people interact with health information.

Logan (2007) warned that the setting has significance because learners are classified as patients, students, or consumers depending on the venue. Therefore advocates of health literacy initiatives must understand how perceptions of the various labels can affect a health professional's portrayal of those they serve. Wells, Hoadley, Richardson, and Richardson (2010) noted that schools are opportune settings for promoting health based on the following reasons: schools are already involved in improving and sustaining the health of their students; schools have easy access to millions of students in both the public and private setting; schools have the benefit of state mandates to provide comprehensive school health education; and schools can benefit from national and professional literacy programs to enhance the literacy skills of their students.

Volandes, and Paasche-Orlow (2007) suggested that most individuals with low health literacy have functional literacy skills but lack the skills needed to interact with the American healthcare system. The researchers also suggested that the health literacy situation in the United

States is due to an educational system that yields an eighth grade average reading level and a healthcare system that is either uninterested in the health problem or in denial about it. Rudd (2007) stated that the healthcare system puts unreasonable demands on patients. These demands should be assessed and adjusted to reflect the abilities of the average patient. Rudd (2007) described 2 strategies for improving health literacy. The first strategy is to improve health literacy skills in primary, secondary, higher, and adult education. Secondly, define the skills needed to accomplish health oriented tasks and enlighten the healthcare community. Thus, empowering health educators to include appropriate health literacy content has the potential to improvement the effectiveness of courses. Additionally the researcher suggested that stakeholders from education and health work together to resolve the health literacy issue.

Schulte (2007) advocated for starting health education in elementary school and continuing through high school. St Leger (2001, p. 197) stated that "it is vital that we look at what schools can do to equip young people with knowledge and skills at the highest level to enable them to be active participants in shaping those policies and practices that impact on their own health." The IOM (2004) noted that one obstacle to achieving health literacy in school-aged students is the lack of continuity in health education initiatives across all age groups. They recommended that health information be incorporated into traditional reading, math, and science curricula. Providing health education and improving health literacy are basic education functions and should be initiated in the formal educational system (Cutilli, 2005).

K-12 Education

Most elementary, middle, and high schools mandate some form of health education (IOM, 2004). Therefore, the Joint Committee on National Health Standards published the

National Health Education Standards (NHES) in 1995. They outlined 7 areas of knowledge and skills needed by individuals to achieve health literacy as follows:

1. Student will comprehend concepts related to health promotion and disease prevention.
2. Students will demonstrate the ability to access valid health information and health-promoting products and services.
3. Students will demonstrate the ability to practice health-enhancing behaviors and reduce health risks.
4. Students will analyze the influence of culture, media, technology, and other factors on health.
5. Students will demonstrate the ability to use interpersonal communication skills to enhance health.
6. Students will demonstrate the ability to use goal-setting and decision-making skills to enhance health.
7. Students will demonstrate the ability to advocate for personal, family, and community health.

Although most States (75%) embrace NHES, health education requirements are not consistent across all grade levels (IOM, 2004). Thus, the percentage of schools required to teach health education usually vary by grade level, and the course content from one class to another is typically not coordinated or designed to build on knowledge learned in previous classes. A mere 10% of the health education courses are taught by teachers with a concentration in a health education or physical education. Therefore, a significant number of teachers feel inadequate as a health education teacher (IOM, 2004). Additionally, requirements for health education classes

are lowest for senior high school students when they are most in need of relevant health information, particularly as it relates to the use of tobacco, alcohol, illicit drugs, and unsafe sexual activity. Even under the best of circumstances, required curricula can be so extensive until health education may be compromised (IOM, 2004). These challenges suggest that health information must be incorporated into each curriculum area; health education curricula must be designed such that the course content of a later class builds on or adds to content presented in a previous class; and health education teachers must be trained in an effort to enhance their competence and confidence (IOM, 2004).

St Leger and Nutbeam (2000) proposed the adoption of a coordinated school health model which was introduced in the mid-1980s in both the United States and Europe and is referred to as the health promoting school in Europe. Its purpose is to accomplish health education objectives by approaching health within an education framework. The model looks outside the curriculum to find ways to improve health education. More focus is placed on the school environment – school-based health policies, connection to health services, and partnerships with the surrounding community- where hands-on interaction can take place. The model seeks to enhance student knowledge and skills related to health and provide them with opportunities to develop advocacy skills. St Leger and Nutbeam (2000) suggested that the co-ordinated school health model contributes to 4 school related characteristics, including lifelong learning, competencies and behaviors; specific cognate knowledge and skills; and self attributes. St Leger (2001) stated that these characteristics are fundamental in achieving desired health and educational outcomes. It must be understood that achieving Nutbeam's (2000) three levels of health literacy – functional, communicative, and critical, is a prerequisite for achieving success using the co-ordinated school health model. According to St Leger (2001), there is a lack of

sufficient evidence to definitively conclude that the coordinated school health provides the best approach to health education but there is some evidence that the model is promising.

Higher Education

Colleges and universities have access to nearly 18 million undergraduate students 18 – 24 years old (IOM, 2000). This access provides an excellent opportunity for colleges and universities to incorporate quality health education into their curricula. However, only a few of the country's undergraduate schools require students to enroll in health education courses (IOM, 2004). According the IOM (2004), one of the Healthy People 2010 objectives is to increase the number of college students who receive information from their college or university on each of six priority health topics, including injuries, alcohol and illicit drug use, unsafe sexual behavior, dietary/nutritional information, and physical activity. Yet, no standards for evaluating the status of the objective have been developed (IOM, 2004). Even in health professional schools in areas such as medicine, pharmacy, nursing, and public health, time constraints and the lack of space in curricula frequently contribute to a lack of attention to health literacy (Cutilli, 2005).

Evidence has shown that education is not always a valid indicator of high levels of health literacy. Therefore Ickes and Cottrell (2010) conducted a study to assess health literacy skills in juniors and seniors enrolled at a large university in the Midwest. Among other assessments, the researchers compared actual health literacy levels of students and the importance of health literacy. They found that students had been taught to value health information. They also found that students had adequate functional health literacy. Still, the study revealed that it was a challenge for some students to understand and use some medical information. Thus, institutions of higher education cannot assume their college graduates have adequate health literacy. One

implication of the study is that undergraduate college students should be required to take at least one health oriented class which enhances their health literacy skills.

Adult Education

The Adult Basic Education and Literacy (ABEL) System was developed through the Workforce Investment Act of 1998 (IOM, 2004). ABEL sponsors education classes such as basic reading, math, English, and preparation for high school equivalence. The ABEL system serves approximately three and a half million students each year and most of these students are prime candidates for health literacy intervention (IOM, 2004). Traditionally, the ABEL system has not emphasized health related topics but it provides an excellent setting to incorporate health subjects into lesson plans (Rudd, 2004). Golbeck, Ahlers-Schmidt and Paschal (2005) conducted a study to determine if an adequate health literacy and numeracy assessment tool exists which could be used in the ABEL setting. They found that a single assessment tool, the Comprehensive Adult Student Assessment System (CASAS) incorporated health although it does not distinguish health literacy from health numeracy. They also found that the two most commonly used health literacy tools in non-ABEL settings were the Rapid Estimate of Adult Literacy in Medicine (REALM) and the Test of Functional Health Literacy in Adults (TOFHLA). The researchers concluded that no assessment tool existed that adequately assesses health literacy or health numeracy in the ABEL setting.

A few states have recognized the need to incorporate health topics into the adult education curricula and have added limited health education (Golbeck, Ahlers-Schmidt, & Paschal, 2005). According to Golbeck, Ahlers-Schmidt and Paschal (2005), Massachusetts, Virginia, and Texas have implemented health education into their ABEL classes, and Georgia

offers health oriented classes in various settings, including hospitals, mental health centers, community centers, and senior centers. However, Golbeck, Ahlers-Schmidt, and Paschal (2005) warned that effective health literacy and numeracy assessment tools need to be identified and used to assess the effectiveness of health education activities. It is important that adult educators create an optimal learning environment. Adult learners bring a lifetime of knowledge that they value to the classroom. Teaching adults can be more effective "by providing a climate in which the learners feel more respected, trusted, unthreatened, and cared about; by exposing them to the need to know before instructing them; by giving them some responsibility in choosing methods and resources; and by involving them in sharing responsibility for evaluating their learning" (Knowles, Holton & Swanson, 1998, p. 70).

Professional Education

There is an indication that some healthcare professionals may not be fully conscious of the skills needed by patients to carryout the tasks demanded by the healthcare system (Rudd, 2007). According to IOM (2004), the Coalition for Allied Health Leadership team developed and conducted a survey to assess the level of awareness of the allied health community. The survey revealed that about one-third of respondents indicated that they were not aware of the health literacy issues. They were not aware of the impact of health literacy on patients, and they reported no institutional policies within their organizations to improve the health literacy situation. Although medical schools are required to teach and assess communication skills, there is no mandate for including health literacy in the curriculum (Harper, Cook, & Makoul, 2007).

Schwartzberg, VanGeest, and Wang (2005) shared that it is not uncommon for physicians to rush when interacting with patients and not take the time need to ensure that patients

comprehend health information. They noted that compared to physicians in other countries, U.S. physicians typically control the physician-patient encounter by using directive style questioning when it is more beneficial to focus the communication on patients and their need to understand the information provided. The researchers noted that although educating healthcare providers on effectively presenting health information could promote patient understanding, most communication courses do not focus on helping patients to understanding (Schwartzberg, VanGeest, & Wang, 2005). Still, improved awareness of the issues associated with health literacy is a basic responsibility of all healthcare professionals.

IOM (2004) noted that although the health literacy education may get incorporated into topics such as patient communication in professional schools, it is typically not a requirement, and is not systematically incorporated in other courses. Thus most health literacy education for healthcare professionals is conducted under the umbrella of Continuing Medical Education which is often designed to update practitioners on new techniques, ideas and concepts. However, Harper, Cook, and Makoul (2007, p. S113) suggested that "if medical education about literacy is seen as just an add-on … it is not likely to have much of an effect." The AMA, along with the AMA Foundation has initiated programs to raise awareness of the health literacy problem (IOM, 2004). In 2003 a partnership of several organizations including AMA Foundation, American Public Health Association, National Council on the Aging, and other organizations founded the Partnership for Clear Health Communication. The partnership was designed to "increase awareness of health literacy and its impact on the nation's health" (IOM, 2004). The project includes the 'Ask-Me-3' program which targets better communication between patients and healthcare providers. AMA Foundation, with the support of Pfizer, Inc, provides grant funding to health literacy community service projects. Additionally, AMA

Foundation developed and provided health literacy educational kits titled 'Health Literacy, Let Your Patients Understand.' The kits are free to physicians, healthcare professionals, and patient advocates, and represent AMA Foundation's primary method of raising awareness about the health literacy issue.

Given the devastating effects of limited health literacy on health outcomes, it is imperative that healthcare professionals develop effective methods to improve patient-provider communication. One method that is effective is the use of plain language. While it might seem unreasonable to expect physicians and other healthcare professionals to discontinue the frequently used jargon and use language that is understandable, passing new laws and regulations to require the use of plain language is not impossible (Schulte, 2007). According to Schulte (2007), laws drafted for similar purpose are currently in existence in other fields. One example is the Federal securities field where, in an effort to protect investors, certain securities documents must be written at the sixth or seventh grade reading level, and must not include double negatives. In 1993, JCAHO changed its accreditation scoring process to include how well patients understand certain instructions (Doak, Doak, & Root, 1996).

Summary

Health literacy has been identified as a powerful determinant of health outcomes (DeWalt, Berkman, Sheridan, Lohr, & Pignone, 2004). Studies revealed that 90 million American adults or half of the American adult population have limited health literacy skills (Paasche-Orlow, Parker, Gazmararian, Nielsen-Bohlman, & Rudd, 2005). A partial list of the effects of limited health literacy includes poorer health status, impaired comprehension of medical information, lack of knowledge about health condition, failure to adhere to medical

regimen, failure to use preventive services, increased risk of hospitalization, higher rates of chronic disease, and increased healthcare costs (McCray, 2004; Pawlak, 2005). Health literacy is defined differently by different organization (Speros, 2005) but it is a complicated construct that is dependant on an individuals' ability to communicate and demands made by society and the healthcare system (Baker, 2006). The healthcare environment, due to its technical nature and the frequent use of medical jargon by healthcare professionals, increases the amount of health literacy needed to navigate the healthcare system (Parker, Wolf, & Kirsch, 2008). Some Federal agencies have released reports identifying health literacy as one of 20 priority areas for national action (Stableford & Mettger, 2007).

Health literacy is essential. It is an important determinant of health outcomes and may ultimately determine whether individuals succeed or fail in their attempt to obtain healthcare services. Finding solutions to the problem generated by the prevalence of limited health literacy has not been easy. There is disagreement among researchers and health literacy stakeholders as to who should resolve the problem and how it should be approached. Nevertheless, the responsibility to find solutions is not solely that of the individual. It is also the responsibility of the educational system and the healthcare system. There should be a collaborative effort among educational organizations and healthcare entities to address the serious problem of limited health literacy in America.

Chapter 3

Methods

This chapter will discuss the research methods used to conduct this study. The research questions analyzed will be presented. The study population and the sample selected for evaluation will be defined. Procedures used to protect human participants will be explained. The design of the study and data collection procedures will be discussed. The instrument utilized in this study will also be presented and explained.

Health literacy is an essential part of healthcare (Parker & Gazmararian, 2003). It is a powerful determinant of health status and mortality (DeWalt, Berkman, Sheridan, Lohr, & Pignone, 2004). Still, nearly half of the American adult population lack sufficient health literacy skills and struggle in their attempt to navigate the U.S. healthcare system (IOM, 2004). Registered nurses play a major role in patient-provider communication. Therefore, the purpose of this study was to examine the health literacy knowledge and experience of registered nurses in Georgia in an effort to evaluate their readiness to provide health literacy intervention. This study sought to determine the extent to which registered nurses in Georgia have health literacy knowledge and experience. This study also sought to explain the effect of the variables age, gender, race, education, certifications, GPA, and attention to personal health on health literacy knowledge and experience. Approval for conducting this study was granted by

AuburnUniversity Institutional Review Board (IRB) under Exempt Status Protocol # 09-302 EX 0911 (see Appendix A) .

Research Questions

This study assessed registered nurses who had at least three years of nursing experience, were licensed in the state of Georgia, and were currently practicing as registered nurses in Georgia. The following research questions were explored:

1. What are the characteristics of experienced, registered nurses in Georgia?
2. To what extent do experienced, registered nurses in Georgia have health literacy knowledge?
3. To what extent do experienced, registered nurses in Georgia have health literacy experience?
4. What is the relationship between health literacy knowledge and health literacy experience?

Design of the Study

A key responsibility of nurses is to provide and promote understanding of health information (Dunn, 2010a). Therefore, this study was designed to assess the health literacy knowledge and experience of registered nurses in Georgia. The study utilized the Health Literacy Knowledge and Experience Survey which was developed by Dr. Catherine M. Cormier (Cormier, 2006). The survey analyzes three distinct areas, including health literacy knowledge, health literacy experience, and demographics. The survey uses quantitative measures to evaluate participants' responses. Part 1 of the survey elicited responses to 29 multiple choice questions designed to capture information about participants' knowledge of health literacy in five content areas, including guidelines for presenting written healthcare information; basic facts on health

literacy; health literacy screening; consequences associated with low health literacy; and evaluating the effectiveness of healthcare information. Part 2 of the survey sought to gather data about the health literacy experiences of participants during the normal course of their nursing careers. Participants were asked to respond to nine Likert-type health literacy experience questions by selecting one of four choices, including Never, Sometimes, Frequently, and Always.

Part 3 of the survey was used to collect demographical data. Eight questions were included in Part 3. One question was designed to determine if participants were registered nurses currently practicing in Georgia. The remaining seven questions sought to collect data for the following variables: age, gender, ethnicity, prior educational experiences, certifications, GPA, and the frequency of interaction with healthcare providers for their own personal healthcare or the healthcare of a family member or friend. This study is a cross-sectional study designed to evaluate the health literacy knowledge and experience of registered nurses in Georgia during a specific time period. The researcher was based in Georgia. Therefore, Georgia nurses were selected for convenience purposes.

Protection of Human Participants

Procedures used to protect human participants were informed by the research procedures and guidelines of the Auburn University Institutional Review Board. The researcher completed the online Collaborative Institutional Training Initiative (CITI) course in The Protection of Human Subjects Curriculum. All documents used in the study, including information letters, recruiting flyers, informed consent forms, and the survey instrument were examined and approved for use by the IRB. No contact was made with participants by the researcher until IRB

approval was granted. All participants were provided an information letter which explained the purpose and possible benefits of the study. Each participant was provided an informed consent form which explained participants' rights; noted that all data provided would be anonymous; explained that study participation was strictly voluntary; and informed that no compensation would be offered for participation (see appendices A, B, C, and D to view above mentioned documents).

Population and Sample Selection

The population for the study was all registered nurses in Georgia who were licensed between 1975 and 2006, had at least three years of nursing experience, and were currently practicing as a registered nurse in Georgia. The researcher initiated the convenience sample selection process by obtaining an updated copy of the Registered Nurse Registry from the Georgia Secretary of State's Office. The total number of nurses included in the Georgia Registered Nurse Registry was 101,040. The registry did not include date of birth. Therefore, in an effort to increase the likelihood that nurses contacted were currently practicing and had at least three years of nursing experience, the researcher selected only those nurses who were initially licensed between 1975 and 2006.

The researcher utilized a systematically selected sample using the following procedure: ten numbers (1- 10) were placed in a bag. The bag was shaken to ensure that numbers were randomly positioned. The number seven which was blindly pulled from the bag represented the starting place within the nurse registry from which potential study participants would be selected. The researcher selected every 35^{th} registry entry. Thus, entries seven, 42, 77, and every 35^{th} entry thereafter were selected until 1500 participants had been selected. When selected entries

had either missing address information or a state other than Georgia the researcher skipped the entry and moved to the next 35th entry with a valid Georgia address. This process produced a population sample of 1500 registered nurses licensed in Georgia.

Instrumentation

This study utilized the HL-KES survey instrument after obtaining written permission from the developer (Cormier, 2006). The instrument was developed to assess the health literacy knowledge and experience of senior level nursing students. This researcher made slight modification to the instrument to make it relevant to registered nurses. Cormier (2006) consulted with five content experts to evaluate the content validity of the interpretations from the instrument's scores. In developing Part 1 (Health Literacy Knowledge) of the instrument, Cormier (2006), along with the five content experts, concluded that five content areas were relevant. Part 1of the instrument addressed *guidelines for presenting written healthcare information; basic facts on health literacy; health literacy screening; consequences associated with low health literacy;* and *evaluating the effectiveness of healthcare information.*

Cormier (2006) also used three of Bloom's six cognitive levels, including *knowledge, comprehension,* and *application* to categorize the 29 items included in Part 1 of the instrument. Eleven of the items addressed guidelines for presenting written healthcare information whereby 5 were under the knowledge cognitive level, 2 were under comprehension, and four were classified under the application cognitive level. Six items in Part 1 assessed basic facts on health literacy. They included four items under the knowledge category and two items under comprehension. There were also six items assessing health literacy screening. They included two knowledge items, two comprehension items, and two application items. Consequences associated with low

health literacy were assessed using four items that were each categorized as comprehension cognitive level. Finally, there were two items that assessed evaluating the effectiveness of healthcare information. Both items were classified under the application cognitive level (Cormier, 2006).

Part 2 of the HL-KES instrument assessed health literacy experience. It incorporated nine items designed to elicit one of four Likert-type responses. Valid responses ranged from "*Never*" to *"Always"*. The four options included "*Never*", "*Sometimes*", "*Frequently*", and "*Always*" (Cormier, 2006). Part 3 of the instrument elicited demographic data and included seven original items and seven variables, including age, gender, ethnicity, prior educational experience, certifications, grade point average (GPA), and the frequency of interaction with healthcare providers for their personal healthcare, or the healthcare of family members or friends. Next, Cormier (2006) conducted a pilot test of the instrument where 57 junior level nursing students completed the survey. Twenty-eight respondents indicated that the readability of the survey was either "good", "easy-to-read", or "OK". But, eight students found the survey to be "wordy" or "too long". Thirty-seven participants had no problems with the survey directions while one participant found the directions to be "too long" and another indicated that the directions were "wordy". A total of 57 nursing students participated in the pilot test and 29 participants indicated that the survey was too long (Cormier, 2006). Finally, an item analysis was conducted on Part 1 of the survey. Item difficulty and item discrimination indices were calculated. Items with a difficulty index of less than .30 or greater than .70 were further evaluated. Also, items with a discrimination index of less than .019 were critically evaluated. As a result, revisions were made to some item stems and distractors to reduce the amount of time required to complete the survey (Cormier, 2006).

Validity and Reliability

In an effort to establish validity of Part 1 and 2 of the instrument, the content experts rated each item as either "Not Relevant", "Fairly Relevant", "Relevant, or "Very Relevant" (Cormier, 2006). The developer of the instrument analyzed the content experts' ratings by calculating the content validity index (CVI) of each item and calculating the overall CVI of the instrument. The CVI rating across all items was .98 compared to a CVI standard of .80. The rating represented a 98% agreement among the evaluators on the content validity of the instrument (Cormier, 2006). As a result of the content experts' critique, Cormier (2006) eliminated one item in Part 1 resulting in 29 health literacy knowledge items in the final version of the instrument.

While the presentation of information about how Cormier (2006) established validity of score interpretation and reliability of scores is necessary, it is not sufficient. There is a tendency of some researchers to overlook the need to establish and report validity and reliability of their own data even if the instrument has been previously validated (Henson, 2001). Scores are dependent on both the instrument and the sample (Wright, 2000). Therefore, continuous validation is indicated because interpretation of traits measured can change over time due to changes in social and cultural attitudes (Benson, 1998). Reliability testing must also be repeated each time new scores are generated. Scores may differ in degree of reliability due to differences in samples, differences in testing conditions, or other factors that differentiate one test administration from another (Henson, 2001). Thus this researcher will present statistical data that evaluate the validity of the HL-KES based on the population and sample of this study as well as an alpha coefficient which evaluates reliability of test scores reported in this study.

Although direct measurements (test-retest and alternate forms coefficients) of reliability provide better estimates, they are less practical because they require additional time to complete, and they impose additional strain on study participants (Henson, 2001). Consequently, this researcher used an internal consistency coefficient to establish reliability of scores reported in this study. Internal consistency estimates demonstrate homogeneity by providing an indication of the extent to which test items combine to measure the same construct (Henson, 2001).

Data Collection

The Georgia Registered Nurse Registry was utilized to identify registered nurses in Georgia. Survey packages were mailed to 1500 registered nurses throughout Georgia during the spring and summer of 2010. The survey package included a marketing flyer, an information letter, a consent form, the HL-KES Survey, and a prepaid, self-addressed envelop. The Georgia Registered Nurse Registry did not provide email addresses. Therefore, three separate mailings to 500 registered nurses were sent via the United States Postal Service. The information letter explained the purpose of the study and criteria for participating in the survey. Participants were required to be registered nurses practicing in Georgia who had at least three years of nursing experience. Participants were asked to complete the HL-KES survey and return it to the researcher using an enclosed prepaid envelop. The HL-KES survey is designed to capture data related to participants' health literacy knowledge, health literacy experience, and demographical background.

According to Cormier (2006), the final version of the HL-KES survey took participants approximately 15 to 20 minutes to complete. However, this researcher noted that it took approximately 20-25 minutes to complete the HL-KES survey. The survey incorporates three

major areas, including health literacy knowledge, health literacy experience, and demographical data. The original HL-KES survey includes seven questions requiring either a multiple choice answer or a fill-in-the-blank answer. The HL-KES was revised to capture the GPA upon graduation from nursing school. Also, a new question was added to verify that participants were currently practicing as registered nurses in Georgia. Therefore Part 3, for purposes of this study, includes nine questions requiring either a multiple choice or fill-in-the-blank response.

Summary

The purpose of the study was to analyze the extent to which registered nurses in Georgia have health literacy knowledge and experience. The researcher also sought to determine what effects demographical variables have on health literacy knowledge and experience. Registered nurses who were initially licensed in Georgia from 1975 to 2006 were included in the study population. A sample of 1500 registered nurses was selected to complete the HL-KES survey. The sample was selected because nurses are vital in the process of providing and explaining healthcare information to patients. Therefore when nurses are adequately prepared to intervene in health literacy cases, barriers to healthcare due to low health literacy can be avoided.

Chapter 3 described the methods used in this study. Information was presented about the design of the study, protection of human participants, instrumentation, population and sample selection, and data collection procedures. The HL-KES survey instrument was developed by Cormier (2006). This study used the HL-KES to assess the health literacy knowledge and experience of registered nurses. The HL-KES was revised slightly to capture the GPA upon graduation from nursing school and to verify that participants were currently working in Georgia as registered nurses. Data were solicited from 1500 registered nurses who had at least three

years of nursing experience and were practicing in Georgia. The three primary areas assessed in the study were health literacy knowledge, health literacy experience, and demographics. The chapter also presented the research questions and discussed the format of the HL-KES survey. Study findings are presented in Chapter 4.

Chapter 4

Findings

Introduction

It has been sufficiently documented that limited health literacy is prevalent (Greenberg, 2001), and is associated with poorer health status (Baker, Parker, Williams, Clark, & Nurss, 1997; McCray, 2004; Nutbeam, 2008; Pawlak, 2005). This chapter reports the findings of the study and presents statistical test results. The chapter presents empirical data to address the research questions, and provides an analysis and discussion of findings for each research question. First, Chapter 4 introduces the study and presents the research questions. Second, the population and sample are described. Third, measures to establish validity of the HL-KES instrument and reliability of test scores are discussed. Finally, an analysis and discussion of overall findings of the study is presented. The SPSS statistical software was used to analyze the data.

Effective communication is essential to public mastery of health information (Stableford & Mettger, 2007). Registered nurses may be the best solution to the health literacy crisis because they are already in an excellent position to promote effective communication between patients and providers (Singleton & Krause, 2009). The nursing discipline is the largest portion of the health oriented workforce and nurses have the responsibility of providing patient education (Jukkala, Deupree, & Graham, 2009). Thus, the purpose of the study was to examine

the extent to which experienced (at least three years) registered nurses in Georgia had health literacy knowledge and experience. An assessment of the health literacy knowledge and experience of registered nurses may provide valuable information needed to implement effective health literacy intervention strategies.

Research Questions

The following research questions were addressed in this study:

1. What are the characteristics of experienced, registered nurses in Georgia?
2. To what extent do experienced, registered nurses in Georgia have health literacy knowledge?
3. To what extent do experienced, registered nurses in Georgia have health literacy experience?
4. What is the relationship between health literacy knowledge and health literacy experience?

Research Question 1

Research question 1 attempted to answer the question, what are the characteristics of experienced registered nurses in Georgia. A total of 141registered nurses participated in the study. The vast majority of nurses are females. Thus, most study participants were females. One hundred and thirty-six (96.4%) participants were females while five (3.6%) were males. Ninety eight (69.5%) participants were white, 36 (25.5) participants were African American, and seven (5.0%) participants classified themselves as other. The age of participants ranged from 27 to 65 with the majority (66.6%) being between the age of 40 and 59. Table 1 displays the age, gender, and ethnicity distribution of the participants.

Table 1

Distribution of Age, Gender, and Ethnicity

Demographic	Frequency	Percent
Age		
29 and under	7	5.0
30 - 39	22	15.6
40- 49	48	34.0
50 - 59	46	32.6
60 and over	17	12.0
Gender		
Female	136	96.4
Male	5	3.6
Ethnicity		
African American	36	25.5
White	98	69.5
Other	7	5.0

The HL-KES instrument was modified slightly to capture the GPA in nursing courses upon participant graduation from nursing school. Data indicated that two participants had a GPA between 2.0 and 2.5; 27 participants had a GPA in the range of 2.51 to 3.0; 34 participants had

earned a GPA between 3.01 and 3.50; and 67 participants had GPAs ranging from 3.51to 4.0. Table 2 presents the distribution of grade point averages.

Table 2

GPA in Nursing Courses at Time of Graduation

GPA	Frequency	Percent
2.00 – 2.50	2	1.4
2.51 – 3.00	22	19.1
3.01 – 3.50	34	24.1
3.51 – 4.00	67	47.5

Participants were asked if they had earned college degrees prior to entering nursing school. Eighty-three (58.8%) participants reported no prior degrees. However, 50 (35.5%) participants reported having an undergraduate degree, and six (4.3%) participants indicated that they had at least a master's degree upon entering nursing school. Additionally, of 141 total study participants, 38 (27.0%) reported having a certification in some area of healthcare prior to entering nursing school. See Table 3 for the distribution of educational attainment. Finally, participants were asked about the frequency with which they interacted with healthcare providers for their own personal healthcare or for the healthcare needs of a significant other. Fourteen (9.9%) participants reported interacting with healthcare providers every few years, 55 (39.0%) participants reported interacting with healthcare providers at least once a year, and 72 (51.1%) participants indicated that they interacted with healthcare providers three to four times a year.

Table 4 displays the distribution of frequency with which participants interacted with healthcare providers for personal health care or the health care of significant others.

Table 3

Prior Educational Attainment and Healthcare Certification

Prior Status	Frequency	Percent
Educational Attainment		
No prior degrees	*83*	58.8
At least one undergrad degree	*50*	35.5
At least a master's degree	6	4.3
Healthcare Certification		
Prior certification – Yes	38	27.0
Prior certification – No	103	73.0

Table 4

Frequency of Interaction with Healthcare Provider

Interval	Frequency	Percent
Every few years	*14*	9.9
At least once a year	55	39.0
Three to four times a year	72	51.1

Research Question 2

The second research question examined the extent to which experienced registered nurses in Georgia had health literacy knowledge. The health literacy knowledge scale of the HL-KES instrument was used to assess participants' health literacy knowledge in five content areas, including basic facts on health literacy; consequences associated with low health literacy; health literacy screening; guidelines for written healthcare materials; and evaluation of health literacy intervention. All analyses were completed by item. Participants were asked to respond to 29 questions whereby 11 (37.9%) questions assessed participants' knowledge of guidelines for presenting written healthcare information. Six questions examined participants' knowledge of basic health literacy facts. Six questions assessed participants' knowledge of screening patients for health literacy skills. Four questions sought to understand participants' knowledge of the consequences associated with limited health literacy. Two additional questions investigated participants' knowledge in evaluating the effectiveness of healthcare information.

In this study item number 27 of the Health Literacy Knowledge scale inadvertently used the word 'least' when the intent was to use 'best' (see Appendix C). Therefore a response of either 'c' or 'd' was accepted as a correct response. Table 5 displays the distribution of responses to the Health Literacy Knowledge items. See Table 6 for a full description of the content areas of the Health Literacy Knowledge items.

Table 5

Responses to the Health Literacy Knowledge Scale by Registered Nurses in Georgia

N=141

Health Literacy Knowledge Item *(Content Area)*		*N*[a] *%*[b]					*N*[c] *%d*	*Ne* *%*[f]	*N*[g] *%*[h]
		a	b	c	d	e			
1.	Low health literacy levels are most prevalent among which of the following groups? (BF)	58	5	8	14	**52**	3	52	138
		41.8	3.5	5.7	9.9	**36.8**	2.1	36.8	97.9
2.	Low health literacy levels are common among: (BF)	22	12	0	**106**		1	106	140
		15.6	8.5		**75.2**		.7	75.2	99.3
3.	The research on health literacy indicates that: (BF)	21	**90**	19	8		3	90	138
		14.9	**63.8**	13.5	5.7		2.1	63.8	97.9
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? (BF)	0	0	28	**113**		0	113	141
				19.9	**80.1**			80.1	100.0
5.	The best predictor of healthcare status is: (BF)	78	**40**	0	22		1	40	140
		55.3	**28.4**		15.6		.7	28.4	99.3
6.	Patients with low health literacy skills: (CQ)	7	1	2	**131**		0	131	141
		5.0	.7	1.4	**92.9**			92.9	100.0
7.	Health behaviors common among patients with low health literacy skills include: (CQ)	**104**	5	15	10		7	104	134
		73.8	3.5	10.6	7.1		5.0	73.8	95
8.	Patients cope with low health literacy by: (CQ)	10	0	7	**121**		3	121	138
		7.1		5.0	**85.8**		2.1	85.8	97.9

(Table continued)

Health Literacy Knowledge Item *(Content Area)*		N^a / $\%^b$					N^c / $\%^d$	N^e / $\%^f$	N^g / $\%^h$
		a	b	c	d	e			
9.	The nurse should keep in mind that individuals with low health literacy skills: (CQ)	26	6	0	**106**		3	106	138
		18.4	4.3		**75.2**		2.1	75.2	97.9
10.	The Rapid Estimate of Adult Literacy in Medicine is an instrument utilized to: (SC)	51	0	18	**68**		4	68	137
		36.2		12.8	**48.2**		2.8	48.2	97.2
11.	When working with individuals who have low health literacy skills the nurse should keep in mind that these individuals: (SC)	**133**	0	3	2		3	133	138
		94.3		2.1	1.4		2.1	94.3	97.9
12.	Which of the following questions should provide the nurse with the best estimate of reading skills of the patient? (SC)	23	15	**99**	1		3	99	138
		16.3	10.6	**70.2**	.7		2.1	70.2	97.9
13.	Which statement best describes the Test of Functional Health Literacy? This instrument is: (SC)	**27**	2	32	70		10	27	131
		19.1	1.4	22.7	49.6		7.1	19.7	92.9
14.	What is the strongest advantage of conducting health literacy screenings? Health literacy screenings: (SC)	13	**103**	18	3		4	103	137
		9.2	**73.0**	12.8	2.1		2.8	73	97.2
15.	Which of the following statements, made by the nurse, would be the best approach to initiating a health literacy screening with a patient?	2	1	**134**	1		3	134	138
		1.4	.7	**95.0**	.7		2.1	95.0	97.9
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: (EV)	5	2	1	**130**		3	130	138
		3.5	1.4	.7	**92.2**		2.1	92.2	97.9

(Table continued)

	Health Literacy Knowledge Items *(Content Area)*	*N*[a] *%*[b] a	b	c	d	e	*N*[c] *%*[d]	*N*[e] *%*[f]	*N*[g] *%*[h]
17.	An individual with functional health literacy will be able to: (BF)	31	13	28	**68**		1	68	140
		22.0	9.2	19.9	**48.2**		.7	48.2	99.3
18.	Which of the following is true with regards to written healthcare information? (GL)	14	**115**	6	4		2	115	139
		9.9	**81.6**	4.3	2.8		1.4	81.6	98.6
19.	The recommended reading level for written healthcare information is: (GL)	**71**	46	11	11		2	71	139
		50.4	32.6	7.8	7.8		1.4	50.4	98.6
20.	The first step in developing written healthcare information is to: (GL)	7	27	**93**	12		2	93	139
		5.0	19.1	**66.0**	8.5		1.4	66.0	98.6
21.	Which of the following statements best describes the Fry Method? (GL)	**28**	50	26	8		29	28	112
		19.9	35.5	18.4	5.7		20.6	19.9	79.4
22.	Recommendations for developing written healthcare materials include: (GL)	7	**131**	2			1	131	140
		5.0	**92.9**	1.4			.7	92.9	99.3
23.	When listing side effects for a handout on chemotherapy the oncology nurse should limit the list to: (GL)	53	**81**	3	1		3	81	138
		37.6	**57.4**	2.1	.7		2.1	57.4	97.9
24.	Written healthcare information provided to a patient related to a specific disease should include: (GL)	**104**	32	4	1		0	104	141
		78.8	22.7	2.8	.7			78.8	100.0
25.	Which of the following would be the most effective wording for a heading in a brochure on hypertension? (GL)	48	2	**88**	3		0	88	141
		34.8	1.4	**62.4**	2.1			62.4	100.0

(Table continued)

Health Literacy Knowledge Item *(Content Area)*		*N*[a] *%*[b]					*N*[c] *%*[d]	*N*[e] *%*[f]	*N*[g] *%*[h]
		a	b	c	d	e			
26.	The best way to ensure that a breast cancer prevention brochure is culturally appropriate is to: (GL)	36	21	5	**77**		2	77	139
		25.5	14.9	3.5	**54.6**		1.4	54.6	98.6
27.	Which of the following instructions on the management of diabetes would be least understood by an individual with low health literacy skills? (GL)	11	8	49	**68**		5	68	136
		7.8	5.7	34.8	**48.2**		3.5	48.2	96.5
28.	Which of the following approaches to patient education provides minimal opportunity for the patient to actually engage in learning? (GL)	17	**101**	11	8		4	101	137
		12.1	**71.6**	7.8	5.7		2.8	71.6	97.2
29.	The most effective way for a nurse to determine how well a patient with low health literacy understands healthcare information is to: (EV)	8	4	107	18		4	107	137
		5.7	2.8	75.9	12.8		2.8	75.9	97.2

Note: Bold faced numbers represent correct answers.

[a]Number of responses for each answer choice.

[b]Percentages of responses for each answer choice.

[c]Number of missing responses.

[d]Percentage of missing responses.

[e]Number of correct responses.

[f]Percentage of correct responses.

[g]Total number of responses.

[h]Percentage of total responses.

Table 6

Descriptions of Content Areas

Content Area Code	Content Area Description
BF	Basic Facts on Health Literacy
CQ	Consequences Associated with Low Health Literacy
SC	Health Literacy Screening
GL	Guidelines for Written Healthcare Materials
EV	Evaluation of Health Literacy Interventions

Although participants exhibited some health literacy knowledge, the knowledge was not consistent throughout each of the five content areas. There were six items classified as basic facts content. While the majority of participants answered three of the items correctly the remaining three items were answered incorrectly by most of the participants. Eighty percent of participants demonstrated the knowledge that limited health literacy is associated with low socioeconomic level and ethnicity, but 63.2 % of the participants also showed that they were not cognizant that low health literacy is most prevalent among individuals who are 65 years old and older. Additionally, only 28.4% of participants demonstrated knowledge that the best indicator of health status is literacy skill level. The survey included four items related to the consequences associated with low health literacy. Each of the four items was answered correctly by a significant majority of participants. Ninety-three percent of participants exhibited the knowledge that low literate patients tend to be diagnosed late in the disease process which often lead to fewer treatment options for patients. Additionally, 86.8% of participants displayed knowledge of tactics used by patients with low literacy skills to conceal their limited literacy ability.

Six of the items were designed to examine participants' knowledge of health literacy screening procedures. Four items were answered correctly by the majority of participants while 2 items were answered incorrectly. Also, 94.3% of respondents exhibited knowledge of patients with low health literacy being reluctant to admit having difficulty reading, and 95% of participants demonstrated knowledge of effective approaches to initiating health literacy screenings. On the other hand, only 19.1% of participants exhibited knowledge of the Test of Functional Health Literacy which is a commonly used health literacy screening tool. There were two items related to evaluating the effectiveness of health literacy intervention. The majority of participants answered both items correctly. Ninety-two percent indicated an understanding that when patients ask to take information home to read, it may be an indication that the patient has difficulty reading. Furthermore, 75.9% of participants displayed knowledge of the most effective way for nurses to determine how well a patient understands health information.

Finally, there were 11 items related to guidelines for developing written healthcare information. Nine of the items were answered correctly by a majority of participants while 2 items were answered incorrectly by the majority of participants. The majority of respondents (81.6%) exhibited the knowledge that illustrations can improve a patient's understanding of written information. Ninety-three percent of participants reflected knowledge that written healthcare information should be presented in the form of a conversation. The majority of participants (78.8%) also exhibited the knowledge that main ideas about specific diseases should be limited to 3 or 4 major points.

Overall, the study found that participants had more knowledge in the content areas of consequences associated with low health literacy and evaluating the effectiveness of health

literacy intervention. Participants demonstrated the least knowledge in the areas of health literacy screening and guidelines for written healthcare materials. Only 19.1% and 36.2% of participants exhibited familiarity with the Test of Functional Health Literacy and Rapid Estimate of Adult Literacy tools respectively. Although the majority of participants answered nine of the 11 items related to guidelines for written healthcare material correctly, 4 of the items were correctly answered by a slim majority. Thus, while 50.4% of participants correctly identified the recommended reading level for written healthcare information, nearly half (49.6%) of the participants did not. Fifty-seven percent of participants demonstrated knowledge about guidelines for developing written healthcare information about specific diseases but 43% of participants showed a lack of knowledge in this area. Fifty-five percent of participants displayed knowledge of the best way to ensure that a health education brochure is culturally appropriate, but 45% of the respondents answered the question incorrectly. Moreover, an overwhelming majority of participants (80%) indicated that they were not familiar with the Fry Method. These findings suggest that while participants had some knowledge of the issues associated with health literacy they can also benefit from additional health literacy knowledge.

Research Question 3

The third research question asked, to what extent do experienced registered nurses in Georgia have health literacy experience. The health literacy experience scale of the HL-KES instrument was used to assess participants' health literacy experience. Participants were asked to respond to nine items by selecting one of four items of a Likert-type scale to indicate how often they participated in activities related to health literacy. The items of the scale included Never, Sometimes, Frequently, and Always. The principal component factors extraction with oblique rotation was performed on nine items from the HL-KES instrument for a sample of 141

participants. One factor was extracted – experience. Fifty-three percent of total variance can be explained by this factor. Internal consistency, Cronbach's alpha is .81. Table seven displays the health literacy experience frequencies. See Appendix C for possible responses to the health literacy experience questions.

The study found that although participants demonstrated that they had experience in some areas of health literacy, they lacked experience in other areas of health literacy. Fifty-eight percent of participants indicated that health literacy was sometimes addressed in the nursing curriculum. Fifty-six percent of participants shared that they frequently provided written healthcare information to individuals or community groups; 51.8% said they sometimes used computer software to provide healthcare information; and 43.3% noted that they sometimes used videotapes to provide healthcare information. Moreover, nearly half of the participants suggested that they had experience in evaluating health education materials and health education approaches. On the other hand, 53.2% of participants shared that they had never used a health literacy screening tool; fifty-one percent of participants indicated they had never used audiotapes to provide health information; and 31.2% of participants said they had never evaluated the reading level of written healthcare materials while another 42.6 % of participants shared that they only evaluated the reading level of written healthcare materials sometimes.

It is also important to note that the only item on the health literacy experience scale whereby the majority of participants indicated frequent use or interaction was using written materials to provide healthcare information to individuals or community groups. Moreover, respondents rarely indicated that they always participated in any of the health literacy experience activities. Results indicate that participants' strongest health literacy experience was in using written healthcare materials and videotapes to provide health information to patients and

community groups. The areas of least health literacy experience was using health literacy screening tools, evaluating the reading level of healthcare materials before using them for patient teaching, and using computer software to provide health information. The study suggests that participants could benefit from increased health literacy experience.

Table 7

Responses to the Health Literacy Experience Scale by Registered Nurses in Georgia N=141

Item no.	Item	Never		Sometimes		Frequently		Always	
		Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*	*Frequency*	*%*
30.	How frequently was health literacy emphasized in your nursing curriculum?	32	22.7	82	58.2	21	14.9	4	2.8
31.	How often did you use a health literacy screening tool to assess the health literacy skill of an individual?	75	53.2	47	33.3	16	11.3	1	.7
32.	How often did you evaluate the reading level of written healthcare materials before using them for patient teaching?	44	31.2	60	42.6	32	22.7	4	2.8

(Table continued)

Item no.	Item	Never		Sometimes		Frequently		Always	
		Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*	*Frequency*	*%*
33.	How often did you evaluate the cultural appropriateness of healthcare materials, including written handouts, videos, audiotapes, before using them for patient teaching?	40	28.3	66	46.8	28	19.9	5	3.5
34.	How often did you evaluate the use of illustrations in written healthcare materials before using them for patient teaching?	*28*	*19.9*	70	49.6	38	27.0	3	2.1
35.	How often did you use written materials to provide healthcare information to an individual or community group?	8	5.7	44	31.2	79	56.0	8	5.7
36.	How often did you provide audiotapes to provide healthcare information to an individual or community group?	72	5.1	49	34.8	14	9.9	3	2.1
37.	How often did you use videotapes to provide healthcare information to an individual or group?	38	26.9	61	43.3	37	26.2	2	1.4
38.	How often did you use computer software to provide healthcare information to an individual or group?	43	30.5	73	51.8	20	14.2	2	1.4

Research Question 4

Research question 4 assessed the relationship between health literacy knowledge and health literacy experience. A Pearson Correlation was performed using SPSS. The correlation reached significance at the .01 level. While one might expect a direct relationship between health literacy knowledge and health literacy experience, results from this study demonstrated an inverse relationship between health literacy knowledge and health literacy experience. This may be due to new nurses entering the workforce with health literacy knowledge gained as a result of recent incorporation of health literacy topics into the nursing curriculum but lacking health literacy experience. Results may also indicate that nurses with many years of nursing experience have health literacy experience gained from actually working with low literate patient but lack the technical knowledge of health literacy because it was not reflected in the nursing curriculum at the time they attended nursing school.

Summary

In this chapter the findings of the study is presented. Limited health literacy is prevalent and is associated with socioeconomic status, age, education, and ethnicity. Registered nurses in Georgia have some health literacy knowledge and some health literacy experience but findings revealed significant gaps in both health literacy knowledge and experience. Five health literacy content areas were identified, including basic facts on health literacy; consequences associated with low health literacy; health literacy screening; guidelines for written healthcare materials; and evaluation of health literacy interventions. The study demonstrated that participants had some knowledge of the basic facts on health literacy but could benefit from additional knowledge. Three of six basic facts on health literacy items were answered correctly by a majority of participants but three items were also answered incorrectly by a majority of

participants. Most participants had health literacy knowledge in the areas of consequences associated with low health literacy and evaluation of health literacy interventions. However, a majority of participants did not have knowledge of health literacy screening or guidelines for written healthcare materials.

The study also found inconsistency in levels of health literacy experience. Participants' strongest health literacy experience was in using healthcare materials and videotapes to provide healthcare information to patients and community groups. But, there were three areas where participants exhibited less health literacy experience. They included using health literacy screening tools; evaluating the reading level of healthcare materials before using them for patient teaching, and using computer software to provide health information. Chapter 5 presents a discussion of study findings, implications of the findings, and recommendations for future research.

Chapter 5

Summary, Implications and Recommendations

Introduction

This chapter presents a discussion of study findings, implications of the findings, recommendations for improving health literacy and recommendations for future research. The primary purpose of the study was to examine the extent to which registered nurses in Georgia had health literacy knowledge and experience. The following research questions inspired the study:

1. What are the characteristics of experienced, registered nurses in Georgia?
2. To what extent do experienced, registered nurses in Georgia have health literacy knowledge?
3. To what extent do experienced, registered nurses in Georgia have health literacy experience?
4. What is the relationship between health literacy knowledge and health literacy experience?

Although the study participants exhibited some health literacy knowledge and experience, they also demonstrated that gaps in knowledge and experience existed in some content areas.

Summary

Health literacy is a critical component of healthcare in America (Parker & Gazmararian, 2003). Individuals with limited health literacy have less knowledge about their medical conditions (Williams, Baker, Parker, & Nurss, 1998); get less preventive care (McCray, 2004; Pawlak, 2005); have less ability to navigate the healthcare system; are more likely to be hospitalized (Baker, Parker, Williams & Clark, 1998); and have increased mortality risk (Wolf, 2007). Nevertheless, Limited health literacy is a major problem in the United States. Nearly half of the American adult population lacks adequate health literacy skills (Murphy-Knoll, 2007). Health literacy is a complicated concept that is comprised of an individuals' ability to communicate, the design of the healthcare system, and demands imposed by society (Baker, 2004). Thus, the healthcare system, along with healthcare providers have a responsibility to become more cognizant of the literacy limits of their clients and implement initiatives to improve the effectiveness of patient-provider encounters (Schloman, 2004) and ultimately improve health outcomes.

Nurses comprise the largest segment of healthcare professionals (Jukkala, Deupree & Graham, 2009). They are considered de facto teachers of health information (Fetter, 1999) and are already in an optimal position to make a positive impact on health outcomes. Health literacy provides an excellent opportunity for nurses to empower patients by providing patient education that meets the specific needs of patients in a way that patients can comprehend. Nurses should be proficient in both identifying limited health literacy and applying appropriate interventions. Thus, this study examines the extent to which registered nurses have health literacy knowledge

and experience. The overall survey return rate was low. Out of 1402 surveys delivered, 141 (10.1%) were completed and returned.

Question 1

The study examined the characteristics of participants. One hundred and forty-one individuals participated in the survey. All participants were registered nurses who reported they were currently employed as a nurse in Georgia and had at least three years of nursing experience. The state of Georgia was selected due to convenience as the investigator was based in Georgia. The majority (67%) of participants was white women, and most (59%) participants were between the ages of 40 and 59. The study included 136 (96.4%) women and five (3.6%) men. Ninety-eight participants (69.5%) were white, 36 (25.5%) were African American, and 7 (5%) reported other as their ethnicity. Fifty-nine percent of participants reported having no degrees prior to entering nursing school. Seventy-three percent said they had no healthcare certifications before entering nursing school. Slightly more than half (51%) reported that they interacted with healthcare professionals three to four times annually for personal healthcare or the healthcare of a significant other, while 39% and 9.9% said they interacted with healthcare providers for personal healthcare or the healthcare of others at least once a year and every few years respectively.

Question 2

The goal of question 2 was to assess the extent to which participants had health literacy knowledge. Participants were asked a series of 29 questions to test their knowledge of health literacy in five content areas, including basic facts on health literacy; consequences associated with low health literacy; health literacy screening; guidelines for written healthcare materials;

and evaluation of health literacy interventions. Responses indicated that participants had knowledge of consequences associated with low health literacy. The knowledge scale included four questions assessing consequences related to health literacy. At least 70% of participants answered each of the four questions correctly. Seventy-four percent of participants exhibited the knowledge that individuals with limited health literacy are less likely to participate in preventive healthcare than those with adequate health literacy. Seventy-five percent of respondents understood that low literate individuals find it difficult to use health information to impact their health situation. Eighty-six percent of participants were cognizant that patients with limited health literacy have a tendency to pretend to read and understand health information when they actually don't understand it. Ninety-three displayed the knowledge that patients with limited health literacy are often diagnosed late in the disease process and have fewer treatment options than patients with adequate literacy skills.

Another content area where participants demonstrated sufficient health literacy knowledge was evaluation of health literacy interventions. There were two questions assessing evaluation of health literacy interventions which represented 6.9% of the health literacy knowledge scale. Seventy-six percent of participants exhibited the knowledge that having a patient teach back information provided is the most effective way to assess patient comprehension. Ninety-two percent of participants displayed the knowledge that when patients are provided health information and they express a desire to take the information home to read, it may be an indication that the patient has difficulty reading the materials.

Patients had less knowledge in other content areas. There were six questions in the area of basic facts on health literacy which accounted for 20.7% of the health literacy knowledge

scale. Three questions were answered correctly by a majority of respondents but the remaining three questions were answered incorrectly by a majority of the respondents. While 75.2% of participants understood that limited health literacy is common across all ethnic groups, only 36.8% were cognizant that limited health literacy is prevalent among older (65 and older) individuals. Participants were aware that limited health is associated with socioeconomic level and ethnicity. But, most participants were not aware that the best predictor of health status is literacy skills.

Gaps in knowledge also existed in the health literacy screening content area. There were six questions which represented 20.7% of the knowledge scale. Four of the six questions were answered correctly by the majority of participants. Two questions proved to be challenging. Participants knew the advantage of conducting health literacy screenings, and knew that screenings should be approached with sensitivity using carefully selected statements when informing patients of the need for a screening. Nevertheless, the majority (51.8%) of participants was unaware of the purpose of the Rapid Estimate of Adult Literacy in Medicine tool. Another 80.9% was not familiar with the Test of Functional Health Literacy. Both tools are designed to assess an individual's literacy level.

The final content area assessed is guidelines for written healthcare materials. There were 11 questions accounting for 37.9% of the knowledge scale. A majority of respondents correctly answered nine of the questions while two questions were answered incorrectly by a majority of the respondents. Eighty percent of participants could not identify the correct description of the Fry Method. Moreover, four of the nine questions answered correctly by a majority of participants were answered correctly by only slim majorities. Thus a gap in knowledge is

evident. Forty-nine percent of participants were not cognizant that the recommended reading level for written healthcare information is 5th grade. Additionally, forty-five percent of participants were not aware of ways to ensure that a health information brochure is culturally appropriate.

Question 3

The experience scale of the HL-KES survey was designed to assess the extent to which participants had health literacy experience. Participants were asked to answer nine questions by selecting one of four Likert-type responses, including Never, Sometimes, Frequently, and Always. Results demonstrated that participants had some health literacy experience but the experience was not consistent across all areas. The majority (58%) of participants reported that health literacy was sometimes addressed in the nursing curriculum. Most (56%) participants reported that they frequently provided healthcare information to individuals or community groups. A majority (51.8%) of participants noted that they sometimes used computer software to provide healthcare information. Another 43.3% said they sometimes used videotapes to provide healthcare information. Nearly half (49.6%) of participants reported having experience in evaluating health education materials prior to using them for patient education sometimes. Still, 53.2% of participants revealed they had never used a health literacy screening tool; 51% had never used audiotapes to provide health information; and 31.2% had never evaluated the reading level of written healthcare materials. The only item on the experience scale was performed frequently by the majority of participants was using written materials to provide healthcare information to individuals or community groups. Thus participants had the most health literacy experience in using written healthcare materials and videotapes to provide healthcare

information. The least health literacy experience was demonstrated in using health literacy screening tools, and evaluating the reading level of healthcare materials before using it to teach patients.

Question 4

Question 4 sought to analyze the relationship between health literacy knowledge and health literacy experience. A Pearson correlation was performed and a result of .01 was obtained. This is an indication that there is a relationship of significance between health literacy knowledge and health literacy experience. One might assume that as health literacy knowledge increases, health literacy experience would also increase. However, data from this study revealed an inverse relationship between health literacy knowledge and health literacy experience. These data are consistent with the findings from a study conducted by Cormier (2006) to assess the health literacy knowledge and experience of senior level baccalaureate nursing students.

Implications

The gaps in health literacy knowledge and experience demonstrated by registered nurses in Georgia who participated in this study suggest that nurses may not be adequately prepared to provide effective health literacy intervention. The low return rate (10.1%) may be an indication that nurses felt they had inadequate health literacy knowledge and experience and was reluctant to reveal it. Low participation may also mean that the actual level of health literacy knowledge and experience is lower than this study demonstrated, suggesting that those who responded had a higher level of health literacy knowledge and experience than many who did not respond. On the other hand, the low response rate may be an indication that recipients of the survey felt it was too long and took too much time to complete it.

Nurses had more knowledge in the content areas of consequences associated with low health literacy and evaluating the effectiveness of health literacy intervention but were less knowledgeable about basic facts on health literacy, health literacy screening, and guidelines for written healthcare materials. This may be an indication that nurses are familiar with the effects and impact of limited health literacy due to their nursing experience and observations in the clinical setting rather than from formal health literacy training. This may explain the lack of knowledge in other areas. It is less likely that one would become proficient in basic facts on health literacy, health literacy screening, and guidelines for written healthcare materials without the use of deliberate and specialized training courses. Thus, the less than adequate knowledge of health literacy may be due to a lack of rigorous health literacy training. Nurses have numerous competing training needs whereby health literacy may not be a high priority. Another point worth noting is that health literacy screening is controversial. Health literacy experts disagree on the value of its use in the clinical setting due to possible risk of further harming patients. Therefore the lack of knowledge regarding health literacy screening may be due to policies that prohibit health literacy screening in the clinical setting.

The study also demonstrated gaps in health literacy experience. More than half (53.3%) of participants reported that they had never used a health literacy screening tool. Another 33% said they only used screening tools sometimes. That is a total of 88% of participants who did not frequently or routinely use health literacy screening tools. It may be that for reasons stated earlier, lack of health literacy training and/or policies that do not promote health literacy screening in the clinical setting is responsible for these results. Moreover, 31.2% shared that they had never evaluated the reading level of written healthcare materials while another 42.6% reported only evaluating written healthcare materials sometimes. Thus, 73% of respondents did

not frequently or routinely assess the reading level of written healthcare materials prior to using them to provide health information. Again, health literacy screening in the clinical setting is controversial due to possible embarrassment and harm to patients. Thus, healthcare providers may be reluctant to provide health literacy screenings. Another possible reason for the lack of health literacy experience in the area of health literacy screening is a lack of proper training.

A number of studies have demonstrated that healthcare materials are often written at levels beyond the comprehension level of patients (IOM, 2004; Safeer & Keenan, 2005). Data from this study support those findings. If written healthcare materials are not consistently evaluated to determine the reading level, patients have an increased chance of receiving incompatible health information which they can not comprehend. In addition to the data generated from the survey, the literature review revealed that many nurses are not adequately trained to detect limited health literacy and effectively intervene; healthcare providers fail to identify as many as half of individuals with limited health literacy (Sand-Jecklin, Murray, Summers & Watson, 2010); and most nurses are not prepared to produce effective health education materials (Pawlak, 2005).

Improving health literacy is the primary responsibility of the educational system and the optimal venue is in the classroom. However, individuals discontinue their education at various stages of their lives and increase the likelihood that they will end up with limited health literacy. The limited health literacy will invariably impact the healthcare system and must be addressed by the healthcare system. Therefore, health literacy is a joint responsibility of the educational system, the healthcare system, and the public health system. Patient education has been incorporated into the overall nursing responsibility for a long time (Pawlak, 2005). Nursing

functions and patient education are inextricably linked. However, the increasing need for health literacy intervention may be competing with higher priority nursing functions. Research suggests that assessments must be made to determine the most effective approach to providing quality health literacy intervention.

Recommendations

Health literacy is a complicated issue that should be addressed jointly by the educational system, healthcare system, and public health system. Currently, there are no health literacy standards to guide patient assessment and communication support. From one healthcare provider to another, health literacy policies and procedures vary greatly. This uninformed approach and high failure rate suggest that standards and protocols for measuring health literacy are needed (Erlen, 2004). Health literacy assessments must be approached with the same level of professionalism and commitment exhibited when assessing other adverse health conditions. Health literacy screenings have evolved and can now be performed in less than five minutes. The Newest Vital Sign is a recently developed screening tool which has proven to be effective and can be completed in approximately three minutes. The Single Item Literacy Screener (SILS) is another recently developed health literacy screening tool. It is a single item questionnaire which appears promising and can be performed in less than three minutes (Chew, Bradley, & Boyko, 2004). The SILS is also less intrusive and more respectful of patients' dignity.

Healthcare professionals can contribute to improving health literacy by using a few simple techniques that enhance patient understanding. They include slowing the pace of providing information, using plain language, using images or pictorial information, repeating information, asking the patient to repeat back information, and developing user friendly, shame

free environments. Although these strategies are effective and easy to use they are not routinely used in most clinical settings. Nurses should incorporate health literacy into patient education program and raise awareness of the issues associated with limited health literacy among various healthcare professionals (Erlen, 2004). Nurses should also become familiar with health literacy screening tools and techniques used to assess low literate patients. Nurses should also be aware of various cultural beliefs, have access to professional training in language and culture, and make use of professional interpreters as needed (Singleton & Krause, 2009).

Health literacy should be included in the curricula at all levels of education, including professional schools. National standards for health education should also be established. Healthcare providers should define the skills needed to accomplish health oriented tasks (Rudd, 2007). This information would empower health educators to incorporate appropriate health literacy content in the curriculum. It is important to ensure that educators are adequately trained in health content and that students are required to enroll in health education courses. Additional health literacy research is also needed. The HL-KES instrument could be more effective if a shorter version was developed whereby more robust statistical analyses could be conducted. A large scale, multistate assessment of the health literacy knowledge and experience of registered nurses with a qualitative component and emphasis on understanding the relationship between health literacy knowledge and health literacy experience is needed. Research to determine the best practices in providing health literacy intervention should be conducted.

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Appendix A

Institutional Review Board Approval Letter

AUBURN
UNIVERSITY

Office of Research Compliance
307 Samford Hall
Auburn University, AL 36849

Telephone: 334-844-5966
Fax: 334-844-4391
hsubjec@auburn.edu

January 14, 2010

MEMORANDUM TO: Glenda Knight (EFLT)

PROTOCOL TITLE: "An Evaluation of Health Literacy Knowledge and Experience of Baccalaureate Nursing Students at Public Nursing Schools in Georgia Compared to Health Literacy Knowledge and Experience of Registered Nurses in Georgia"

IRB FILE NO.: 09-302 EX 0911

APPROVAL DATE: November 6, 2009
EXPIRATION DATE: November 5, 2010

The referenced protocol was approved "Exempt" on November 6, 2009 under 45 CFR 46.101 (b) (2):

> "Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
> (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and
> (ii) any disclosure of the human subjects' response outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation."

You should retain this letter in your files, along with a copy of the revised protocol and other pertinent information concerning your study. If you should anticipate a change in any of the procedures authorized in this protocol, you must request and receive IRB approval prior to implementation of any revision. Please reference the above IRB file number in any correspondence regarding this project.

If you will be unable to file a Final Report on your project before November 5, 2010, you must submit a request for an extension of approval to the IRB no later than October 18, 2010. If your IRB authorization expires and/or you have not received written notice that a request for an extension has been approved prior to November 5, 2010 you must suspend the project immediately and contact the Office of Human Subjects Research for assistance.

A Final Report will be required to close your IRB project file. Please note that the approved, stamped version of your information letter should be provided to participants during the consent process.

If you have any questions concerning this Board action, please contact the Office of Human Subjects Research at 844-5966.

Sincerely,

Kathy Jo Ellison, RN, DSN, CIP
Chair of the Institutional Review Board
for the Use of Human Subjects in Research

cc: Dr. Sheri Downer
Dr. Maria Witte

Appendix B

Information Letters

Permission Request Letter

January 7, 2009

Catherine M. Cormier

Instructor of Nursing
Southeastern Louisiana University

Dear Dr. Cormier:

I am a doctoral student at Auburn University in Auburn Alabama. I am preparing to write my dissertation on "An EVALUATION OF NURSES' ABILITY TO EFFECTIVELY COMMUNICATE WITH PATIENTS WITH LOW HEALTH LITERACY SKILLS." While searching for appropriate instruments, I located an instrument you developed - the Health Literacy Knowledge and Experience Survey (HL-KES). I have read part of your dissertation and believe your health literacy questionnaire would be effective in my study. I am requesting permission to use your questionnaire. Your permission would be greatly appreciated. If you have questions please contact me at 404/ 763-9726 or you may email me at knighgd@auburn.edu to communicate your response.

I look forward to hearing from you soon. Thank you.

Sincerely,

Glenda D. Knight, MPH, CHES

Email Response Communication

From: <ccormier@selu.edu> Thursday - January 8, 2009 7:25 AM

To: "Glenda Knight" <knighgd@auburn.edu>

Subject: Re: Request for Permission . . .

Attachments: Mime.822 (3857 bytes)

Best of Luck!
On Wednesday, January 07, 2009 7:30 PM, Glenda Knight wrote:
>
>Date: Wed, 07 Jan 2009 19:30:11 -0600
>From: Glenda Knight
>To: <ccormier@selu.edu>
>cc:
>Subject: Re: Request for Permission . . .
>
>Dr. Cormier,
>Thank you for the prompt response. I really appreciate your willingness to grant me permission to use the HL-KES. Of course, I would be happy to share the results of my research with you. As soon as it is complete, I'll submit a copy to you. Again, thank you very much.
>
>Glenda Knight
>
>>>> cathy cormier <ccormier@selu.edu> 01/07/09 12:44 PM >>>
> Dear Glenda,
>It sounds like you have a great dissertation topic. I would be happy
>to share the HL-KES with you for your project. Several nurses have
>contacted me regarding the instrument and I would like to begin
>collecting data on the reliability and validity of the instrument. I
>would greatly appreciate it if you would share the results of your
>study with this information upon completion.
>Best of luck and if you need any assistance please feel free to
>contact me at any time.
>Sincerely
>Cathy Cormier
> At 03:19 PM 1/6/2009, you wrote:
>>Dear Dr. Cormier,

>>My name is Glenda Knight and I am a doctoral student at Auburn
>>University in Auburn, Alabama. Attached to this email is a letter
>>requesting your permission to use your health literacy questionnaire
>>(HL-KES). I look forward to hearing from you soon.
>>
>>Thank you,

(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS AN IRB APPROVAL STAMP WITH CURRENT DATES HAS BEEN APPLIED TO THIS DOCUMENT.)

REGISTERED NURSE INFORMATION LETTER

for a Research Study Entitled

"An Evaluation of the Health Literacy Knowledge and Experience of Registered Nurses in Georgia"

You are invited to participate in a research study aimed at determining the extent to which senior baccalaureate nursing students enrolled at public colleges and universities in Georgia and registered nurses practicing in Georgia have health literacy knowledge and experience. This study is being conducted by Glenda D. Knight, a Doctoral Candidate, at Auburn University under the supervision of Dr. Maria Witte, associate professor. You were selected because you are licensed as a registered nurse in Georgia and are 18 years old or older.

What will be involved if you participate? If you decide to participate in this research study, you will be asked to complete the Health Literacy Knowledge and Experience Survey. Answer each question based on your current knowledge and experience. Please be honest with all responses. Your total time commitment will be approximately 30 minutes. After completing the survey, please return it to the survey administrator using the self addressed, stamped envelop.

Are there any risks or discomforts? There are no identifiable risks or discomforts associated with participating in this research study. All data collected will be anonymous. Your name will never appear on any document.

Are there any benefits to yourself or others? If you participate in this study you will help educators and health care providers gain a better understanding of the health literacy knowledge and experience status of the nursing workforce in Georgia. Participating in the survey may also benefit you by making you more aware of the various strategies available for improving communication between nurses and patients.

Will you receive compensation for participating? There is no compensation for participating in this study. However, after completion of the study, research information will be made available to you upon request.

If you change your mind about participating, you can withdraw at any time during the study. Your participation is completely voluntary. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Your decision about whether or not to participate or stop participating will not jeopardize you in any way.

Any data obtained in connection with this study will remain anonymous. We will protect your privacy and the data you provide by excluding your identity and restricting access to only those individuals who are conducting this study. Information collected through your participation may be used to fulfill educational requirement, published in a professional journal, and/or presented at a professional meeting.

If you have questions about this study, please contact Glenda D. Knight at (404) 763-9726 (knighgd@auburn.edu) or Dr. Maria Witte at (334) 844- 4460 (wittemm@auburn.edu).

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334)-844-5966 or email at hsubjec@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, THE DATA YOU PROVIDE WILL SERVE AS YOUR AGREEMENT TO DO SO. THIS LETTER IS YOURS TO KEEP.

_____

Investigator's Signature Date

_____

Print Name

Thank you for your participation

Health Literacy Research Study

Be part of an important health literacy research study

Are you 18 years old or older?

Are you a registered nurse working in the state of Georgia?

Do you have at least 3 years of nursing experience?

Do you want to learn more about a prevalent health care issue that will affect you as a nurse?

If you answered **YES** to these questions, you are eligible to participate in a health literacy research study.

The purpose of this research study is to evaluate the health literacy knowledge and experience of practicing registered nurses in Georgia. By participating in the study, you may find that you will benefit by being more aware of the strategies available to improve communication between nurses and patients. The study will also help educators and health care providers gain a better understanding of the health literacy status of the nursing workforce in Georgia.

All data collected will be anonymous. Your name will never appear on any document. The survey will take approximately 25 minutes to complete.

This study is being conducted by Glenda D. Knight, a Doctoral Candidate, at Auburn University under the supervision of Dr. Maria Witte, associate professor.

Please contact Glenda Knight at (404) 763-9726 (knighgd@auburn.edu) or Dr. Maria Witte at (334) 844-4460 (wittemm@auburn.edu) for more information.

Appendix C

Health Literacy Knowledge and Experience Survey

1. Health Literacy knowledge and Experience Survey

(Registered Nurses)

Introduction: Health literacy is the ability to read, understand and make informed decisions about health care. The purpose of this study is to assess the health literacy knowledge and experience of Registered Nurses practicing in the state of Georgia.

Your participation in the survey will contribute to the body of knowledge on health literacy and provide valuable information to nursing faculty and health care administrators

Your responses will be kept anonymous and in no way affect your employment. I encourage you to participate in this research study; however, participation is optional. Informed consent is implied with completion of the 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 individuals read three to five grade levels lower than the last year of school completed.
   C. if an individual has completed high school the 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 literacy skills.
   C. are often prescribed less complicated medication regimens 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 life style 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 that 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 healthcare 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 high school?"
   B. "Do you have difficulty reading?"
   C. "Would you read the label on this medication bottle for me?"
   D. "Do you need eyeglasses 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 material.

14. What is the strongest advantage of 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 teachings.
   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 instructions.
    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 health care status.
    D. overall patients comprehend written information better that verbal instructions.

19. The recommended reading level for written healthcare information is:
    A. 5^{th} grade.
    B. 8^{th} grade.
    C. 10^{th} grade.
    D. 12^{th} 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. using 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 least 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 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 health literacy 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 ask the patient a series of questions following instructions.

Part 2: Health Literacy Experiences

Directions: Questions 30 – 38 ask you to describe how often you participated in activities related to health literacy.

Choose the response that best describes health literacy experiences while employed as a nurse:

		Never	Sometimes	Frequently	Always
30	How frequently was health literacy emphasized in your nursing curriculum?	_____	_____	_____	_____
31	How often did you use a health literacy screening tool to assess the health literacy skill of an individual?	_____	_____	_____	_____
32	How often did you evaluate the reading level of written healthcare materials before using them for patient teaching?	_____	_____	_____	_____
33	How often did you evaluate the cultural appropriateness of healthcare materials, including written handouts, videos, audiotapes, before using them for patient teaching?	_____	_____	_____	_____
34	How often did you evaluate the use of illustrations in written healthcare materials before using them for patient teaching?	_____	_____	_____	_____
35	How often did you use written materials to provide health care information to an individual or community group?	_____	_____	_____	_____
36	How often did you use audiotapes to provide healthcare information to an individual or community group? .	_____	_____	_____	_____

37	How often did you use videotapes to provide healthcare Information to an individual or community group? .	_____	_____	_____	_____
38	How often did you use computer software to provide Healthcare information to an individual or community Group?	_____	_____	_____	_____

Part 3: Demographic Data

Directions: Questions 39 – 46 relate to demographic data. Choose the response that characterizes you best.

1. Gender
   A. male
   B. female

2. Ethnicity:
   A. White
   B. African American
   C. Other
   D.

3. Prior educational experience:
   A. No prior degrees
   B. At least one undergraduate degree before entering nursing school.
   C. At least a master's degree before entering nursing.

4. I was certified in some area of healthcare (nursing assistant, radiology technician, emergency medical technician, licensed practical nurse) prior to attending nursing school.
   A. No
   B. Yes

5. How frequently do you interact with healthcare providers for your own personal healthcare needs or the health care needs of a significant other?
   A. Every few years
   B. At least once a year
   C. Three to four times a year

6. Please enter your age in years.

7. Please enter your grade point average in required nursing courses at the time of your graduation from nursing school.

8. Are you currently employed as a nurse in the state of Georgia?
   A. Yes
   B. No

Please return your completed survey to the survey administrator using the self addressed, stamped envelop provided in your survey package.

Thank you for completing this survey!